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The EHRA White Book 2015

The Current Status of Cardiac Electrophysiology
in ESC Member Countries

K.-H. Kuck, G. Hindricks, L. Padeletti, P. Raatikainen, D.O. Arnar



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Preface – The EHRA White Book 2015

The eighth edition of the White Book of the European Heart Rhythm Association (EHRA) provides comprehensive data on electrophysiological procedures and implantation of cardiac implantable electronic devices (CIEDs) in the European Society of Cardiology (ESC) area. The White Book has become a key reference for those seeking information about invasive arrhythmia therapies. No other publication provides up-to-date information on the procedure numbers and educational requirements along with key demographic information and national healthcare statistics.

Since its founding, the spirit and methodology of the White Book project has remained unchanged, although the questionnaire and the data collected has been revised and refined each year.

The EHRA White Book represents a successful and tangible attempt by the leading European professional arrhythmia society to serve its principal mission - to improve the quality of life of the European population by reducing the impact of cardiac arrhythmias and reduce sudden cardiac death. The EHRA White Book is an important reference to monitor the yearly status of treatment of arrhythmia in ESC countries as well as to identify possible obstacles to ESC Guidelines implementation in each country.

The data collection is mostly the result of voluntary participation of each National Working Group on Arrhythmias or the National Cardiac Societies. In the vast majority of the ESC countries, well established centralized databases of both CIEDs and catheter ablation procedures do exist. The databases are often created and maintained by the National Working Group on Arrhythmias and Electrophysiology and/or the National Cardiac Society. However, in some ESC countries no registries are available and the data may be limited. In these cases estimates are provided and clearly indicated where this is the case. The EHRA White Book might serve as motivation and a template for these countries to adopt a systematic approach to collect key data on arrhythmia therapy. Despite the heterogeneous source of information, there is consistency in the data collection over the years that enables comparison on a year to year basis. EHRA is very grateful to all National Working Groups for their continuous support and contribution to White Book. This year's edition includes data from 52 countries of the 56 ESC countries.

The EHRA White Book has been made possible thanks to the efforts of several key contributors. Prof. Christian Wolpert and Prof. Panos Vardas deserve special mention as the founding fathers of the EHRA White Book, the chairs and co-chairs of national Working Groups / National Cardiac Societies of the 56 ESC countries, the EHRA staff at the European Heart House, and last but not least the project sponsor, BIOTRONIK SE & Co. KG company and in particular Robert Wüstenberg and Anja Thümen. To all of them, we extend our deepest gratitude and appreciation.

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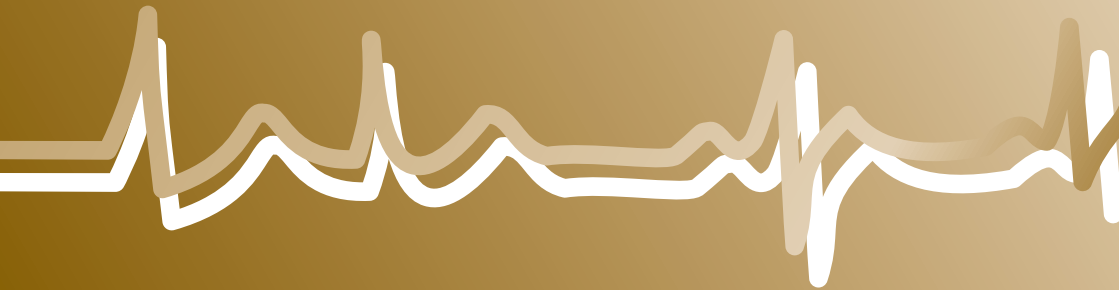
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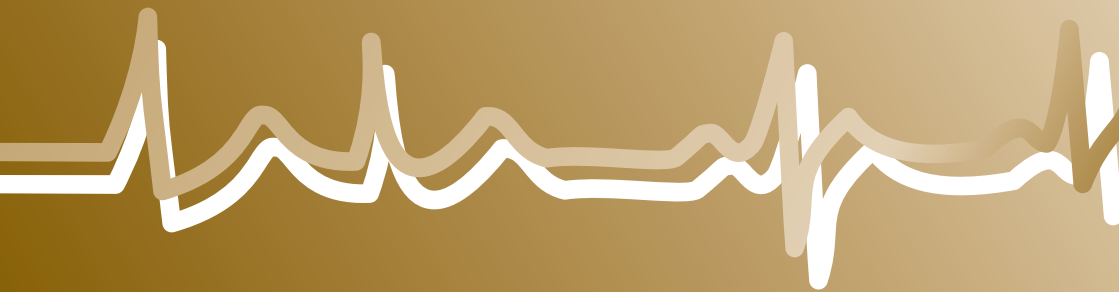
with special thanks to: Biskub I, Bondarchuk S, Bugaev M, Burkovskii S, Gritsai A, Doronin O, Ermuraki S, Kachan O, Karpenko J, Klantsa A, Komiaty V, Kushnir N, Lisohub S, Marcienko I, Matlah A, Malyarchuk R, Matviichuk A, Melnitchuk M, Nikitan S, Notova G, Oleinik V, Pilipchuk V, Pohilko S, Popov S, Posudevskii S, Pravosudovich S, Protsik V, Sakevich R, Sarazhin K, Vegulyar S, Volkov D, Zubenko K

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2. Scope and Methodology



2. Scope and Methodology

The EHRA White Book 2015 is the 8th edition of a project that was launched in an attempt to understand the national realities with regard to treatment of cardiac arrhythmias.

Every year EHRA invites all the countries member of the European Society of Cardiology to participate in this project. Like in the past most of them have provided data for this year's edition.

In this edition, the following sections are available for all participating countries:

1. Statistics information
2. Country
3. Healthcare system
4. Education
5. Pacemakers
6. Cardiac resynchronization therapy devices
7. Implantable cardiac defibrillator
8. Loop recorders
9. Lead extractions
10. Device specific information
11. Interventional electrophysiology
12. Guidelines
13. Sources

The 2015 EHRA White Book edition follows similar methodology as the previous editions from 2008-2014.

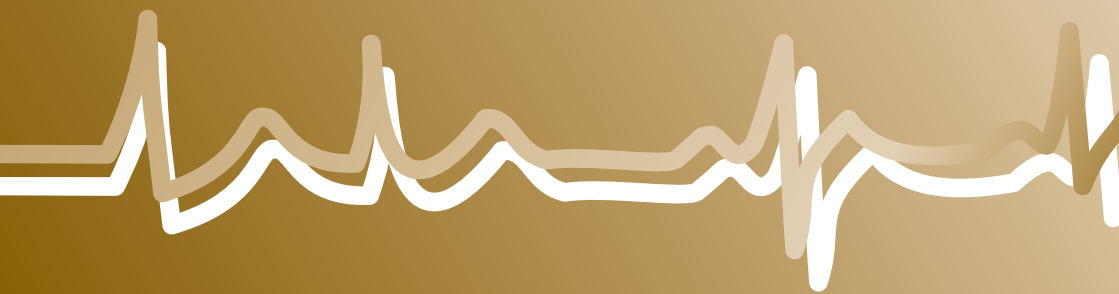
The data were collected by surveying national cardiology societies and working groups of cardiac pacing and electrophysiology of each country.

The chairmen of the societies and/or working groups were responsible for compiling information about their country based on a questionnaire. The data gathered by the societies and working groups were mainly from national registries and national health institutions.

Simultaneously, a secondary investigation was conducted to cross verify and build the quantitative and qualitative information contained in the book. Once the data collection was complete, the national societies or working groups were asked to authorise the publication of the information.

All data were collected in the period from March 2015 to May 2015 and was the most recent available, at the time of the publication. Unfortunately, some countries did not have available data for all of the sections of the book.

3. Sources for Demographic Information



3. Sources for demographic information

The demographic information for each country was taken from the following sources:

Age pyramid

United States Census Bureau (Homepage)

URL: <http://www.census.gov/ipc/www/idb/informationGateway.php>

February 25, 2015

Healthcare data

- **Hospitals (per 100 000 population)**

European health for all database (HFA-DB)

URL: <http://data.euro.who.int/hfad/>

February 26, 2015

- **Beds (per 100 000 population)**

European health for all database (HFA-DB)

URL: <http://data.euro.who.int/hfad/>

February 26, 2015

- **Density of physicians (per 1000 population)**

European health for all database (HFA-DB)

URL: <http://data.euro.who.int/hfad/>

February 26, 2015

- **Density of nurses (per 1000 population)**

European health for all database (HFA-DB)

URL: <http://data.euro.who.int/hfad/>

February 26, 2015

Demographic information

- **Population**

United States Census Bureau (Homepage)

URL: <http://www.census.gov/ipc/www/idb/informationGateway.php>

February 27, 2015

- **Population annual growth rate (%)**

United States Census Bureau (Homepage)

URL: <http://www.census.gov/ipc/www/idb/informationGateway.php>

February 27, 2015

- **Life expectancy at birth (in years)**

United States Census Bureau (Homepage)

URL: <http://www.census.gov/ipc/www/idb/informationGateway.php>

February 27, 2015

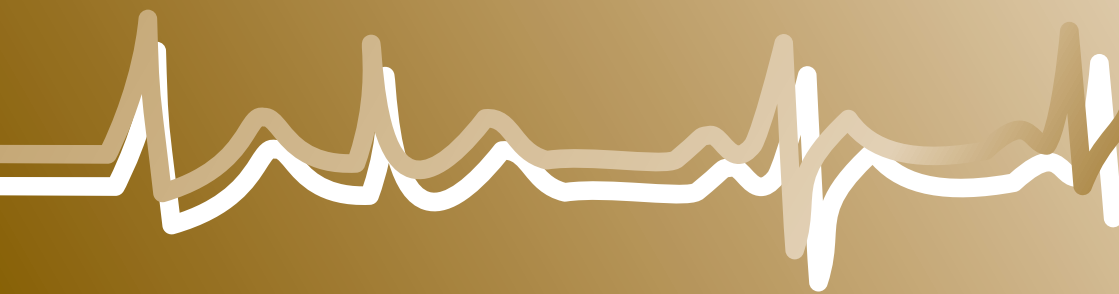
3. Sources for demographic information

- **Death rate (per 1000 population)**
European health for all database (HFA-DB)
URL: <http://data.euro.who.int/hfad/>
February 26, 2015
- **Live births (per 1000 population)**
European health for all database (HFA-DB)
URL: <http://data.euro.who.int/hfad/>
February 26, 2015

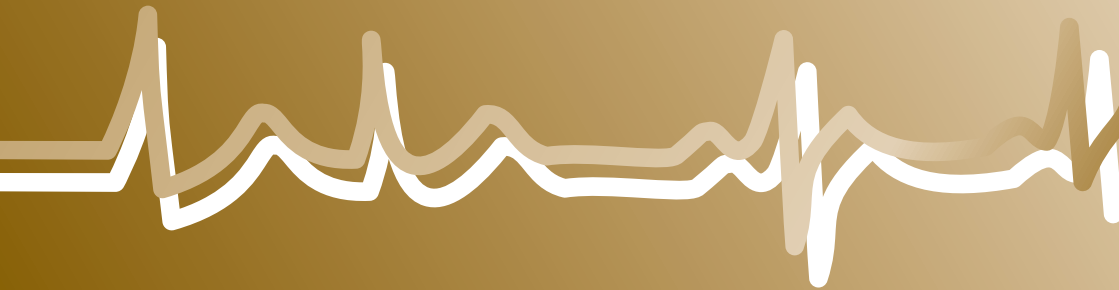
Economic information

- **Gross domestic product (U.S dollar-billions)**
International Monetary Fund (IMF)
URL: <http://www.imf.org/external/ns/cs.aspx?id=28>
February 26, 2015
- **Gross domestic product per capita (U.S dollar-units)**
International Monetary Fund (IMF)
URL: <http://www.imf.org/external/ns/cs.aspx?id=28>
February 26, 2015
- **Total expenditure on health as % of GDP**
European health for all database (HFA-DB)
URL: <http://data.euro.who.int/hfad/>
February 26, 2015
- **General government expenditure on health as % of total expenditure on health**
WHO -World Health Statistics Report 2013; Section 7;
February 25, 2015
- **Private expenditure on health as % of total expenditure on health**
WHO -World Health Statistics Report 2013; Section 7;
February 25, 2015

4. ESC Countries Overview

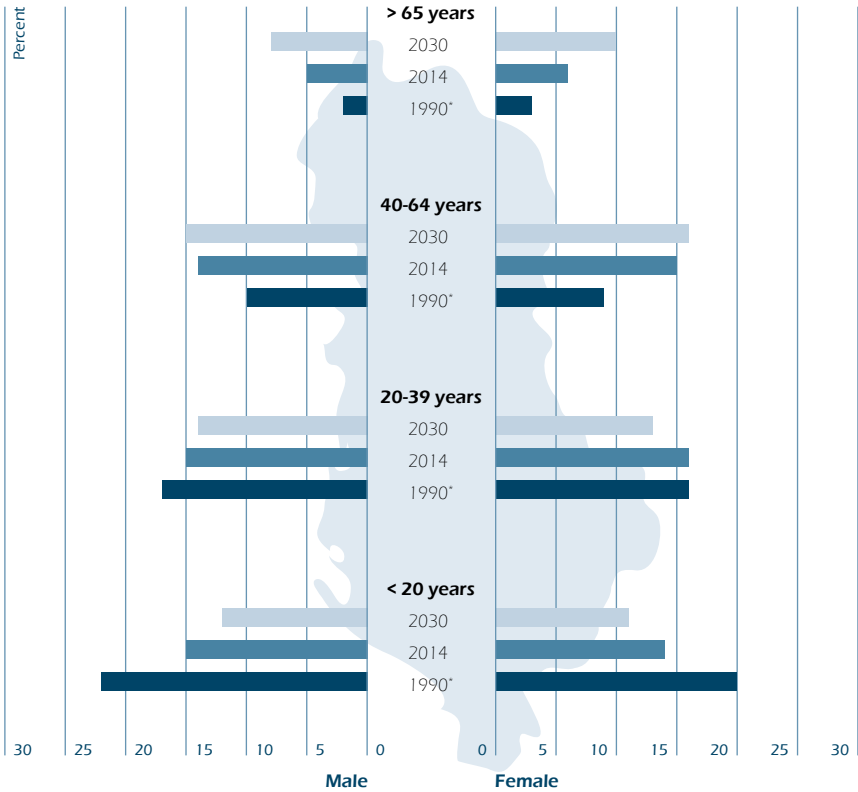


ALBANIA



1. Statistics

Age pyramid for Albania



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	1,4	2012
Beds (per 100.000 population)	259,3	2012
Density of physicians (per 1.000 population)	1,1	2012
Density of nurses (per 1.000 population)	5,1	1994

Demographic information		
Population	3.020.209	2014
Population annual growth rate (%)	0,3	2014
Life expectancy at birth	78	2014
Death rate (per 1.000 population)	5,7	2004
Live births (per 1.000 population)	10,7	2011

Economic information		
Gross domestic product (U.S dollar-billions)	13,59	2014*
Gross domestic product per capita (U.S dollar-units)	4.900,00	2014*
Total expenditure on health as % of GDP	6,0	2012
General government expenditure on health as % of total expenditure on health	47,9	2011
Private expenditure on health as % of total expenditure on health	52,1	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

The central government with Ministry of Health is the overall responsible in the Albanian healthcare system. The main actor is the National Health Insurance Fund Administration. The main source of health care financing is the health insurance contributions. It is calculated as the 3.4% of basic salary. The contributors is 50% from employer and 50% from employee.

Basic insurance availability	Yes
------------------------------	-----

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	not available	70%
Uninsured citizens	not available	30%

Distribution of insurance modality		
	2013	2014
Public insurance company	not available	100%
Private insurance company	not available	0%
Private co-payment	not available	0%

Possibility to subscribing to private health insurance plans	No answer
--------------------------------------------------------------	-----------

Co-payment necessary for the following therapy	
	No
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
----------------------------------------------------------------------	--

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
--------------------------------	--	--

	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	No
------------------------------------------------------------------------------------------------------	-----------

Required period of training to perform implantations	Yes	2-3 years
-------------------------------------------------------------	------------	------------------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
--------------------------------------	--

Pacemaker	4
ICD implantation	3
CRT implantation	2
Electrophysiological studies and catheter ablation	1
Atrial fibrillation ablation	1

Number of universities (Schools of Medicine)	2
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	50%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	25%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	4
Total Pacemaker units implanted	not available	134
Thereof, New implants	not available	116
Thereof, Replacements	not available	18

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	1
Total CRT units implanted	not available	2
Thereof, CRT pacemaker	not available	2
Thereof, CRT ICD	not available	0

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	2
Total ICD units implanted	not available	4
Thereof, Single chamber	not available	4
Thereof, Dual chamber	not available	0
First implants	not available	4
Replacements	not available	0
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	0
Total loop recorders implanted	not available	0
Specialist performing implants		No implants

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	not available	not available
Total lead extraction procedures	not available	not available
Specialist performing lead extractions		No extractions



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	4	1
Number of ablations performed	not available	not available
Mean number of ablations per centre	not available	not available
Number of AF ablations	not available	not available
Number of ablation centres (> 50 AF ablations)	not available	1
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	1
Number of physicians under training to become independent electrophysiologists	not available	3



12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No answer
U.S.	Yes
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Others: Lack of long life strategy in the Healthcare System.						

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

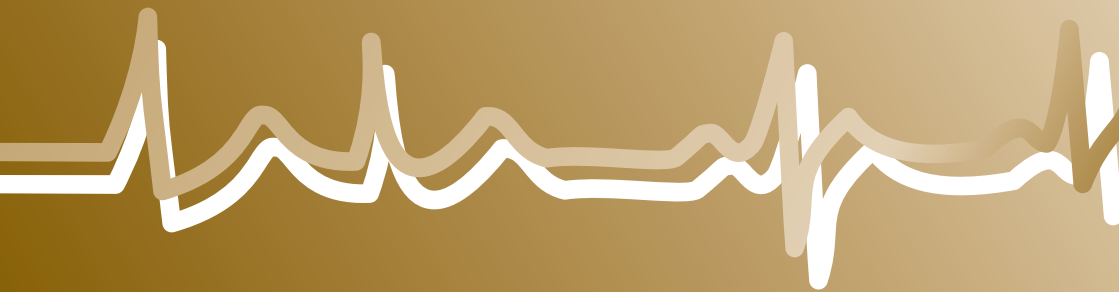
Name of National Cardiac Society, National Working Group or arrhythmia body

· Albanian Society of Cardiology

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

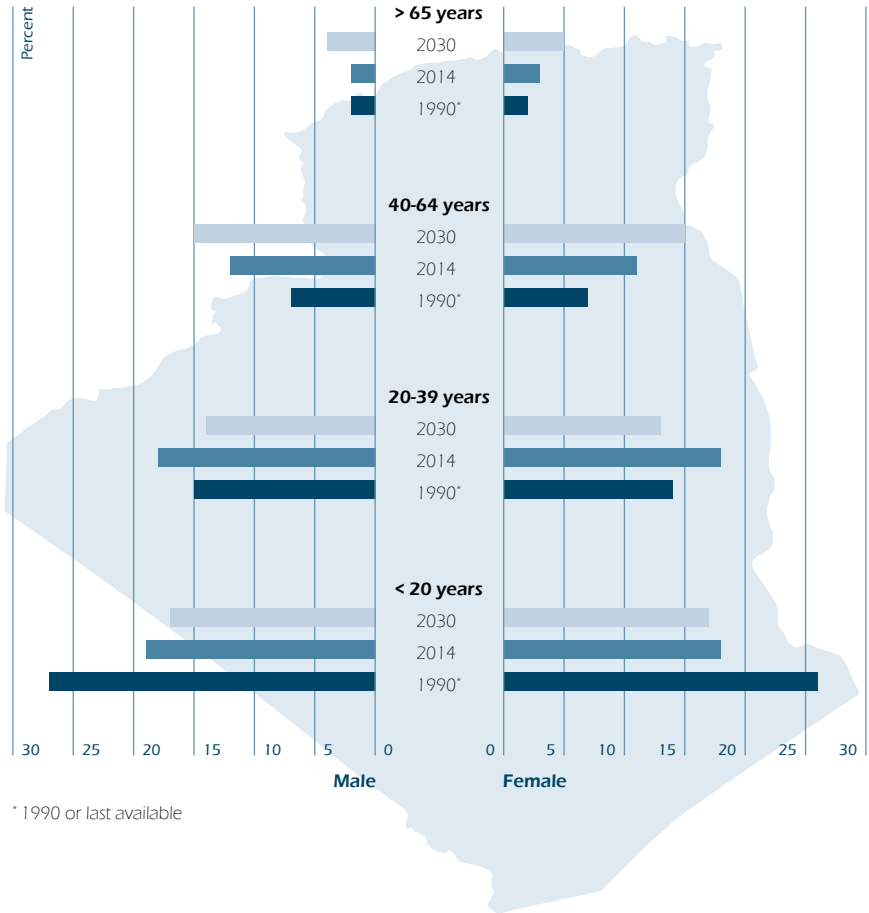
- EHRA White Book 2014
- Official statistics
- Survey from professional association
- Estimation

ALGERIA



1. Statistics

Age pyramid for Algeria



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	not available	not available
Beds (per 100.000 population)	not available	not available
Density of physicians (per 1.000 population)	not available	not available
Density of nurses (per 1.000 population)	not available	not available

Demographic information		
Population	38.813.722	2014
Population annual growth rate (%)	1,9	2014
Life expectancy at birth	76	2014
Death rate (per 1.000 population)	not available	not available
Live births (per 1.000 population)	not available	not available

Economic information		
Gross domestic product (U.S dollar-billions)	227,80	2014*
Gross domestic product per capita (U.S dollar-units)	5.886,37	2014*
Total expenditure on health as % of GDP	not available	not available
General government expenditure on health as % of total expenditure on health	82,0	2011
Private expenditure on health as % of total expenditure on health	18,0	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

Mainly National Health System Private offices and clinics available.

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: social security for public or private jobs.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	70%	70%
Uninsured citizens	30%	30%

Distribution of insurance modality		
	2013	2014
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	0%	0%

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
	No
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals								
	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments:	Physicians receive salaries as these interventions are provided by public hospitals.				Hospitals providing these interventions pay by themselves according to their resources.			

Treatment availability	
No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input checked="" type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability					
	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
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Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
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	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	No
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Suggested period of training to perform implantations	Yes	1 year
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Training centres availability	
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Pacemaker	11
ICD implantation	7
CRT implantation	1
Electrophysiological studies and catheter ablation	1
Atrial fibrillation ablation	0

Number of universities (Schools of Medicine)	10
-----------------------------------------------------	-----------



Percentage of academic centres among all practicing EP centres	100%
-----------------------------------------------------------------------	-------------

Percentage of academic centres among all practicing implanting devices centres	90%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	19	19
Total Pacemaker units implanted	2,480	2,508
Thereof, New implants	2,050	1,957
Thereof, Replacements	430	551

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	8	8
Total CRT units implanted	64	56
Thereof, CRT pacemaker	31	20
Thereof, CRT ICD	33	36

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	8	8
Total ICD units implanted	38	60
Thereof, Single chamber	23	25
Thereof, Dual chamber	15	35
First implants	30	50
Replacements	8	10
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	2	2
Total loop recorders implanted	not available	6
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	not available	2
Total lead extraction procedures	not available	56
Specialist performing lead extractions		
Cardiologists	Yes	95%
Surgeons	Yes	5%



10. Device specific

Availability of remote monitoring of devices	No answer
-----------------------------------------------------	------------------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	1	2
Number of ablations performed	230	240
Mean number of ablations per centre	230	not available
Number of AF ablations	0	0
Number of ablation centres (> 50 AF ablations)	0	0
Number of VT/VF ablations	not available	5
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0
Number of LAA closures	not available	0
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	3
Number of physicians under training to become independent electrophysiologists	not available	5



Availability of a national registry for interventional electrophysiology	No
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12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

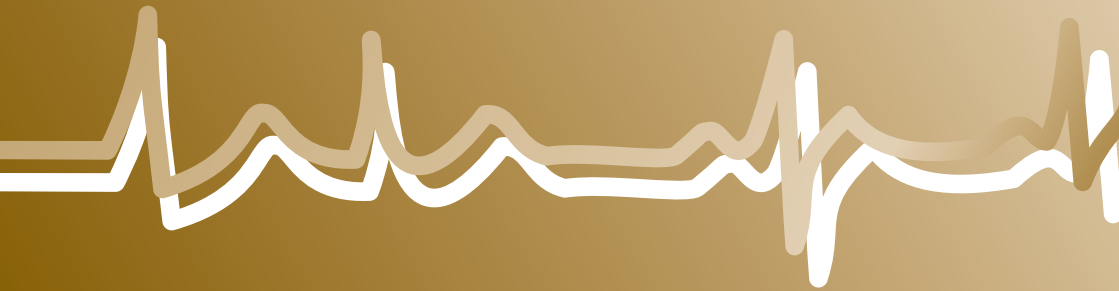
Name of National Cardiac Society, National Working Group or arrhythmia body

· Algerian Society of Cardiology Working Group on Cardiac arrhythmias

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

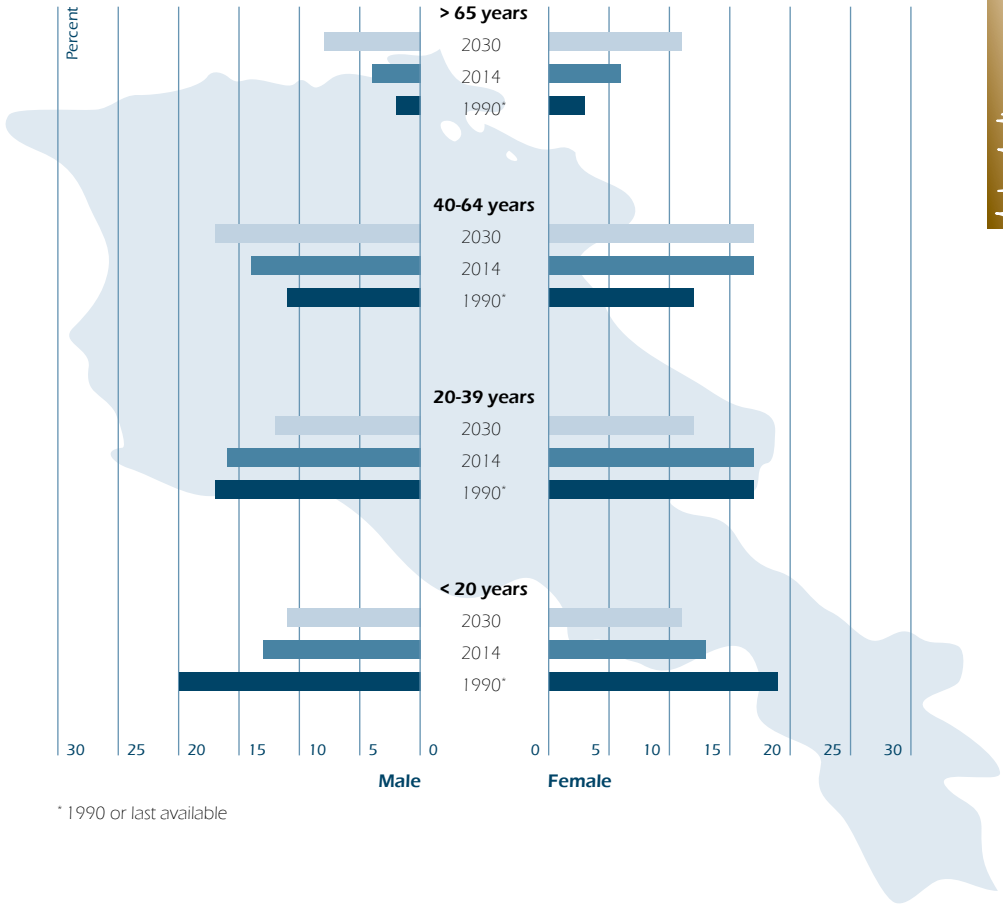
- EHRA White Book 2014
- Sample short survey
- Estimation

ARMENIA



1. Statistics

Age pyramid for Armenia



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	4,2	2012
Beds (per 100.000 population)	404,8	2012
Density of physicians (per 1.000 population)	2,8	2012
Density of nurses (per 1.000 population)	5,0	2012

Demographic information		
Population	3.060.927	2014
Population annual growth rate (%)	-0,1	2014
Life expectancy at birth	74	2014
Death rate (per 1.000 population)	9,1	2012
Live births (per 1.000 population)	14,1	2012

Economic information		
Gross domestic product (U.S dollar-billions)	11,11	2014*
Gross domestic product per capita (U.S dollar-units)	3.373,06	2014*
Total expenditure on health as % of GDP	4,5	2012
General government expenditure on health as % of total expenditure on health	52,2	2011
Private expenditure on health as % of total expenditure on health	47,8	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	47%	48%

3. Healthcare System

The Armenian Health system contains of three parts: state, insurance and private. Medical care is financed by state in following cases: 1) children 0-7 years old; 2) some emergency medical care (co-payment); 3) invalides II and III groups and low income risk groups. Medical care is financed by insurance for some parts of population. Unfortunately both of health cares does not cover any kind of rhythm disturbance.

Basic insurance availability	No
------------------------------	----

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	35%	25%
Uninsured citizens	65%	75%

Distribution of insurance modality		
	2013	2014
Public insurance company	0%	0%
Private insurance company	70%	100%
Private co-payment	30%	0%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:	Hospital received reimbursement only for insured patients.							

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cardiologist
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
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Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
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	Specialist	
Catheter ablation	No	
ICD or pacemaker implants	No	

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
--------------------------------------	--

Pacemaker	3
ICD implantation	3
CRT implantation	3
Electrophysiological studies and catheter ablation	3
Atrial fibrillation ablation	3

Number of universities (Schools of Medicine)	3
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	33%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	33%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres

	2013	2014
Implanting centres	2	3
Total Pacemaker units implanted	94	129
Thereof, New implants	59	101
Thereof, Replacements	35	28

Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2013	2014
Implanting centres	2	3
Total CRT units implanted	10	4
Thereof, CRT pacemaker	0	0
Thereof, CRT ICD	10	4

Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2013		2014
Implanting centres	2		3
Total ICD units implanted	28		25
Thereof, Single chamber	2		4
Thereof, Dual chamber	26		21
First implants	16		14
Replacements	12		11
Specialist performing implants			
Cardiologists		Yes	100%
Surgeons		No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2013		2014
Implanting centres	2		2
Total loop recorders implanted	6		12
Specialist performing implants			
Cardiologists		Yes	100%
Surgeons		No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions			
	2013		2014
Hospitals performed lead extractions	1		0
Total lead extraction procedures	3		0
Specialist performing lead extractions			
Cardiologists		Yes	100%
Surgeons		No	0%



10. Device specific

Availability of remote monitoring of devices	No
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National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	2	3
Number of ablations performed	140	132
Mean number of ablations per centre	70	44
Number of AF ablations	8	11
Number of ablation centres (> 50 AF ablations)	1	0
Number of VT/VF ablations	not available	12
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	1
Number of LAA closures	not available	0
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	8
Number of physicians under training to become independent electrophysiologists	not available	1


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

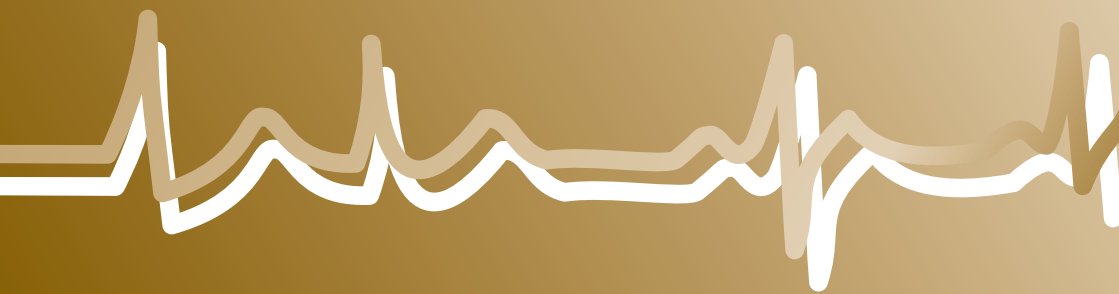
Name of National Cardiac Society, National Working Group or arrhythmia body

· Armenian Arrhythmological Association

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

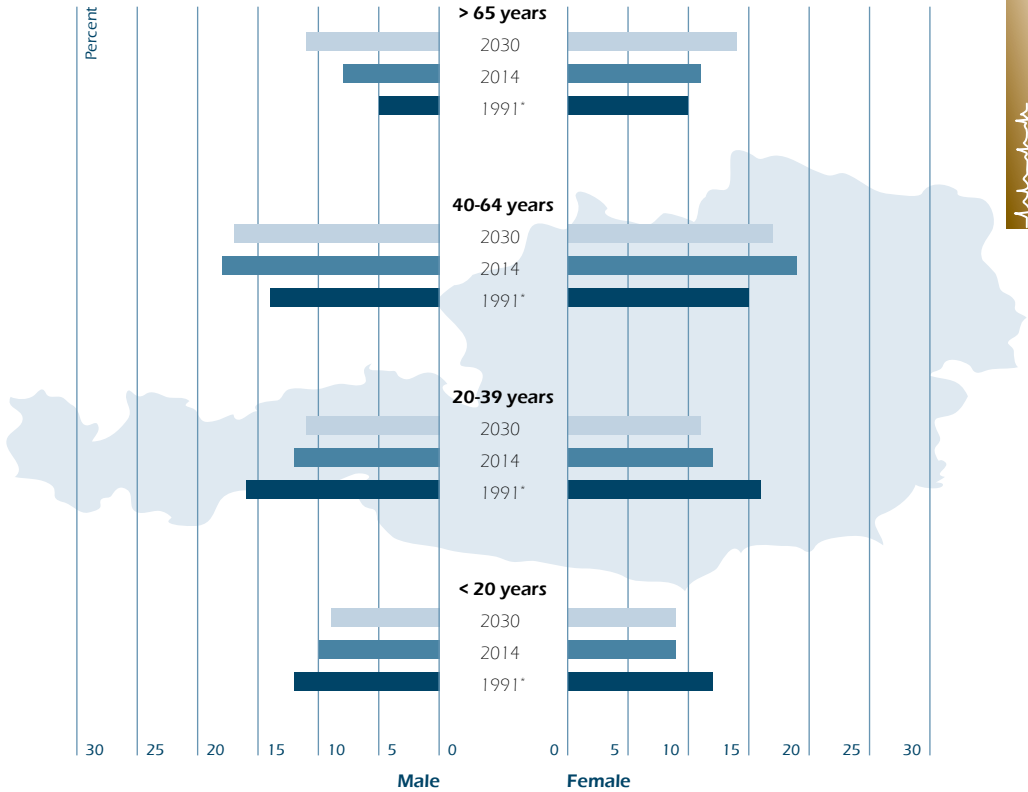
 · EHRA White Book 2014
 · Armenian Arrhythmological Association

AUSTRIA



1. Statistics

Age pyramid for Austria



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	3,3	2011
Beds (per 100.000 population)	767,9	2011
Density of physicians (per 1.000 population)	4,8	2011
Density of nurses (per 1.000 population)	7,9	2011

Demographic information		
Population	8.223.062	2014
Population annual growth rate (%)	0,0	2014
Life expectancy at birth	80	2014
Death rate (per 1.000 population)	9,1	2011
Live births (per 1.000 population)	9,4	2012

Economic information		
Gross domestic product (U.S dollar-billions)	436,07	2014*
Gross domestic product per capita (U.S dollar-units)	51.183,05	2014*
Total expenditure on health as % of GDP	11,5	2012
General government expenditure on health as % of total expenditure on health	75,3	2011
Private expenditure on health as % of total expenditure on health	24,7	2011

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	43%	43%

3. Healthcare System

The Austrian healthcare system is characterized by the federalist structure of the country, the delegation of competencies to self-governing stakeholders in the social insurance system as well as by cross-stakeholder structures at federal and Länder level which possess competencies in cooperative planning, coordination and financing. According to the Federal Constitution, almost all areas of the healthcare system are primarily the regulatory responsibility of the federal government. The most important exception is the hospital sector. In this area, the federal government is only responsible for enacting basic law, legislation on implementation and enforcement is the responsibility of the nine Länder. In the outpatient sector, but also in the rehabilitation sector and in the field of medicines, healthcare is organized by negotiations between the 21 health insurance funds and the Federation of Austrian Social Insurance Institutions on the one hand and the chambers of physicians and pharmacists (which are organized as public-law bodies) and the statutory professional associations of midwives or other health professions on the other. The various sectors of the health care system have traditionally been characterized by different stakeholders and regulation- and financing mechanisms. However, in recent years there have been increased efforts to introduce decision-making and financing flows which are effective across all sectors. Since 2002, all the Länder (except Vienna) as well as some of the private non-profit owners have privatized their hospitals, mainly in the form of organizational privatizations. The various private operating companies have one thing in common: they are responsible for the management of hospitals, whereas the Länder or local authorities as (majority) owners usually act as a guarantor. The Austrian healthcare system has developed almost completely into a model which is mainly based on decentralized contracts with all service providers. [Health systems in transition, Hofmarcher 2006]

Basic insurance availability	Yes
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Requirements: All citizens of our country with a minimum salary of 300€ pay for the social security and therefore qualify for public insurance.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	98,2%	98%
Uninsured citizens	1,8%	2%



Distribution of insurance modality		
	2013	2014
Public insurance company	85%	65%
Private insurance company	not available	0%
Private co-payment	15%	35%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No

Reimbursement availability for physicians and hospitals								
	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability	
No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>



4. Education

National certification availability					
	Yes, it 's required for practice	Yes, but it 's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

National Cardiac Society supporting EHRA certification system	
Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist or cardiac surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
Pacemaker	not available
ICD implantation	not available
CRT implantation	not available
Electrophysiological studies and catheter ablation	not available
Atrial fibrillation ablation	not available



Number of universities (Schools of Medicine)	4
-----------------------------------------------------	----------

Percentage of academic centres among all practicing EP centres	22%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	7%
---------------------------------------------------------------------------------------	-----------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	57	57
Total Pacemaker units implanted	7.950	8.272
Thereof, New implants	5.814	5.944
Thereof, Replacements	2.136	2.328

Specialist performing implants		
Cardiologists	Yes	50%
Surgeons	Yes	50%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	18	18
Total CRT units implanted	1.178	1.236
Thereof, CRT pacemaker	281	420
Thereof, CRT ICD	897	816

Specialist performing implants		
Cardiologists	Yes	50%
Surgeons	Yes	50%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	21	21
Total ICD units implanted	1.296	1.362
Thereof, Single chamber	not available	not available
Thereof, Dual chamber	not available	not available
First implants	974	976
Replacements	322	386

Specialist performing implants		
Cardiologists	Yes	10%
Surgeons	Yes	90%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	25	25
Total loop recorders implanted	504	509

Specialist performing implants		
Cardiologists	Yes	80%
Surgeons	Yes	20%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	5	5
Total lead extraction procedures	250	280

Specialist performing lead extractions		
Cardiologists	Yes	10%
Surgeons	Yes	90%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	Austrian Pacemaker, ICD and Loop Recorder Registry (GOEG)
Pacing	Yes	Austrian Pacemaker, ICD and Loop Recorder Registry (GOEG)
Electrophysiology	Yes	Ablation Registry Austria (Austrian Society of Cardiology)

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
-------------------------------------------------------------------------------------------------------------------------------------	------------

Official name: Austrian Pacemaker, ICD and Loop Recorder Registry (GOEG)

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	17	17
Number of ablations performed	2,421	2,622
Mean number of ablations per centre	142	154
Number of AF ablations	771	878
Number of ablation centres (> 50 AF ablations)	5	12
Number of VT/VF ablations	not available	83
Number of ablation centres (> 10 VT ablations on structural heart diseases)	2	3
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	35
Number of physicians under training to become independent electrophysiologists	not available	10



Availability of a national registry for interventional electrophysiology	Yes
---------------------------------------------------------------------------------	------------

Ablation Registry Austria (Austrian Society of Cardiology): 1 Center no reporting

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

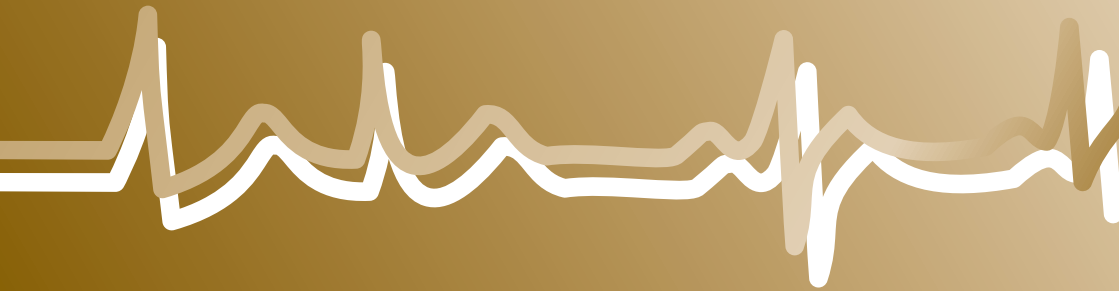
Name of National Cardiac Society, National Working Group or arrhythmia body

· Working Group of Rhythmology, Austrian Society of Cardiology

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

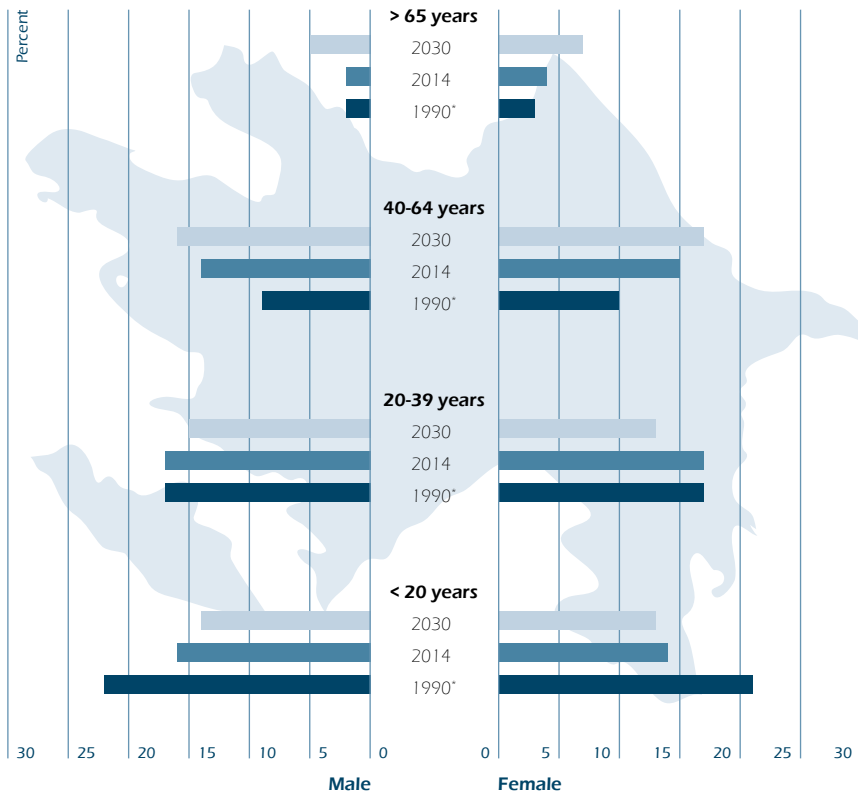
- EHRA White Book 2014
- Austrian Ministry of Health
- Austrian Society of Cardiology
- GOEG (Gesundheit Österreich GmbH)

AZERBAIJAN



1. Statistics

Age pyramid for Azerbaijan



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	5,8	2012
Beds (per 100.000 population)	467,8	2012
Density of physicians (per 1.000 population)	3,5	2012
Density of nurses (per 1.000 population)	6,8	2012

Demographic information		
Population	9.686.210	2014
Population annual growth rate (%)	1,0	2014
Life expectancy at birth	72	2014
Death rate (per 1.000 population)	5,9	2007
Live births (per 1.000 population)	18,9	2012

Economic information		
Gross domestic product (U.S dollar-billions)	77,91	2014*
Gross domestic product per capita (U.S dollar-units)	8.303,26	2014*
Total expenditure on health as % of GDP	5,4	2012
General government expenditure on health as % of total expenditure on health	21,6	2011
Private expenditure on health as % of total expenditure on health	78,4	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	33%	not available

3. Healthcare System

Healthcare is free of charge for every citizen in public hospitals.

Basic insurance availability	Yes

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	70%	80%
Private insurance company	10%	10%
Private co-payment	20%	10%

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	Yes
Pacemakers	No
Ablation	Yes

Comments: Only in private sector.



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input checked="" type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
----------------------------------------------------------------------	--

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
		Specialist
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	No	

Official national competency guidelines for electrophysiological studies or catheter ablation	No
------------------------------------------------------------------------------------------------------	-----------

Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
--------------------------------------	--

Pacemaker	10
ICD implantation	7
CRT implantation	3
Electrophysiological studies and catheter ablation	3
Atrial fibrillation ablation	1

Number of universities (Schools of Medicine)	1
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	50%
----------------------------------------------------------------	-----

Percentage of academic centres among all practicing implanting devices centres	60%
--------------------------------------------------------------------------------	-----

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	6	10
Total Pacemaker units implanted	131	184
Thereof, New implants	22	not available
Thereof, Replacements	109	not available

Specialist performing implants		
Cardiologists	Yes	64%
Surgeons	Yes	36%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	2	3
Total CRT units implanted	17	18
Thereof, CRT pacemaker	0	0
Thereof, CRT ICD	17	18

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	2	7
Total ICD units implanted	13	20
Thereof, Single chamber	4	8
Thereof, Dual chamber	9	12
First implants	13	not available
Replacements	0	not available

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	2	1
Total loop recorders implanted	0	1

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	1	1
Total lead extraction procedures	10	8

Specialist performing lead extractions		
Cardiologists	Yes	100%
Surgeons	No	0%



10. Device specific

Availability of remote monitoring of devices No

Reasons why remote monitoring is not available: No information

National registry for

		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry No

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions No

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	2	3
Number of ablations performed	232	384
Mean number of ablations per centre	116	128
Number of AF ablations	4	2
Number of ablation centres (> 50 AF ablations)	0	2
Number of VT/VF ablations	not available	56
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	2
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	2
Number of physicians under training to become independent electrophysiologists	not available	not available



Availability of a national registry for interventional electrophysiology	No
---------------------------------------------------------------------------------	-----------

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	Yes
European	Yes

Obstacles to guideline implementation

	Ranking of importance*				
	1	2	3	4	5
Lack of centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle 5 = great obstacle * (1 = top; 6 = lowest)

13. Sources

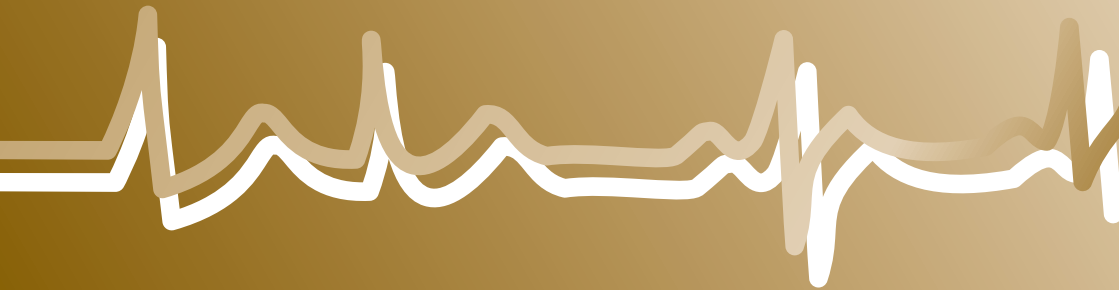
Name of National Cardiac Society, National Working Group or arrhythmia body

· Azerbaijan Society of Cardiology, Arrhythmia Working Group

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

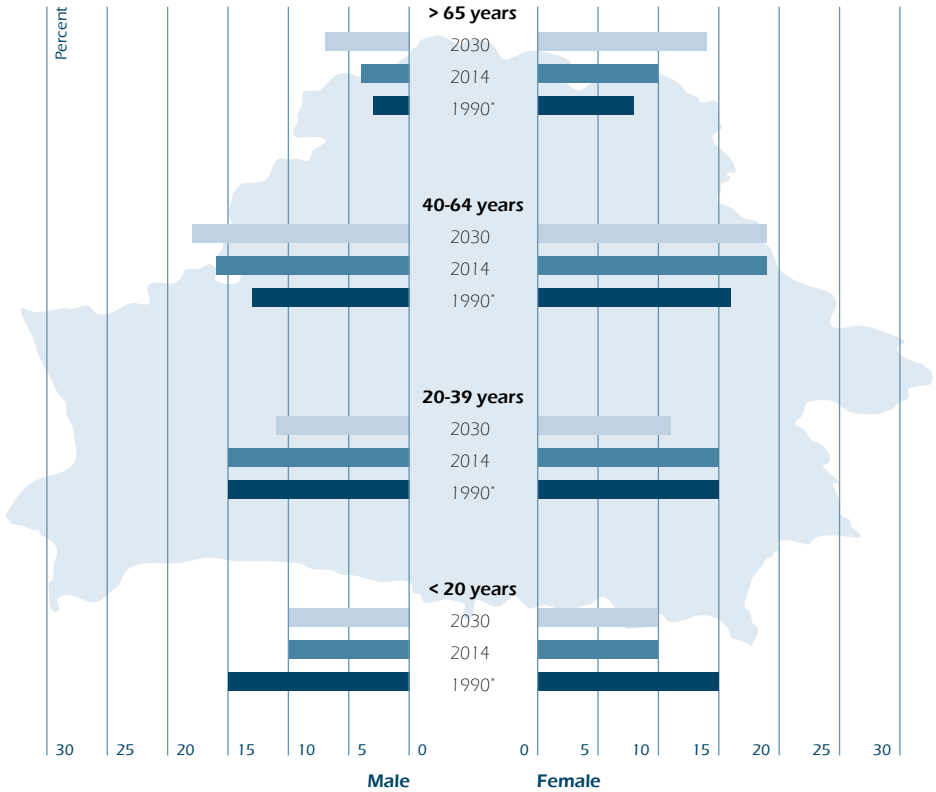
- EHRA White Book 2014
- Survey from professional association
- Official statistics
- Estimations

BELARUS



1. Statistics

Age pyramid for Belarus



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	6,0	2014**
Beds (per 100.000 population)	951,3	2014**
Density of physicians (per 1.000 population)	2,2	2014**
Density of nurses (per 1.000 population)	6,15	2014**

Demographic information		
Population	9.608.058	2014
Population annual growth rate (%)	-0,2	2014
Life expectancy at birth	72	2014
Death rate (per 1.000 population)	12,66	2014**
Live births (per 1.000 population)	12,5	2014**

Economic information		
Gross domestic product (U.S dollar-billions)	77,17	2014*
Gross domestic product per capita (U.S dollar-units)	8.195,11	2014*
Total expenditure on health as % of GDP	5,0	2012
General government expenditure on health as % of total expenditure on health	70,5	2011
Private expenditure on health as % of total expenditure on health	29,5	2011

* IMF estimative

** Source: <http://belstat.gov.by/en/ofitsialnaya-statistika/otrasli-statistiki/naselenie/>



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	52,7%	54,3%

3. Healthcare System

National Health System.

Basic insurance availability	Yes
------------------------------	-----

Requirements for citizens to qualify for public insurance: Citizenship.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	100%	100%
Private insurance company	not available	not available
Private co-payment	not available	not available

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

	Specialist	
Catheter ablation	Yes	Roentgen-endovascular surgeon
ICD or pacemaker implants	Yes	Roentgen-endovascular surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation
No
Required period of training to perform implantations
Yes
4 months
Suggested period of training to perform implantations
Yes
1 year
Training centres availability

Pacemaker	1
ICD implantation	1
CRT implantation	1
Electrophysiological studies and catheter ablation	1
Atrial fibrillation ablation	1

Number of universities (Schools of Medicine)
4



Percentage of academic centres among all practicing EP centres	60%
----------------------------------------------------------------	-----

Percentage of academic centres among all practicing implanting devices centres	80%
--------------------------------------------------------------------------------	-----

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	10	10
Total Pacemaker units implanted	2.813	2.970
Thereof, New implants	2.430	2.417
Thereof, Replacements	383	553

Specialist performing implants		
Cardiologists	No	0%
Surgeons	Yes	100%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	5	6
Total CRT units implanted	54	49
Thereof, CRT pacemaker	not available	not available
Thereof, CRT ICD	not available	not available

Specialist performing implants		
Cardiologists	No	0%
Surgeons	Yes	100%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	10	10
Total ICD units implanted	153*	172
Thereof, Single chamber	not available	not available
Thereof, Dual chamber	not available	not available
First implants	not available	not available
Replacements	not available	not available

* 2013 data updated

Specialist performing implants		
Cardiologists	No	0%
Surgeons	Yes	100%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	1	1
Total loop recorders implanted	22	58

Specialist performing implants		
Cardiologists	No	0%
Surgeons	Yes	100%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	10	10
Total lead extraction procedures	not available	6

Specialist performing lead extractions		
Cardiologists	No	0%
Surgeons	Yes	100%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	IPG registry
Pacing	Yes	IPG registry
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	6	6
Number of ablations performed	736	807
Mean number of ablations per centre	123	135
Number of AF ablations	70	69
Number of ablation centres (> 50 AF ablations)	1	1
Number of VT/VF ablations	not available	20
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	1
Number of LAA closures	not available	5
Number of centres (LAA closures)	not available	1
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	1


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	No
European	No

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

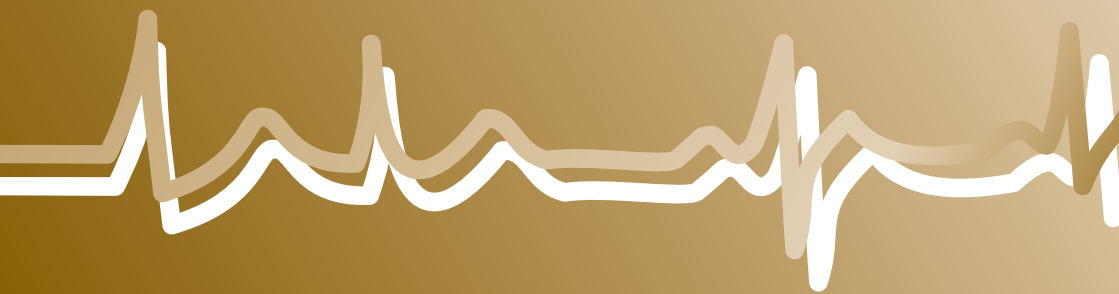
Name of National Cardiac Society, National Working Group or arrhythmia body

· Belorussian Scientific Society of Cardiologists, Belorussian Heart Rhythm Association

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

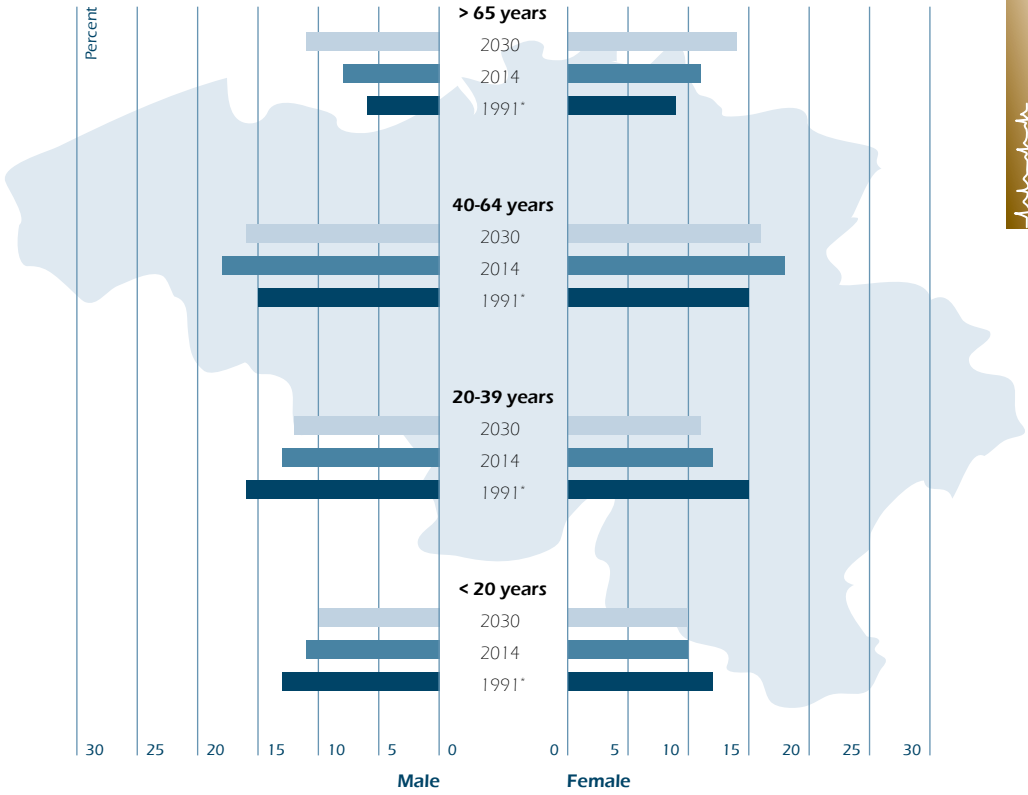
- EHRA White Book 2014
- Official statistics
- Estimation

BELGIUM



1. Statistics

Age pyramid for Belgium



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	1,7	2012
Beds (per 100.000 population)	629,6	2012
Density of physicians (per 1.000 population)	2,9	2011
Density of nurses (per 1.000 population)	15,7	2010

Demographic information		
Population	10.449.361	2014
Population annual growth rate (%)	0,1	2014
Life expectancy at birth	80	2014
Death rate (per 1.000 population)	9,7	2010
Live births (per 1.000 population)	11,5	2012

Economic information		
Gross domestic product (U.S dollar-billions)	527,81	2014*
Gross domestic product per capita (U.S dollar-units)	47.164,28	2014*
Total expenditure on health as % of GDP	10,8	2012
General government expenditure on health as % of total expenditure on health	75,9	2011
Private expenditure on health as % of total expenditure on health	24,1	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

National and obligatory for everybody.

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: citizenship.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	99%	99%
Uninsured citizens	1%	1%

Distribution of insurance modality		
	2013	2014
Public insurance company	not available	90%
Private insurance company	not available	0%
Private co-payment	not available	10%

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	Yes



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: ICD: prescription under national guidelines and limited budget per center; ILR: recorder reimbursed for a limited nr per year, physician and hospital not reimbursed.

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
----------------------------------------------------------------------	--

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input checked="" type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for	
--------------------------------	--

	Specialist	
Catheter ablation	Yes	Cardiac surgery has to be on site
ICD or pacemaker implants	Yes	Cardiac surgery has to be on site

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
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Ministry healthcare

Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
--------------------------------------	--

Pacemaker	not available
ICD implantation	not available
CRT implantation	not available
Electrophysiological studies and catheter ablation	not available
Atrial fibrillation ablation	not available

Number of universities (Schools of Medicine)	7
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	20%
----------------------------------------------------------------	-----

Percentage of academic centres among all practicing implanting devices centres	7%
--------------------------------------------------------------------------------	----

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	105	104
Total Pacemaker units implanted	12.725	12.912
Thereof, New implants	8.945	8.935
Thereof, Replacements	3.780	3.977

Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	Yes	not available

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	35	40
Total CRT units implanted	1.221	1.332
Thereof, CRT pacemaker	397	458
Thereof, CRT ICD	824	874

Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	Yes	not available



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2013		2014
Implanting centres	23		23
Total ICD units implanted	1.704		1.611
Thereof, Single chamber	1.047		980
Thereof, Dual chamber	657		631
First implants	1.136		1.170
Replacements	568		441
Specialist performing implants			
Cardiologists		Yes	not available
Surgeons		Yes	not available

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2013		2014
Implanting centres	45		not available
Total loop recorders implanted	317		352
Specialist performing implants			
Cardiologists		Yes	not available
Surgeons		Yes	not available

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions			
	2013		2014
Hospitals performed lead extractions	not available		not available
Total lead extraction procedures	not available		not available
Specialist performing lead extractions			
Cardiologists		Yes	not available
Surgeons		Yes	not available



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	QERMID@DEFIBRILLATORS
Pacing	Yes	QERMID@PACEMAKERS
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	44	44
Number of ablations performed	6.056	6.126
Mean number of ablations per centre	138	139
Number of AF ablations	2.352	2.560
Number of ablation centres (> 50 AF ablations)	16	22
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	7	not available
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	not available



Availability of a national registry for interventional electrophysiology	Yes
---------------------------------------------------------------------------------	------------

Official name: BEHRA national ablation database

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
------------------------------------------------------------------	--

National	Yes
U.S.	Yes
European	Yes

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle 5 = great obstacle * (1 = top; 6 = lowest)

13. Sources

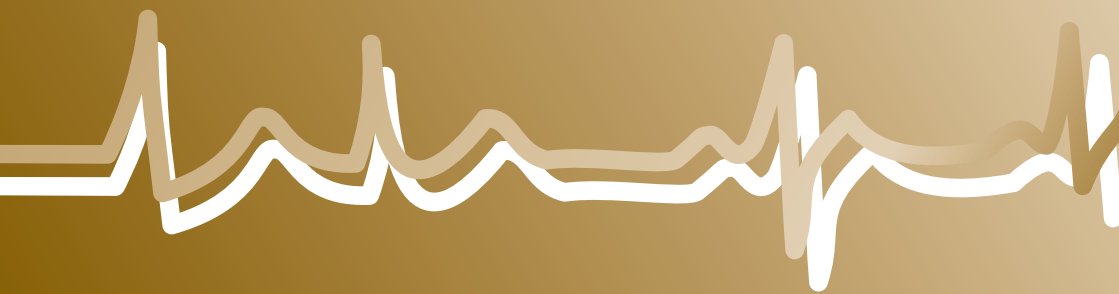
Name of National Cardiac Society, National Working Group or arrhythmia body

· BeHRA

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

- EHRA White Book 2014
- Official statistics
- Survey from professional association
- Estimation

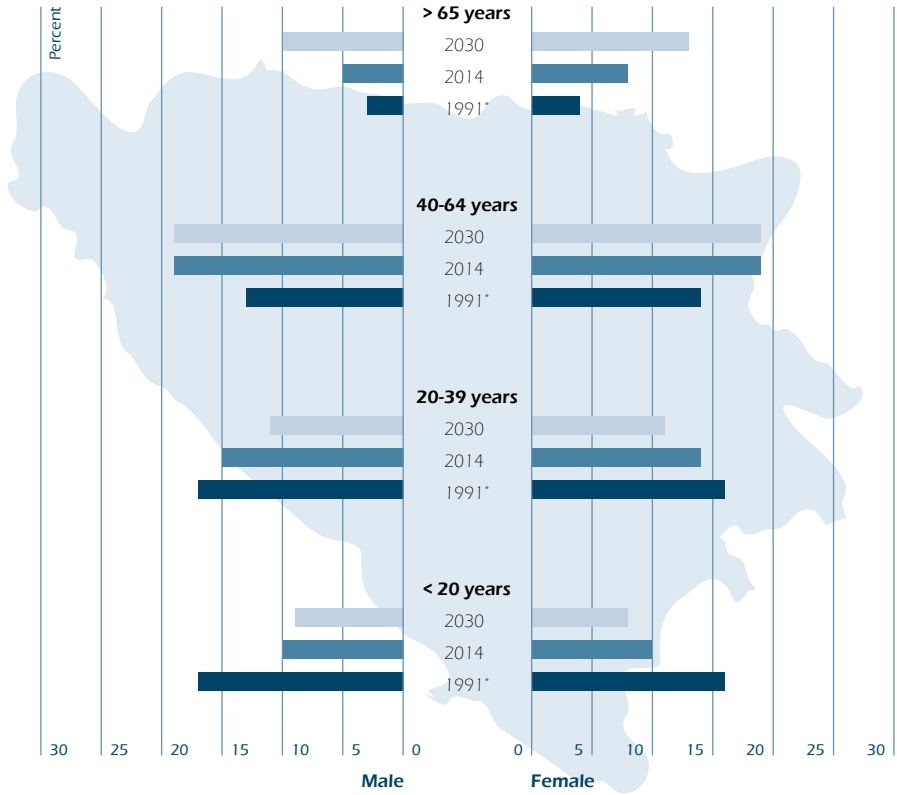
BOSNIA & HERZEGOVINA





1. Statistics

Age pyramid for Bosnia & Herzegovina



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	1,0	2010
Beds (per 100.000 population)	345,1	2010
Density of physicians (per 1.000 population)	1,7	2010
Density of nurses (per 1.000 population)	5,3	2010

Demographic information		
Population	3.871.643	2014
Population annual growth rate (%)	-0,1	2014
Life expectancy at birth	76	2014
Death rate (per 1.000 population)	9,1	2011
Live births (per 1.000 population)	8,3	2012

Economic information		
Gross domestic product (U.S dollar-billions)	18,99	2014*
Gross domestic product per capita (U.S dollar-units)	4.904,51	2014*
Total expenditure on health as % of GDP	9,9	2012
General government expenditure on health as % of total expenditure on health	71,3	2011
Private expenditure on health as % of total expenditure on health	28,7	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	52%	53%

3. Healthcare System

The National healthcare system in BH is provided through an established network of health centers of Family Medicine (primary care. As a secondary and tertiary care, General hospitals, University hospitals, University Clinical centers and specialised institutions are providing services. A few private healthcares are incorporated to the healthcare system.

Basic insurance availability	No
------------------------------	----

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	75%	75%
Uninsured citizens	25%	25%

Distribution of insurance modality		
	2013	2014
Public insurance company	75%	75%
Private insurance company	0%	0%
Private co-payment	0%	25%

Possibility to subscribing to private health insurance plans	No
--------------------------------------------------------------	----

Co-payment necessary for the following therapy	
ICD devices	No answer
Pacemakers	No answer
Ablation	No answer

Comments: It is mandatory the payment of 20% of all implant costs for patients under 65 years old.



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

		Specialist
Catheter ablation	No answer	
ICD or pacemaker implants	Yes	Cardiologist, surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation **No**

Required period of training to perform implantations **No**

Suggested period of training to perform implantations **Yes** **0,5 year***

* Pacemakers 0,5 year; ICDs 0,5 year; CRTs 0,5 year

Training centres availability

Pacemaker	0
ICD implantation	0
CRT implantation	0
Electrophysiological studies and catheter ablation	0
Atrial fibrillation ablation	0

Number of universities (Schools of Medicine) **5**



Percentage of academic centres among all practicing EP centres	0%
-----------------------------------------------------------------------	-----------

Percentage of academic centres among all practicing implanting devices centres	50%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	6	6
Total Pacemaker units implanted	868	831
Thereof, New implants	826	758
Thereof, Replacements	42	73

Specialist performing implants		
Cardiologists	Yes	80%
Surgeons	Yes	20%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	2	2
Total CRT units implanted	25	23
Thereof, CRT pacemaker	16	13
Thereof, CRT ICD	9	10

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	5	5
Total ICD units implanted	65	55
Thereof, Single chamber	56	45
Thereof, Dual chamber	9	10
First implants	61	48
Replacements	4	7

Specialist performing implants		
Cardiologists	Yes	80%
Surgeons	Yes	20%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	1	1
Total loop recorders implanted	8	11

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	0	0
Total lead extraction procedures	0	0

Specialist performing lead extractions		
Cardiologists	Yes	50%
Surgeons	Yes	50%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	0	0
Number of ablations performed	0	0
Mean number of ablations per centre	0	0
Number of AF ablations	0	0
Number of ablation centres (> 50 AF ablations)	0	0
Number of VT/VF ablations	not available	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0
Number of LAA closures	not available	0
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	0
Number of physicians under training to become independent electrophysiologists	not available	0


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					Ranking of importance*
	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

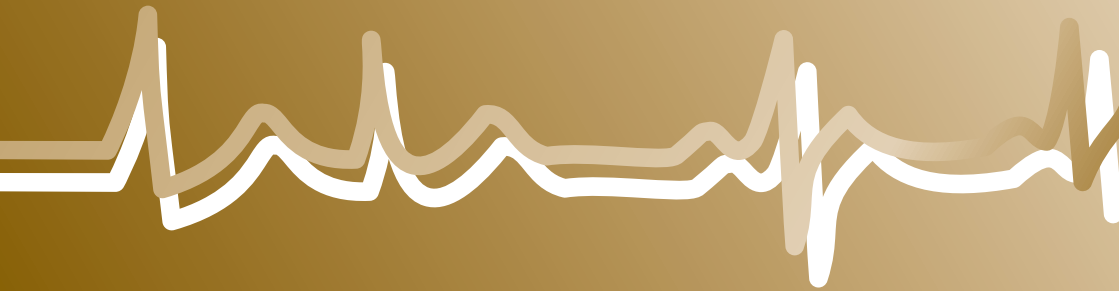
Name of National Cardiac Society, National Working Group or arrhythmia body

- Working Group for Cardiac Pacing / Association of Cardiologist in Bosnia and Herzegovina
- Cardiac Society of Republic of Srpska / Working Group for Cardiac Pacing

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

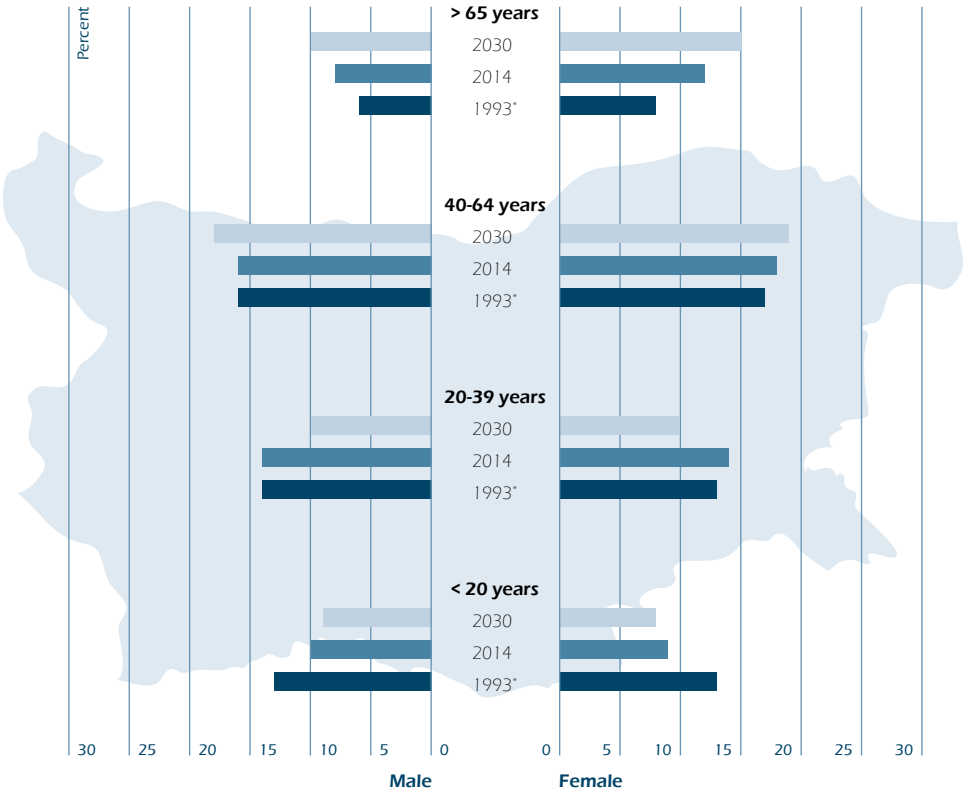
- EHRA White Book 2014
- Official statistics
- Survey from professional association

BULGARIA



1. Statistics

Age pyramid for Bulgaria



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	4,7	2011
Beds (per 100.000 population)	644,9	2011
Density of physicians (per 1.000 population)	3,9	2011
Density of nurses (per 1.000 population)	4,7	2011

Demographic information		
Population	6.924.716	2014
Population annual growth rate (%)	-0,8	2014
Life expectancy at birth	74	2014
Death rate (per 1.000 population)	15,0	2012
Live births (per 1.000 population)	9,5	2012

Economic information		
Gross domestic product (U.S dollar-billions)	55,08	2014*
Gross domestic product per capita (U.S dollar-units)	7.648,20	2014*
Total expenditure on health as % of GDP	7,4	2012
General government expenditure on health as % of total expenditure on health	55,3	2011
Private expenditure on health as % of total expenditure on health	44,7	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	60%	64%

3. Healthcare System

The National Health system includes National Health System Fund and private eighteen insurance funds.

Basic insurance availability	Yes
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Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	80%	80%
Uninsured citizens	20%	20%

Distribution of insurance modality		
	2013	2014
Public insurance company	75%	75%
Private insurance company	1%	1%
Private co-payment	24%	24%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	Yes
Pacemakers	No
Ablation	Yes



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: There is limited reimbursement for ICDs and CRT - D devices and the patient has to co-pay.

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The National standard for device therapy and invasive electrophysiology
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The National standard for device therapy and invasive electrophysiology
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The National standard for device therapy and invasive electrophysiology
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The National standard for device therapy and invasive electrophysiology



National Cardiac Society supporting EHRA certification system	
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Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input checked="" type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
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	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
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Comments: The National standard for device therapy and invasive electrophysiology.

Required period of training to perform implantations	Yes	2 years
-------------------------------------------------------------	------------	----------------

Suggested period of training to perform implantations	Yes	2 years
--------------------------------------------------------------	------------	----------------

Training centres availability	
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Pacemaker	2
ICD implantation	2
CRT implantation	1
Electrophysiological studies and catheter ablation	1
Atrial fibrillation ablation	1

Number of universities (Schools of Medicine)	5
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	20%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	40%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres

	2013	2014
Implanting centres	17	17
Total Pacemaker units implanted	3,511	3,726
Thereof, New implants	3,011	3,128
Thereof, Replacements	500	598

Specialist performing implants

Cardiologists	Yes	99%
Surgeons	Yes	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2013	2014
Implanting centres	8	7
Total CRT units implanted	260	303
Thereof, CRT pacemaker	232	268
Thereof, CRT ICD	28	35

Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	8	9
Total ICD units implanted	32	47
Thereof, Single chamber	19	24
Thereof, Dual chamber	13	23
First implants	30	32
Replacements	2	15

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	1	1
Total loop recorders implanted	2	5

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	1	0
Total lead extraction procedures	11	0

Specialist performing lead extractions		
Cardiologists	Yes	100%
Surgeons	No	0%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	Professional National Register – "Bg Pace"
Pacing	Yes	Professional National Register – "Bg Pace"
Electrophysiology	Yes	Professional National Register – "Bg Ephy"

Availability of a national quality insurance system or complication registry	Yes
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Official name: Professional National Register – "Bg Pace"; Professional National Register – "Bg Ephy"

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
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11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	3	4
Number of ablations performed	378	663
Mean number of ablations per centre	126	166
Number of AF ablations	47	79
Number of ablation centres (> 50 AF ablations)	not available	1
Number of VT/VF ablations	not available	18
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	1
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	6
Number of physicians under training to become independent electrophysiologists	not available	7



Availability of a national registry for interventional electrophysiology	Yes
---------------------------------------------------------------------------------	------------

Official name: Professional National Register – "Bg Ephy"

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
------------------------------------------------------------------	--

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*				
----------------------------------------------	-------------------------------	--	--	--	--

	1	2	3	4	5
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

Name of National Cardiac Society, National Working Group or arrhythmia body

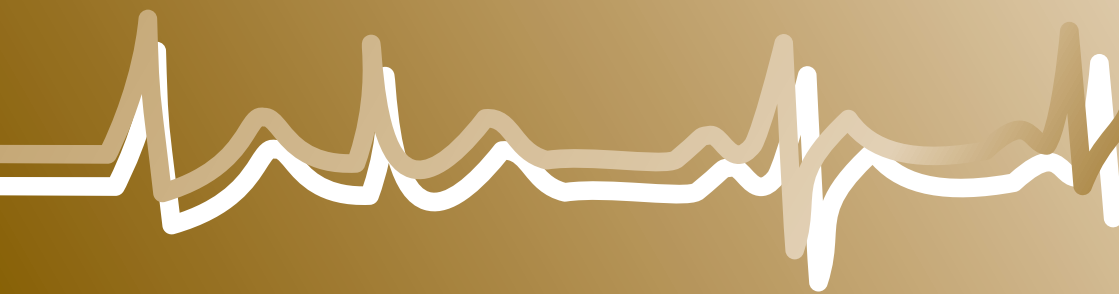
· Professional association Electrophysiology and Cardiac Pacing

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

· EHRA White Book 2014

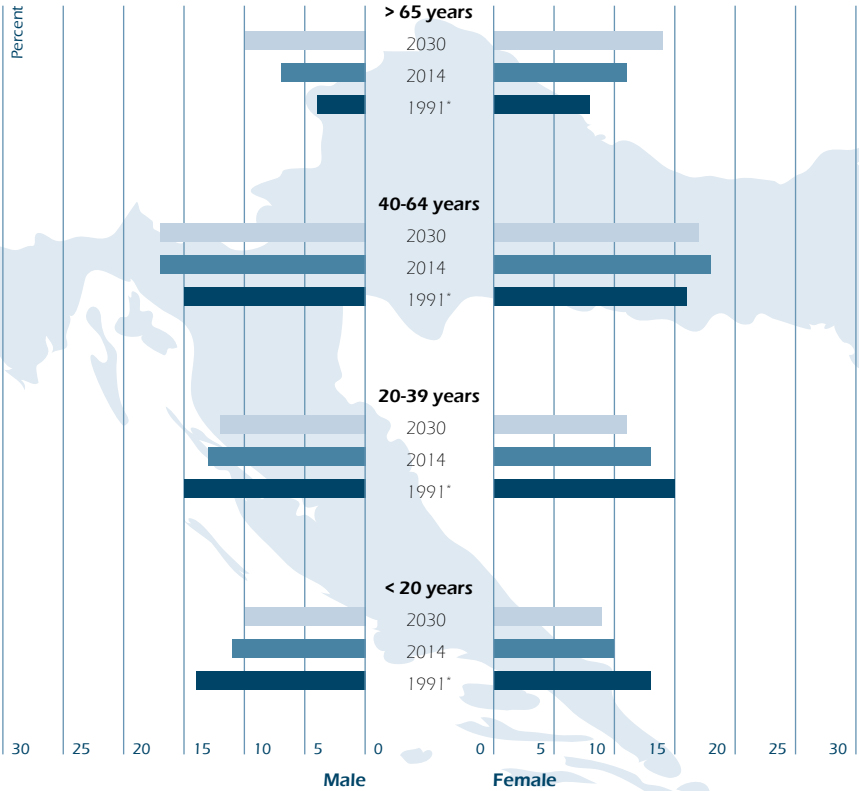
· Bulgarian Society of Cardiology, Professional National Register – "Bg Ephy",
Professional National Register – "Bg Pace"

CROATIA



1. Statistics

Age pyramid for Croatia



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	1,3	2011
Beds (per 100.000 population)	578,9	2011
Density of physicians (per 1.000 population)	2,8	2011
Density of nurses (per 1.000 population)	5,8	2011

Demographic information		
Population	4.470.534	2014
Population annual growth rate (%)	-0,1	2014
Life expectancy at birth	76	2014
Death rate (per 1.000 population)	12,1	2012
Live births (per 1.000 population)	9,8	2012

Economic information		
Gross domestic product (U.S dollar-billions)	58,33	2014*
Gross domestic product per capita (U.S dollar-units)	13.624,26	2014*
Total expenditure on health as % of GDP	6,8	2012
General government expenditure on health as % of total expenditure on health	82,5	2011
Private expenditure on health as % of total expenditure on health	17,5	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	49%	49%

3. Healthcare System

The Croatian healthcare system is based on the state-owned Health Insurance Institute in addition to poorly developed private insurances.

Basic insurance availability	Yes
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Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	90%	90%
Uninsured citizens	10%	10%

Distribution of insurance modality		
	2013	2014
Public insurance company	90%	90%
Private insurance company	5%	5%
Private co-payment	5%	5%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
----------------------------------------------------------------------	--

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
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	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist or surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
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Pacemaker	5
ICD implantation	5
CRT implantation	5
Electrophysiological studies and catheter ablation	4
Atrial fibrillation ablation	3

Number of universities (Schools of Medicine)	4
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	80%
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Percentage of academic centres among all practicing implanting devices centres	58%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	18	18
Total Pacemaker units implanted	2,418	2,601
Thereof, New implants	2,075	2,180
Thereof, Replacements	343	421

Specialist performing implants		
Cardiologists	Yes	91%
Surgeons	Yes	9%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	7	11
Total CRT units implanted	81	124
Thereof, CRT pacemaker	60	85
Thereof, CRT ICD	21	39

Specialist performing implants		
Cardiologists	Yes	94%
Surgeons	Yes	6%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	12	12
Total ICD units implanted	156	173
Thereof, Single chamber	88	135
Thereof, Dual chamber	68	38
First implants	not available	152
Replacements	not available	21

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	7	6
Total loop recorders implanted	28	17

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	3	6
Total lead extraction procedures	0	31

Specialist performing lead extractions		
Cardiologists	Yes	67%
Surgeons	Yes	33%



10. Device specific

Availability of remote monitoring of devices	No
-----------------------------------------------------	-----------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
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11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	5	5
Number of ablations performed	817	852
Mean number of ablations per centre	163	170
Number of AF ablations	172	223
Number of ablation centres (> 50 AF ablations)	2	3
Number of VT/VF ablations	not available	28
Number of ablation centres (> 10 VT ablations on structural heart diseases)	3	2
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	9
Number of physicians under training to become independent electrophysiologists	not available	3



Availability of a national registry for interventional electrophysiology	No
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12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No answer
European	Yes

Obstacles to guideline implementation

	Ranking of importance*				
	1	2	3	4	5
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

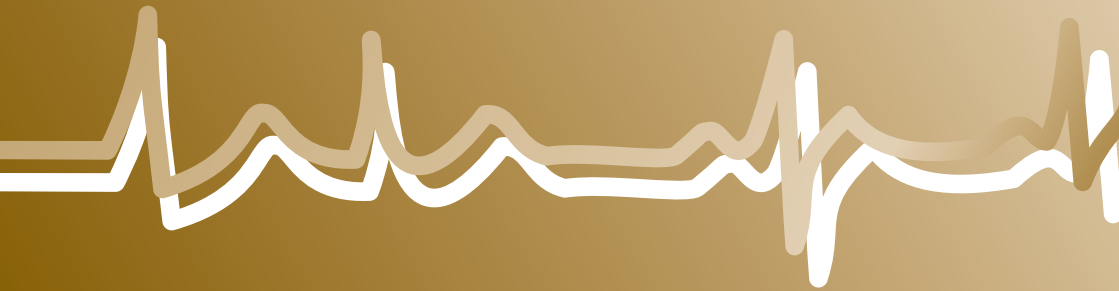
Name of National Cardiac Society, National Working Group or arrhythmia body

· Croatian Cardiac Society, Working Group for Arrhythmias and Cardiac Pacing

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

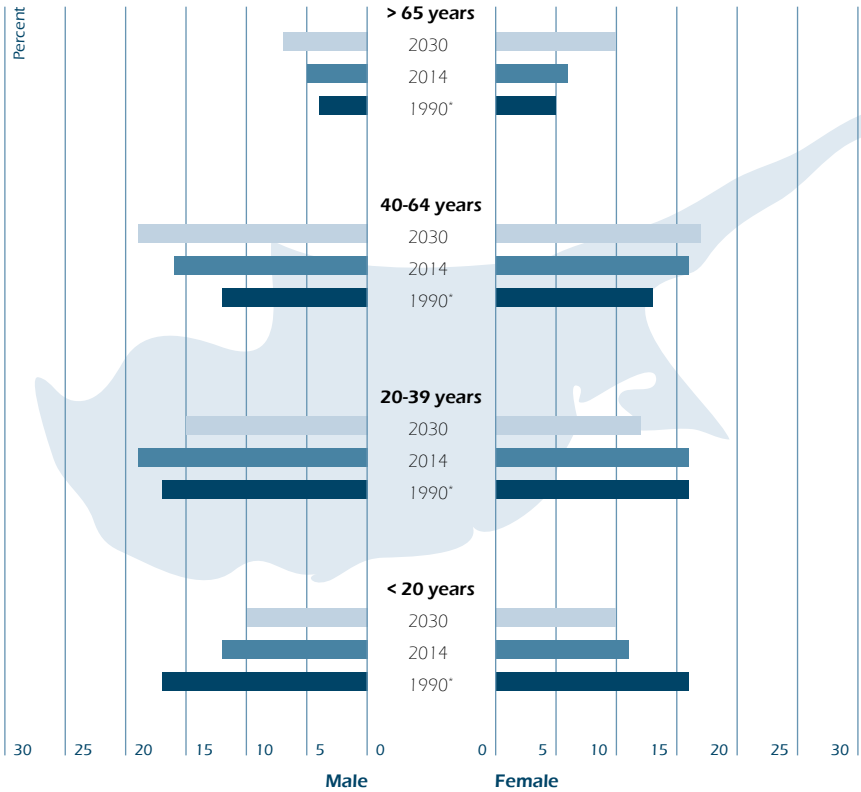
- EHRA White Book 2014
- Croatian Health Insurance Fund
- Croatian Cardiac Society, Working Group for Arrhythmias and Cardiac Pacing

CYPRUS



1. Statistics

Age pyramid for Cyprus



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	10,2	2011
Beds (per 100.000 population)	349,1	2011
Density of physicians (per 1.000 population)	3,0	2011
Density of nurses (per 1.000 population)	4,4	2004

Demographic information		
Population	1.172.458	2014
Population annual growth rate (%)	1,5	2014
Life expectancy at birth	78	2014
Death rate (per 1.000 population)	6,3	2011
Live births (per 1.000 population)	11,8	2012

Economic information		
Gross domestic product (U.S dollar-billions)	21,34	2014*
Gross domestic product per capita (U.S dollar-units)	23.954,68	2014*
Total expenditure on health as % of GDP	7,3	2012
General government expenditure on health as % of total expenditure on health	43,3	2011
Private expenditure on health as % of total expenditure on health	56,7	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	30%	30%

3. Healthcare System

Free medical care is provided by the state to civil servants and to citizens on income grounds. This covers approximately 85% of the population. The rest are served by the private sector.

Basic insurance availability	Yes
------------------------------	-----

Requirements for citizens to qualify for public insurance: they qualify if their income is low (below a specified level).

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	85%	85%
Uninsured citizens	15%	15%

Distribution of insurance modality		
	2013	2014
Public insurance company	85%	85%
Private insurance company	15%	15%
Private co-payment	0%	0%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No

Comments: free if it is performed in the public sector; paid for by the patient in the private sector.



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:	this applies to the public sector; in the private sector the physician receives a fee.				the public hospitals are directly funded by the state; this includes salaries, devices and all other expenses.			

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input checked="" type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: the indications unofficially follow the ESC guidelines.

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
----------------------------------------------------------------------	--

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
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		Specialist
Catheter ablation	Yes	Cardiologist (electrophysiologist)
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
--------------------------------------	--

Pacemaker	2
ICD implantation	2
CRT implantation	2
Electrophysiological studies and catheter ablation	1
Atrial fibrillation ablation	1

Number of universities (Schools of Medicine)	3
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	33%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	20%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	5	5
Total Pacemaker units implanted	250	250
Thereof, New implants	not available	not available
Thereof, Replacements	not available	not available

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	3	4
Total CRT units implanted	25	29
Thereof, CRT pacemaker	not available	not available
Thereof, CRT ICD	not available	not available

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	3	4
Total ICD units implanted	60	73
Thereof, Single chamber	not available	not available
Thereof, Dual chamber	not available	not available
First implants	not available	not available
Replacements	not available	not available

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	3	2
Total loop recorders implanted	14	12

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	1	1
Total lead extraction procedures	2	3

Specialist performing lead extractions		
Cardiologists	Yes	100%
Surgeons	No	0%



10. Device specific

Availability of remote monitoring of devices No

Reasons why remote monitoring is not available: short distances preclude the need for remote monitoring.

National registry for

		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry No

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions No

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	3	3
Number of ablations performed	45	142
Mean number of ablations per centre	15	47
Number of AF ablations	6	53
Number of ablation centres (> 50 AF ablations)	0	0
Number of VT/VF ablations	not available	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0
Number of LAA closures	not available	0
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	5
Number of physicians under training to become independent electrophysiologists	not available	0


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

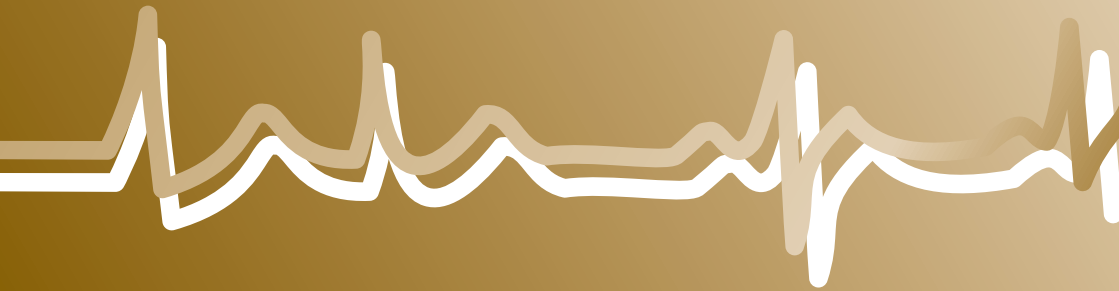
Name of National Cardiac Society, National Working Group or arrhythmia body

· Cyprus Working Group on Arrhythmia and Electrophysiology (of the Cyprus Society of Cardiology)

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

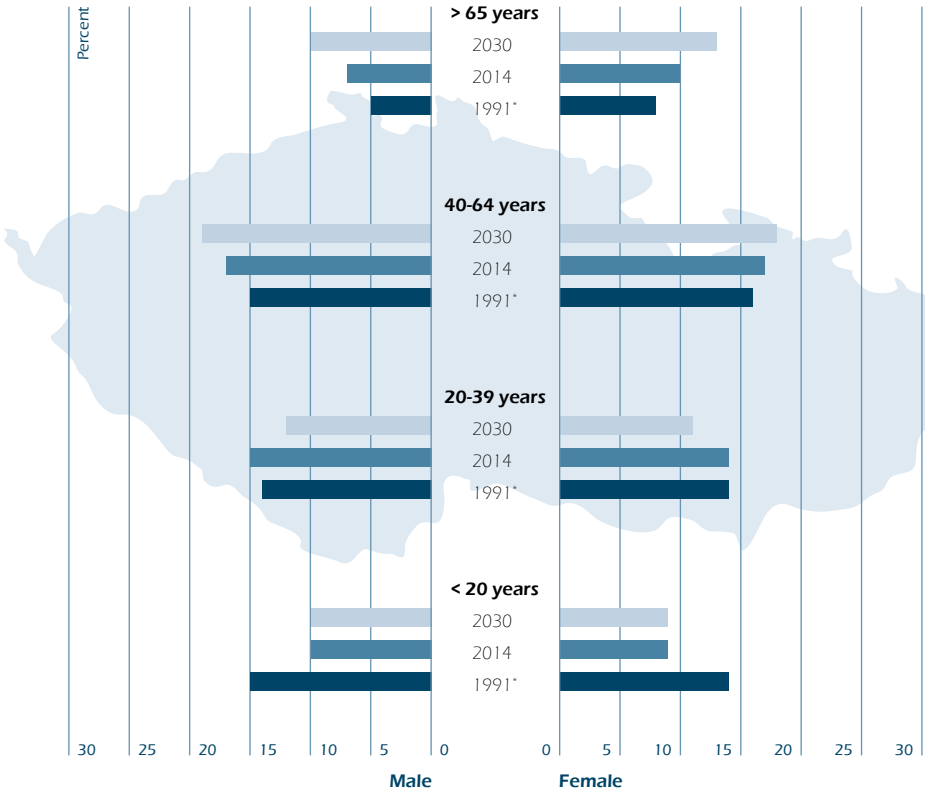
- EHRA White Book 2014
- Official statistics
- Survey from professional association
- Other

CZECH REPUBLIC



1. Statistics

Age pyramid for Czech Republic



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	2,4	2011
Beds (per 100.000 population)	683,6	2011
Density of physicians (per 1.000 population)	3,6	2011
Density of nurses (per 1.000 population)	8,5	2011

Demographic information		
Population	10.627.448	2014
Population annual growth rate (%)	0,2	2014
Life expectancy at birth	78	2014
Death rate (per 1.000 population)	10,3	2012
Live births (per 1.000 population)	10,3	2012

Economic information		
Gross domestic product (U.S dollar-billions)	200,01	2014*
Gross domestic product per capita (U.S dollar-units)	18.985,15	2014*
Total expenditure on health as % of GDP	7,7	2012
General government expenditure on health as % of total expenditure on health	84,2	2011
Private expenditure on health as % of total expenditure on health	15,8	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

National Health System

Basic insurance availability	Yes
------------------------------	-----

Requirements for citizens to qualify for public insurance: Czech citizenship.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	99,9%	99,9%
Uninsured citizens	0,1%	0,1%

Distribution of insurance modality		
	2013	2014
Public insurance company	99,9%	99,8%
Private insurance company	0,1%	0,1%
Private co-payment	not available	0,1%

Possibility to subscribing to private health insurance plans	No
--------------------------------------------------------------	----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ICD and PM Accreditation
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EP Accreditation
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

	Specialist	
Catheter ablation	Yes	Cardiologist, licence for EP, licence for ablations
ICD or pacemaker implants	Yes	Cardiologist, licence for device implantations

Official national competency guidelines for electrophysiological studies or catheter ablation **Yes**

Czech Society of Cardiology, Working Group on Arrhythmias and Cardiac Pacing

Required period of training to perform implantations **Yes***

* Requires certain number of implantations.

Suggested period of training to perform implantations **No**
Training centres availability

Pacemaker	37
ICD implantation	17
CRT implantation	17
Electrophysiological studies and catheter ablation	10
Atrial fibrillation ablation	10

Number of universities (Schools of Medicine) **7**



Percentage of academic centres among all practicing EP centres	not available
----------------------------------------------------------------	---------------

Percentage of academic centres among all practicing implanting devices centres	not available
--------------------------------------------------------------------------------	---------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	37	37
Total Pacemaker units implanted	9,416	9,447
Thereof, New implants	6,615	6,614
Thereof, Replacements	2,801	2,833

Specialist performing implants		
Cardiologists	Yes	90%
Surgeons	Yes	10%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	17	17
Total CRT units implanted	1,716	1,872
Thereof, CRT pacemaker	435	416
Thereof, CRT ICD	1,281	1,456

Specialist performing implants		
Cardiologists	Yes	97%
Surgeons	Yes	3%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	17	17
Total ICD units implanted	3.196*	2.138
Thereof, Single chamber	1.342	1.588
Thereof, Dual chamber	573	550
First implants	2.435*	1.618
Replacements	761*	520
* CRT-D units included		
Specialist performing implants		
Cardiologists	Yes	95%
Surgeons	Yes	5%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	20
Total loop recorders implanted	520	650
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	5	5
Total lead extraction procedures	320	180
Specialist performing lead extractions		
Cardiologists	Yes	80%
Surgeons	Yes	20%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	ICD online registry
Pacing	Yes	PM online registry
Electrophysiology	Yes	Catheter ablation registry

Availability of a national quality insurance system or complication registry	Yes
-------------------------------------------------------------------------------------	------------

Official name: State institute for drug control

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	20	22
Number of ablations performed	5,116	5,855
Mean number of ablations per centre	256	266
Number of AF ablations	2,082	2,297
Number of ablation centres (> 50 AF ablations)	11	10
Number of VT/VF ablations	not available	289
Number of ablation centres (> 10 VT ablations on structural heart diseases)	6	9
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	4
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	not available



Availability of a national registry for interventional electrophysiology	Yes
---------------------------------------------------------------------------------	------------

Official name: Ablation online registry

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
------------------------------------------------------------------	--

National	Yes
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

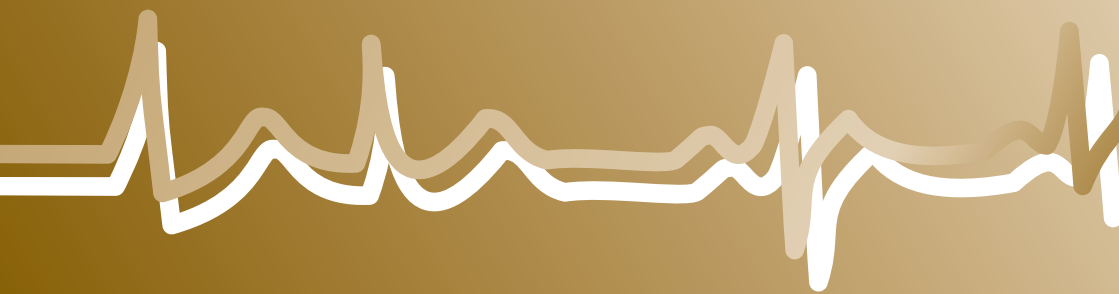
Name of National Cardiac Society, National Working Group or arrhythmia body

· Czech Society of Cardiology Working Group on Arrhythmias and Cardiac Pacing

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

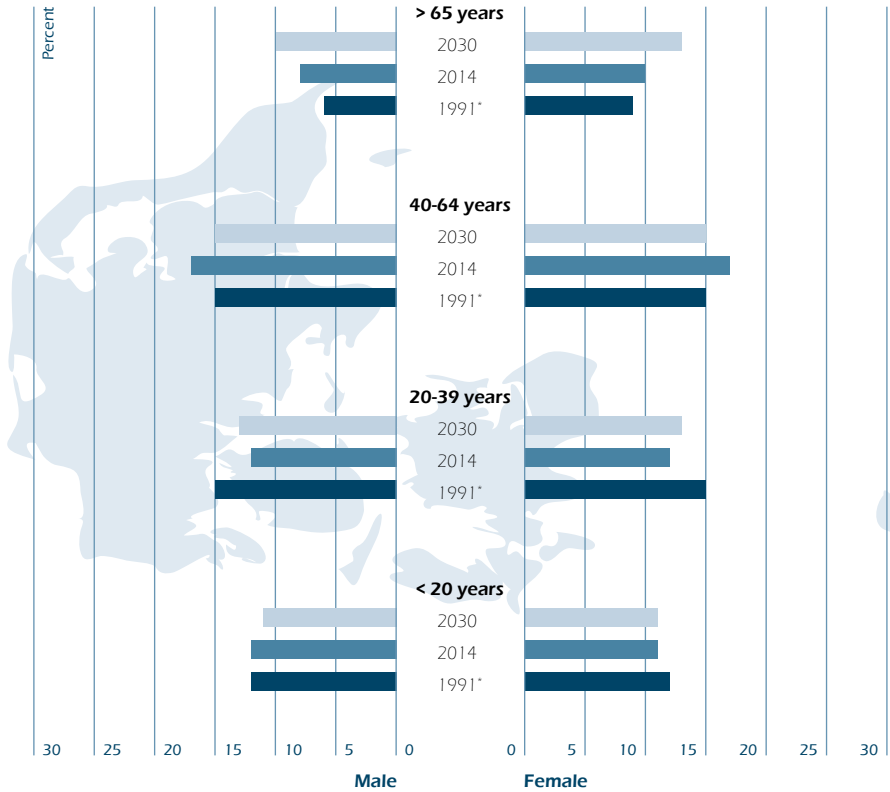
- EHRA White Book 2014
- Sales data
- Estimation
- Registries

DENMARK



1. Statistics

Age pyramid for Denmark



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	not available	not available
Beds (per 100.000 population)	350,0	2010
Density of physicians (per 1.000 population)	3,5	2009
Density of nurses (per 1.000 population)	15,7	2009

Demographic information

Population	5.569.077	2014
Population annual growth rate (%)	0,2	2014
Life expectancy at birth	79	2014
Death rate (per 1.000 population)	9,4	2011
Live births (per 1.000 population)	10,4	2012

Economic information

Gross domestic product (U.S dollar-billions)	347,20	2014*
Gross domestic product per capita (U.S dollar-units)	61.884,50	2014*
Total expenditure on health as % of GDP	11,2	2012
General government expenditure on health as % of total expenditure on health	85,3	2011
Private expenditure on health as % of total expenditure on health	14,7	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	25%*	not available

*data from 2012

3. Healthcare System

National Health System

Basic insurance availability	Yes
------------------------------	-----

Requirements: None.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	0%	0%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: There is no restrictions for device implants only for ablations.

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
		Specialist
Catheter ablation	Yes	Cardiologist with special training/education in electrophysiology
ICD or pacemaker implants	Yes	Cardiologist with special training in device implantation

Official national competency guidelines for electrophysiological studies or catheter ablation	No
------------------------------------------------------------------------------------------------------	-----------

Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	Yes	1 year
--------------------------------------------------------------	------------	---------------

Training centres availability	
Pacemaker	11
ICD implantation	6
CRT implantation	5
Electrophysiological studies and catheter ablation	6
Atrial fibrillation ablation	6

Number of universities (Schools of Medicine)	4
-----------------------------------------------------	----------

Percentage of academic centres among all practicing EP centres	83%
-----------------------------------------------------------------------	------------



Percentage of academic centres among all practicing implanting devices centres	45%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	11	11
Total Pacemaker units implanted	4.725	4.823
Thereof, New implants	3.543	3.654
Thereof, Replacements	1.182	1.169

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	5	5
Total CRT units implanted	1.001	965
Thereof, CRT pacemaker	405	415
Thereof, CRT ICD	596	550

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	6	6
Total ICD units implanted	1.285	1.208
Thereof, Single chamber	982	945
Thereof, Dual chamber	303	263
First implants	890	882
Replacements	395	326

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	11	11
Total loop recorders implanted	not available	not available

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	4	4
Total lead extraction procedures	not available	not available

Specialist performing lead extractions		
Cardiologists	Yes	85%
Surgeons	Yes	15%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	Danish PM and ICD register
Pacing	Yes	Danish PM and ICD register
Electrophysiology	Yes	Ablation.dk

Availability of a national quality insurance system or complication registry	Yes
-------------------------------------------------------------------------------------	------------

Official name: Danish Health and Medicines Authority

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
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Official name: Re device recalls: Danish PM and ICD register; Re lead extractions: none

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	6	6
Number of ablations performed	3.622	3.867
Mean number of ablations per centre	604	645
Number of AF ablations	1.609	1.698
Number of ablation centres (> 50 AF ablations)	6	6
Number of VT/VF ablations	not available	148
Number of ablation centres (> 10 VT ablations on structural heart diseases)	5	5
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	3
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	25
Number of physicians under training to become independent electrophysiologists	not available	not available



Availability of a national registry for interventional electrophysiology	Yes
---------------------------------------------------------------------------------	------------

Official name: ablation.dk

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
------------------------------------------------------------------	--

National	Yes
U.S.	Yes
European	Yes

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5

Obstacles to guideline implementation	1	2	3	4	5
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of referral	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

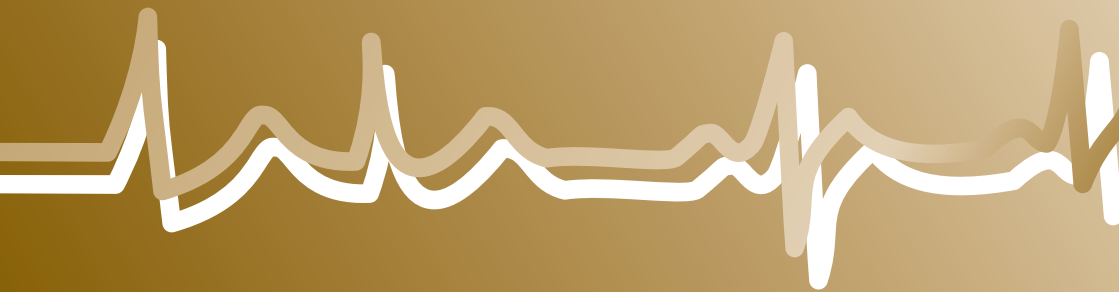
Name of National Cardiac Society, National Working Group or arrhythmia body

- Danish Society of Cardiology
- Danish Working Group in Arrhythmias, Pacemakers and ICD

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

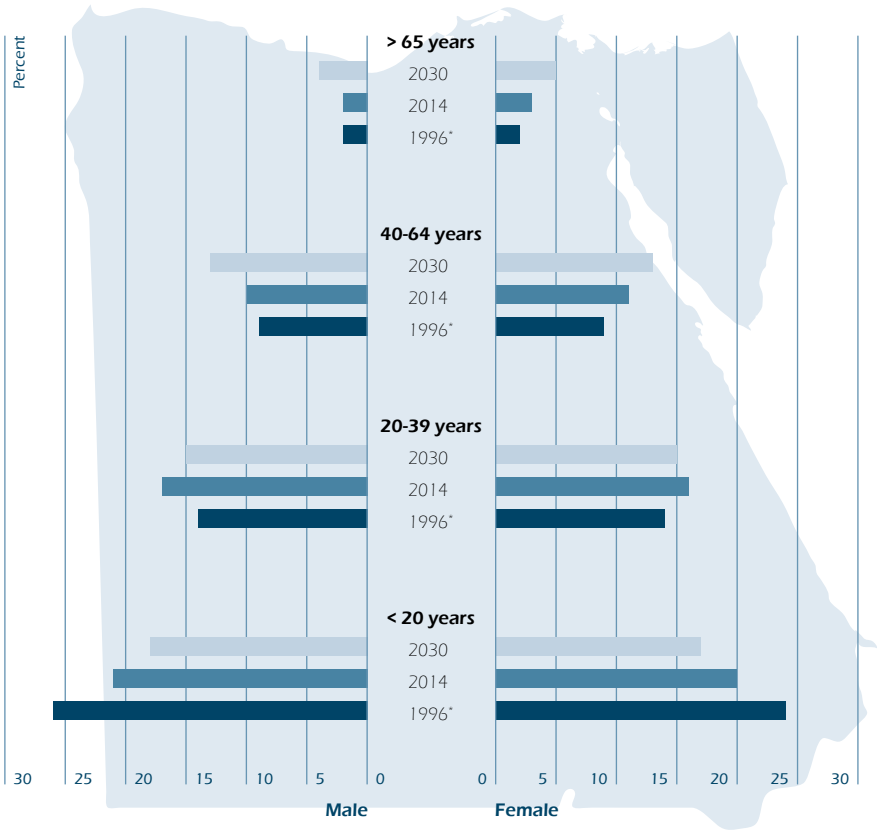
- EHRA White Book 2014
- Official statistics
- Estimation
- Danish PM and ICD register
- ablation.dk

EGYPT



1. Statistics

Age pyramid for Egypt



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	not available	not available
Beds (per 100.000 population)	not available	not available
Density of physicians (per 1.000 population)	not available	not available
Density of nurses (per 1.000 population)	not available	not available

Demographic information

Population	86.895.099	2014
Population annual growth rate (%)	1,9	2014
Life expectancy at birth	74	2014
Death rate (per 1.000 population)	not available	not available
Live births (per 1.000 population)	not available	not available

Economic information

Gross domestic product (U.S dollar-billions)	284,86	2014*
Gross domestic product per capita (U.S dollar-units)	3.336,61	2014*
Total expenditure on health as % of GDP	not available	not available
General government expenditure on health as % of total expenditure on health	40,7	2011
Private expenditure on health as % of total expenditure on health	59,3	2011

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

Egypt has a more or less heterogeneous health system: there are different public & private providers and financing agents. The main agents are: the governmental sector (including ministry of health institutes, university and teaching hospitals, the military and police hospitals), the public sector (known as health insurance organization, the curative care organization) and finally the private sector.

Basic insurance availability	No
------------------------------	----

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	65%	67%
Uninsured citizens	35%	33%

Distribution of insurance modality		
	2013	2014
Public insurance company	64%	64%
Private insurance company	1%	1%
Private co-payment	35%	35%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No

Comments: it depends on the insurance plan, in certain insurance plan the patient should pay certain percentage of the bill of whatever medical service he's receiving.



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ICD primary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ICD secondary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:	Though in governmental & university hospitals the re-imbursements are quite insufficient.				Though the Hospital Reimbursement is quite insufficient.			

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input checked="" type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

		Specialist
Catheter ablation	Yes	Cardiologist/electrophysiologist, with the exception of one centre, which is critical care unit, Cairo university, where critical care specialist are allowed to train in & perform EP & device implantation procedures.
ICD or pacemaker implants	Yes	Cardiologists or electrophysiologists, except in only one center which is critical care unit, Cairo university where critical care specialists are allowed to train in & practice device therapy.

Official national competency guidelines for electrophysiological studies or catheter ablation
No
Required period of training to perform implantations
Yes
3 years
Suggested period of training to perform implantations
Yes
3 years
Training centres availability

Pacemaker	28
ICD implantation	13
CRT implantation	13
Electrophysiological studies and catheter ablation	11
Atrial fibrillation ablation	4

Number of universities (Schools of Medicine)
22



Percentage of academic centres among all practicing EP centres	60%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	70%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres

	2013	2014
Implanting centres	28	33
Total Pacemaker units implanted	2,850	3,320
Thereof, New implants	not available	3,040
Thereof, Replacements	not available	280

Specialist performing implants

Cardiologists	Yes	76%
Surgeons	Yes	2%
Others: Critical Care Physicians, Cairo University	Yes	22%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2013	2014
Implanting centres	13	16
Total CRT units implanted	414	530
Thereof, CRT pacemaker	339	420
Thereof, CRT ICD	75	110

Specialist performing implants

Cardiologists	Yes	70%
Surgeons	No	0%
Others: Critical Care Physicians, Cairo University	Yes	30%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	13	16
Total ICD units implanted	178	236
Thereof, Single chamber	142	188
Thereof, Dual chamber	36	48
First implants	not available	212
Replacements	not available	24

Specialist performing implants		
Cardiologists	Yes	90%
Surgeons	No	0%
Others: Critical Care Physicians, Cairo University	Yes	10%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	2	5
Total loop recorders implanted	3	7

Specialist performing implants		
Cardiologists	Yes	80%
Surgeons	No	0%
Others: Critical Care Physicians, Cairo University	Yes	20%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	2	4
Total lead extraction procedures	15	28

Specialist performing lead extractions		
Cardiologists	Yes	80%
Surgeons	No	0%
Others: Critical Care Physicians, Cairo University	Yes	20%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for

	Official name
ICD	No
Pacing	No
Electrophysiology	No

Availability of a national quality insurance system or complication registry	No
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Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	13	15
Number of ablations performed	1,064	1,354
Mean number of ablations per centre	82	90
Number of AF ablations	35	60
Number of ablation centres (> 50 AF ablations)	0	0
Number of VT/VF ablations	not available	10
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0
Number of LAA closures	not available	19
Number of centres (LAA closures)	not available	3
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	22
Number of physicians under training to become independent electrophysiologists	not available	15


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No answer
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Others: Lack of medical awareness of the indications for device therapy.						

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

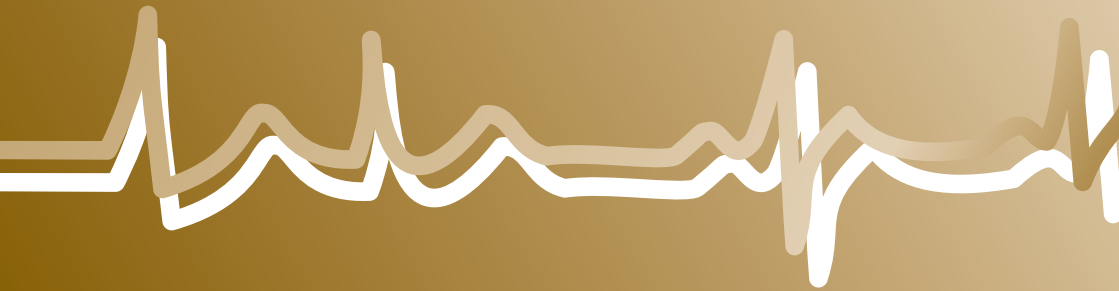
Name of National Cardiac Society, National Working Group or arrhythmia body

- Egyptian Cardiac Rhythm Association (ECRA) – A community from the Egyptian Society of Cardiology and the only EP organization in Egypt

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

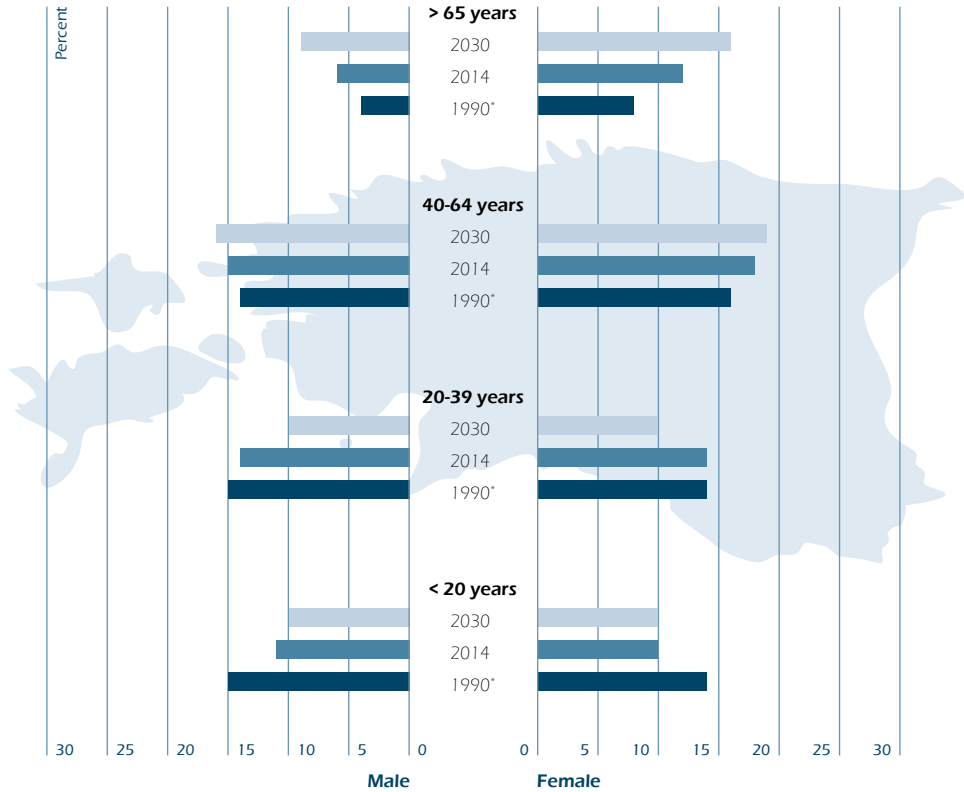
- EHRA White Book 2014
- Survey from professional association
- Sales data
- Estimation
- Official statistics

ESTONIA



1. Statistics

Age pyramid for Estonia



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	4,1	2011
Beds (per 100.000 population)	530,9	2011
Density of physicians (per 1.000 population)	3,3	2011
Density of nurses (per 1.000 population)	6,5	2011

Demographic information		
Population	1.257.921	2014
Population annual growth rate (%)	-0,7	2014
Life expectancy at birth	74	2014
Death rate (per 1.000 population)	11,4	2011
Live births (per 1.000 population)	10,9	2012

Economic information		
Gross domestic product (U.S dollar-billions)	26,36	2014*
Gross domestic product per capita (U.S dollar-units)	19.777,26	2014*
Total expenditure on health as % of GDP	5,9	2012
General government expenditure on health as % of total expenditure on health	80,5	2011
Private expenditure on health as % of total expenditure on health	19,5	2011

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	54%	not available

3. Healthcare System

Estonian health insurance relies on the principle of solidarity. The Health Insurance Fund covers the costs of health services required by the person in case of illness regardless of the amount of social tax paid for the person concerned. The Fund uses the social tax paid for the working population, also for covering the cost of health services provided to persons who have no income with regard to work activities. The employers are required by the law to pay social tax for all persons employed, whereby the rate of this tax is 33% of the taxable amount, and of which 20% is allocated for pension insurance and 13% for health insurance.

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: An insured person is a permanent resident of the Republic of Estonia or a person living in Estonia by virtue of a temporary residence permit or by the right of permanent residence, who pays the social tax for himself/herself or for whom the payer of social tax is required to pay social tax. Insured persons are: a person working on the basis of an employment contract; a public servant; a member of the management or supervisory board of a legal entity; a person employed on the basis of a contract under the law of obligations; a person registered at Estonian Unemployment Insurance Fund; a person, who participated in the elimination of the consequences of a nuclear disaster, a conscript, the non-working spouse of a diplomat or a public servant, the curator of a disabled person, a person receiving child care allowance, a dependant spouse, for whom the government pays social tax, a person receiving social allowance. According to the Health Insurance Act persons for whom no social tax is paid are considered as having equal status to the insured person. The persons having equal status are: a pregnant woman, a person under 19 years of age, a person receiving state pension granted in Estonia, an insured person's dependent spouse, who is no more than 5 years away from attaining the age limit for old-age pension, pupils (there are age limits), a student, who is permanent resident.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	not available	95%
Uninsured citizens	not available	5%



Distribution of insurance modality		
	2013	2014
Public insurance company	not available	100%
Private insurance company	not available	0%
Private co-payment	not available	0%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No

Reimbursement availability for physicians and hospitals								
	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability	
No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>



4. Education

National certification availability					Official name
	Yes, it 's required for practice	Yes, but it 's not required for practice	No	No answer	
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

National Cardiac Society supporting EHRA certification system	
Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		Specialist
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation **No**

Required period of training to perform implantations **Yes** **100 implantations**

Suggested period of training to perform implantations **No**

Training centres availability	
Pacemaker	2
ICD implantation	2
CRT implantation	2
Electrophysiological studies and catheter ablation	2
Atrial fibrillation ablation	1



Number of universities (Schools of Medicine)	1
-----------------------------------------------------	----------

Percentage of academic centres among all practicing EP centres	50%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	20%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	5	5
Total Pacemaker units implanted	1.155	1.054
Thereof, New implants	1.001	912
Thereof, Replacements	154	142

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	2	2
Total CRT units implanted	70	51
Thereof, CRT pacemaker	41	27
Thereof, CRT ICD	29	24

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	2	2
Total ICD units implanted	104	96
Thereof, Single chamber	26	13
Thereof, Dual chamber	78	83
First implants	98	88
Replacements	6	8

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	2	2
Total loop recorders implanted	10	6

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	not available	not available
Total lead extraction procedures	not available	not available

Specialist performing lead extractions		
Cardiologists	Yes	100%
Surgeons	No	0%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
-------------------------------------------------------------------------------------------------------------------------------------	------------

Official name: State Agency of Medicine

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	2	2
Number of ablations performed	382	411
Mean number of ablations per centre	191	206
Number of AF ablations	71	98
Number of ablation centres (> 50 AF ablations)	1	1
Number of VT/VF ablations	not available	7
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0
Number of LAA closures	not available	2
Number of centres (LAA closures)	not available	1
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	5
Number of physicians under training to become independent electrophysiologists	not available	0



Availability of a national registry for interventional electrophysiology	No
---------------------------------------------------------------------------------	-----------

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation

	Ranking of importance*				
	1	2	3	4	5
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

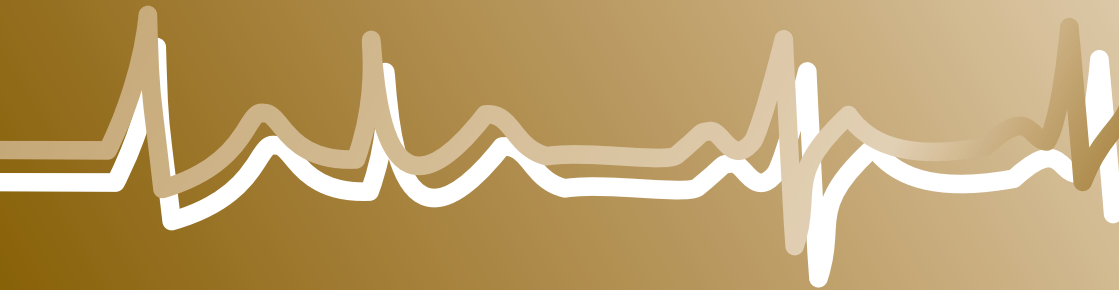
Name of National Cardiac Society, National Working Group or arrhythmia body

· Estonian Society of Cardiology, Working Group of Arrhythmias

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

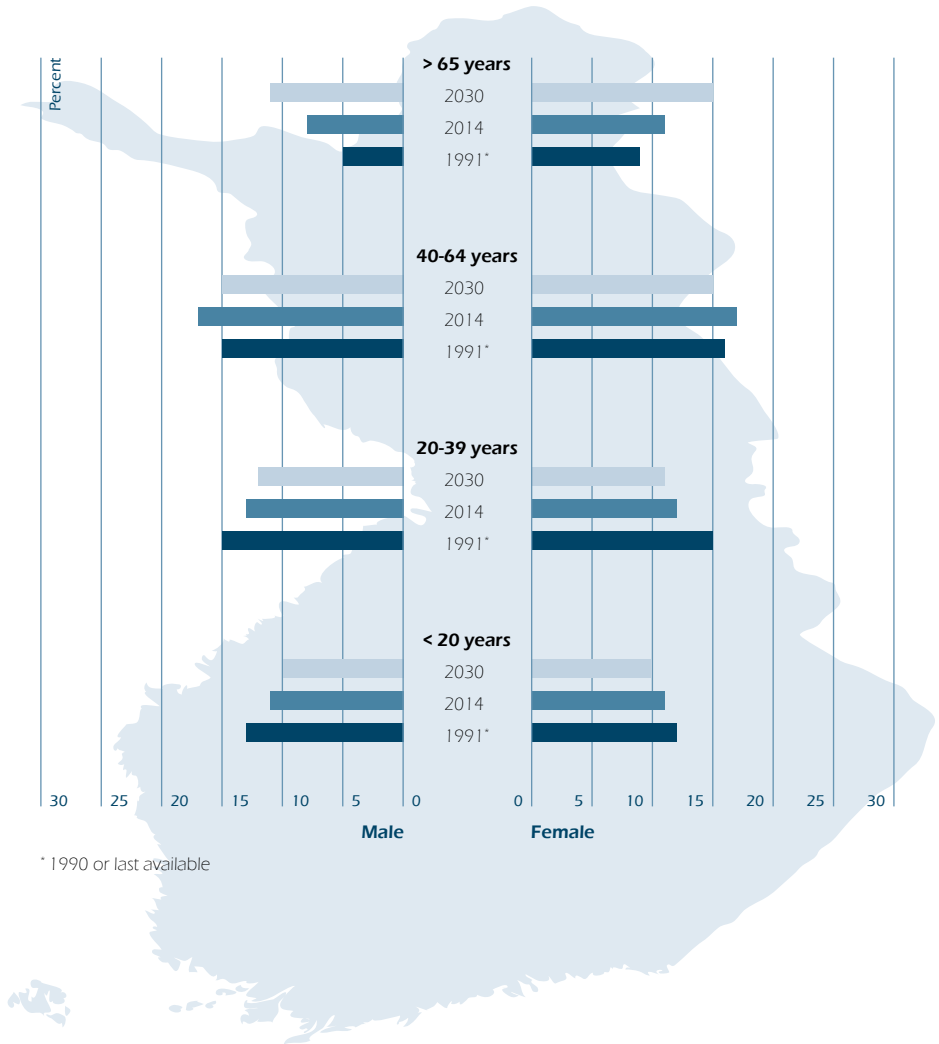
- EHRA White Book 2014
- Official statistics
- Survey from professional association

FINLAND



1. Statistics

Age pyramid for Finland



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	5,1	2011
Beds (per 100.000 population)	552,2	2011
Density of physicians (per 1.000 population)	2,7	2008
Density of nurses (per 1.000 population)	10,7	2010

Demographic information		
Population	5.268.799	2014
Population annual growth rate (%)	0,1	2014
Life expectancy at birth	80	2014
Death rate (per 1.000 population)	9,4	2011
Live births (per 1.000 population)	11,0	2012

Economic information		
Gross domestic product (U.S dollar-billions)	276,28	2014*
Gross domestic product per capita (U.S dollar-units)	50.450,67	2014*
Total expenditure on health as % of GDP	9,2	2012
General government expenditure on health as % of total expenditure on health	75,4	2011
Private expenditure on health as % of total expenditure on health	24,6	2011

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	39%	39%

3. Healthcare System

Finland has a compulsory health care system which is tax based. It provides comprehensive coverage for the entire population. The Ministry of Social Affairs and Health issues the legislation on health and social care policies and monitors the implementation. At local level, the municipal health committee and council make decisions on the planning and organization of healthcare.

Basic insurance availability	Yes
------------------------------	-----

Requirements for citizens to qualify for public insurance: Every citizen is qualified.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	75,2%	75,2%
Private insurance company	3%	3%
Private co-payment	21,8%	21,8%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No

Comments: The patients pay a nominal fee for hospital admission.



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments:	The physicians do not receive any additional reimbursement for any procedures performed in the public health care hospitals.				The hospital charge the municipalities for services according to annually set prices. Billing is usually based on DRG, but per procedure billing is used by some hospitals.			

Treatment availability

No restrictions	<input checked="" type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		Specialist
Catheter ablation	No	
ICD or pacemaker implants	No	

Official national competency guidelines for electrophysiological studies or catheter ablation	No

Required period of training to perform implantations	No

Suggested period of training to perform implantations	Yes

Training centres availability	
Pacemaker	20
ICD implantation	19
CRT implantation	15
Electrophysiological studies and catheter ablation	9
Atrial fibrillation ablation	8

Number of universities (Schools of Medicine)	5



Percentage of academic centres among all practicing EP centres	56%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	25%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres

	2013	2014
Implanting centres	20	20
Total Pacemaker units implanted	5.369	5.536*
Thereof, New implants	4.184	4.253*
Thereof, Replacements	1.185	1.283*

* CRT-P included

Specialist performing implants

Cardiologists	Yes	95%
Surgeons	Yes	5%*
Internal medicine	Yes	<1%

* mainly replacements

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2013	2014
Implanting centres	14	15
Total CRT units implanted	437	526
Thereof, CRT pacemaker	158	181
Thereof, CRT ICD	279	345

Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	19	19
Total ICD units implanted	1.020	1.161*
Thereof, Single chamber	not available	not available
Thereof, Dual chamber	not available	not available
First implants	734	839*
Replacements	286	322*
* CRT-D included		
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	16	20
Total loop recorders implanted	321	295
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	5	5
Total lead extraction procedures	not available	17
Specialist performing lead extractions		
Cardiologists	Yes	50%
Surgeons	Yes	50%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	Yes
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Official name: Finnish Medicines Agency

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
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Official name: Finnish Medicines Agency and Valvira

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	8	9
Number of ablations performed	2.203	2.222
Mean number of ablations per centre	275	247
Number of AF ablations	654	736
Number of ablation centres (> 50 AF ablations)	5	5
Number of VT/VF ablations	not available	82
Number of ablation centres (> 10 VT ablations on structural heart diseases)	4	5
Number of LAA closures	not available	63
Number of centres (LAA closures)	not available	5
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	15
Number of physicians under training to become independent electrophysiologists	not available	8



Availability of a national registry for interventional electrophysiology	No
---------------------------------------------------------------------------------	-----------

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	Yes
European	Yes

Obstacles to guideline implementation

	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of reimbursement, limited financial resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

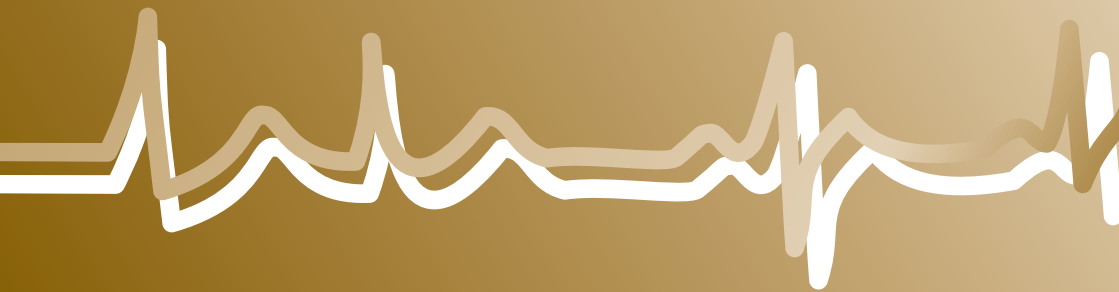
Name of National Cardiac Society, National Working Group or arrhythmia body

· The Finnish Cardiac Society, National Working Group for Arrhythmias and Pacing

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

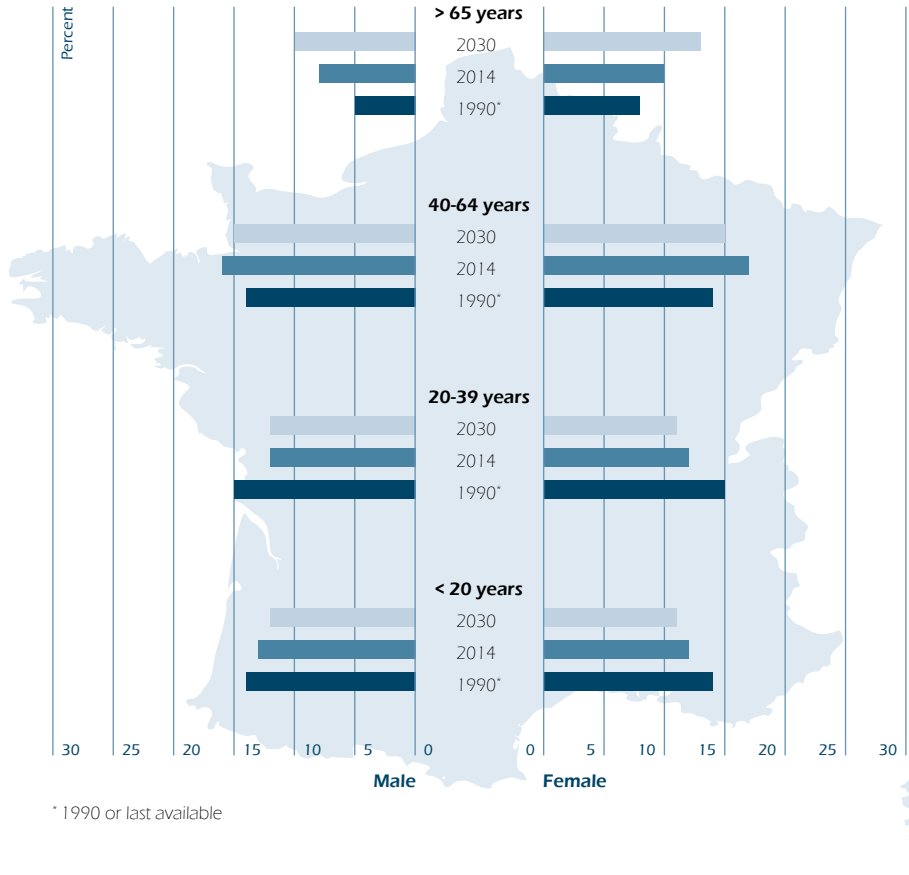
- EHRA White Book 2014
- Statistics Finland
- Ministry of Social Affairs and Health
- Survey from professional association
- Estimation

FRANCE



1. Statistics

Age pyramid for France



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	4,3	2011
Beds (per 100.000 population)	656,5	2011
Density of physicians (per 1.000 population)	3,2	2012
Density of nurses (per 1.000 population)	9,6	2012

Demographic information		
Population	66.259.012	2014
Population annual growth rate (%)	0,5	2014
Life expectancy at birth	82	2014
Death rate (per 1.000 population)	8,6	2010
Live births (per 1.000 population)	12,4	2012

Economic information		
Gross domestic product (U.S dollar-billions)	2.902,33	2014*
Gross domestic product per capita (U.S dollar-units)	45.383,63	2014*
Total expenditure on health as % of GDP	11,8	2012
General government expenditure on health as % of total expenditure on health	76,8	2011
Private expenditure on health as % of total expenditure on health	23,2	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	26%

3. Healthcare System

National Health system, completed by private insurances.

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: Less than 3 months of residency.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	55%	55%
Private insurance company	0%	0%
Private co-payment	45%	45%

Possibility to subscribing to private health insurance plans	No
--------------------------------------------------------------	----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input checked="" type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Diplome Interuniversitaire de Rythmologie et Stimulation Cardiaque
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Diplome Interuniversitaire de Rythmologie et Stimulation Cardiaque
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

	Specialist	
Catheter ablation	Yes	Cardiologist with dedicated certification
ICD or pacemaker implants	Yes	Cardiologist with dedicated certification

Official national competency guidelines for electrophysiological studies or catheter ablation

Yes

Piot O, Anselme F, Bovéda S, Chauvin M, Daubert JC, Defaye P, Deharo JC, Gras D, Hermida JS, Kacet S, Klug D, Leenhardt A, le Heuzey JY, Mabo P, Pisapia A, Sadoul N, Salvador-Mazenq M, Cazeau S; on behalf of the Cardiac Rhythm and Pacing Group. Guidelines issued by the French Society of Cardiology concerning the competence, performance and environment required in the practice of diagnostic and interventional cardiac electrophysiology. Arch Cardiovasc Dis. 2011 Nov;104:586-590.

Required period of training to perform implantations

Yes

2 years

Suggested period of training to perform implantations

No

Training centres availability

Pacemaker	not available
ICD implantation	not available
CRT implantation	not available
Electrophysiological studies and catheter ablation	not available
Atrial fibrillation ablation	not available

Number of universities (Schools of Medicine)

47



Percentage of academic centres among all practicing EP centres	50%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	50%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	500	451
Total Pacemaker units implanted	60.000	67.000
Thereof, New implants	50.000	55.000
Thereof, Replacements	10.000	12.000

Specialist performing implants		
Cardiologists	Yes	95%
Surgeons	Yes	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	159	146
Total CRT units implanted	not available	9.570
Thereof, CRT pacemaker	not available	3.500
Thereof, CRT ICD	not available	6.070

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	148	162
Total ICD units implanted	not available	13,700
Thereof, Single chamber	not available	not available
Thereof, Dual chamber	not available	not available
First implants	not available	11,000
Replacements	not available	2,700
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	260	80
Total loop recorders implanted	not available	not available
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	50	50
Total lead extraction procedures	not available	2,200
Specialist performing lead extractions		
Cardiologists	Yes	80%
Surgeons	Yes	20%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	Yes
-------------------------------------------------------------------------------------	------------

Official name: Agence Nationale de Sécurité des Médicaments et des Produits de Santé.

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
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11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	not available	130
Number of ablations performed	not available	33,300
Mean number of ablations per centre	not available	256
Number of AF ablations	not available	11,000
Number of ablation centres (> 50 AF ablations)	not available	70
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	50
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	not available


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

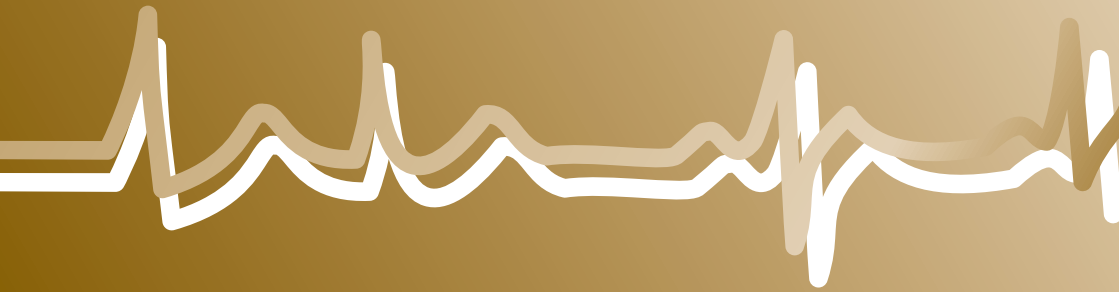
Name of National Cardiac Society, National Working Group or arrhythmia body

· Groupe de Rythmologie et de Stimulation de la Société Française de Cardiologie

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

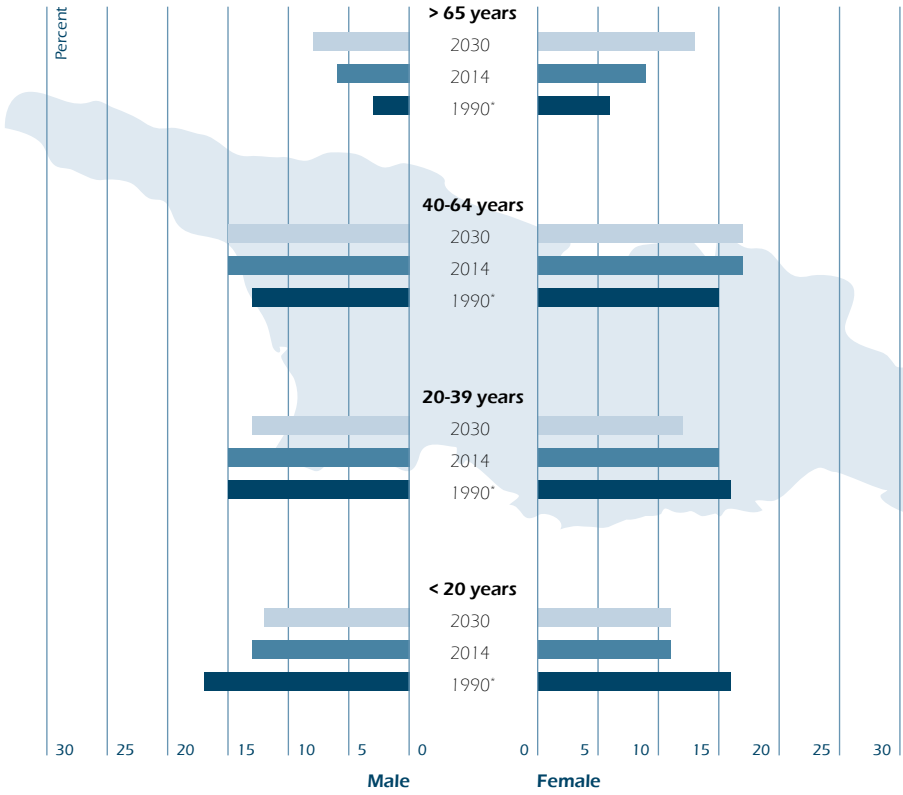
- EHRA White Book 2014
- Official statistics
- Survey from professional association
- Sales data
- Estimation

GEORGIA



1. Statistics

Age pyramid for Georgia



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	4,9	2012
Beds (per 100.000 population)	252,7	2012
Density of physicians (per 1.000 population)	4,1	2012
Density of nurses (per 1.000 population)	3,1	2012

Demographic information

Population	4.935.880	2014
Population annual growth rate (%)	-0,1	2014
Life expectancy at birth	76	2014
Death rate (per 1.000 population)	10,7	2010
Live births (per 1.000 population)	12,7	2012

Economic information

Gross domestic product (U.S dollar-billions)	16,13	2014*
Gross domestic product per capita (U.S dollar-units)	3.607,32	2014*
Total expenditure on health as % of GDP	9,2	2012
General government expenditure on health as % of total expenditure on health	18,1	2011
Private expenditure on health as % of total expenditure on health	81,9	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	38%

3. Healthcare System

National health system and private insurance.

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: Not have a private insurance.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2013	2014
Public insurance company	not available	not available
Private insurance company	not available	not available
Private co-payment	not available	not available

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	Yes
Pacemakers	Yes
Ablation	Yes



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Subspecialty cardiac electrophysiology and arrhythmia management
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Subspecialty cardiac electrophysiology and arrhythmia management
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input checked="" type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

	Specialist	
Catheter ablation	Yes	Cardiologist (cardiac electrophysiologist)
ICD or pacemaker implants	Yes	Cardiologist (cardiac electrophysiologist)

Official national competency guidelines for electrophysiological studies or catheter ablation **No**

Required period of training to perform implantations **Yes** **2 years**

Suggested period of training to perform implantations **No**

Training centres availability

Pacemaker	not available
ICD implantation	not available
CRT implantation	not available
Electrophysiological studies and catheter ablation	not available
Atrial fibrillation ablation	not available

Number of universities (Schools of Medicine) **3**



Percentage of academic centres among all practicing EP centres	50%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	50%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	9	9
Total Pacemaker units implanted	620	608
Thereof, New implants	not available	not available
Thereof, Replacements	not available	not available

Specialist performing implants		
Cardiologists	Yes	90%
Surgeons	Yes	10%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	6	7
Total CRT units implanted	40	55
Thereof, CRT pacemaker	6	11
Thereof, CRT ICD	34	44

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	7	8
Total ICD units implanted	59	104
Thereof, Single chamber	51	81
Thereof, Dual chamber	8	23
First implants	55	100
Replacements	4	4

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	5	9
Total loop recorders implanted	1	4

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	0	1
Total lead extraction procedures	0	3

Specialist performing lead extractions		
Cardiologists	Yes	100%
Surgeons	No	0%



10. Device specific

Availability of remote monitoring of devices	No
-----------------------------------------------------	-----------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
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11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	7	7
Number of ablations performed	269	356
Mean number of ablations per centre	38	51
Number of AF ablations	35	50
Number of ablation centres (> 50 AF ablations)	0	0
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	not available
Number of LAA closures	not available	0
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	7
Number of physicians under training to become independent electrophysiologists	not available	1



Availability of a national registry for interventional electrophysiology	No
---------------------------------------------------------------------------------	-----------

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	Yes
European	Yes

Obstacles to guideline implementation

	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	5
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

Name of National Cardiac Society, National Working Group or arrhythmia body

· Georgian Heart Rhythm Association

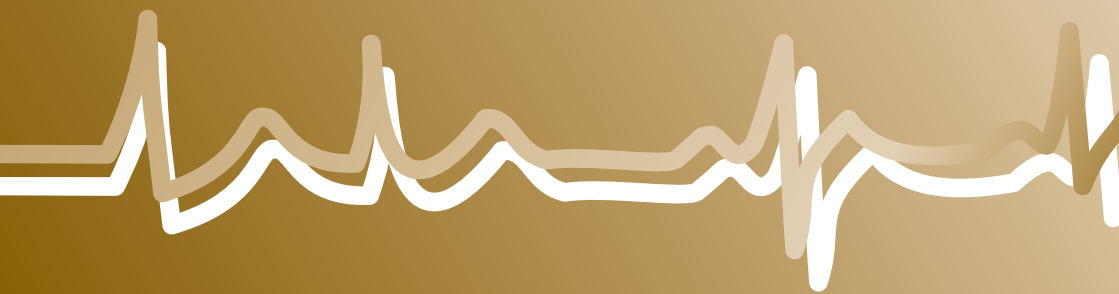
All sources that were used to fill out the questionnaire for the EHRA White Book 2015

· EHRA White Book 2014
 · National statistics office of Georgia
 · Georgian Heart Rhythm Association

Remarks

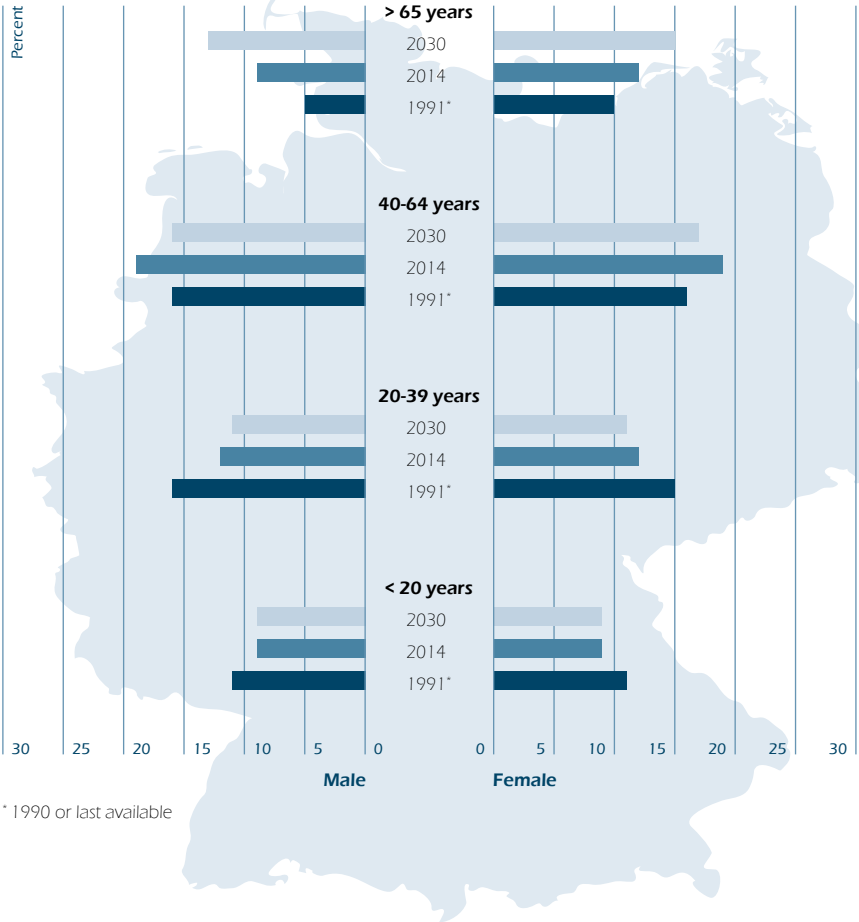
One centre didn't provide data.

GERMANY



1. Statistics

Age pyramid for Germany





Healthcare data		
Hospitals (per 100.000 population)	4,0	2011
Beds (per 100.000 population)	822,4	2011
Density of physicians (per 1.000 population)	3,8	2011
Density of nurses (per 1.000 population)	11,5	2011

Demographic information		
Population	80.996.685	2014
Population annual growth rate (%)	-0,2	2014
Life expectancy at birth	80	2014
Death rate (per 1.000 population)	10,6	2012
Live births (per 1.000 population)	8,2	2012

Economic information		
Gross domestic product (U.S dollar-billions)	3.820,46	2014*
Gross domestic product per capita (U.S dollar-units)	47.200,96	2014*
Total expenditure on health as % of GDP	11,3	2012
General government expenditure on health as % of total expenditure on health	76,5	2011
Private expenditure on health as % of total expenditure on health	23,5	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	40%

3. Healthcare System

Classical insurance model (Bismarck): working people are primarily insured, financed through salary dependent subscriptions, organized by independent, partially private, or self organized institutions.

Basic insurance availability	Yes
------------------------------	-----

Requirements for citizens to qualify for public insurance: None.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	98%	99%
Uninsured citizens	2%	1%

Distribution of insurance modality		
	2013	2014
Public insurance company	75%	87%
Private insurance company	10%	11%
Private co-payment	15%	2%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DGK Zertifizierung Spezielle Rhythmologie – Kardiale Device-therapie
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DGK Zertifizierung Spezielle Rhythmologie – Invasive Elektrophysiologie
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DGK Zertifizierung Spezielle Rhythmologie



National Cardiac Society supporting EHRA certification system	
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Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input checked="" type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for	
--------------------------------	--

	Specialist
Catheter ablation	No
ICD or pacemaker implants	No

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
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DGK, AG Rhythmologie

Required period of training to perform implantations	No
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Suggested period of training to perform implantations	No
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Training centres availability	
--------------------------------------	--

Pacemaker	not available
ICD implantation	not available
CRT implantation	not available
Electrophysiological studies and catheter ablation	not available
Atrial fibrillation ablation	not available

Number of universities (Schools of Medicine)	36
-----------------------------------------------------	-----------



Percentage of academic centres among all practicing EP centres	not available
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Percentage of academic centres among all practicing implanting devices centres	not available
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	1.010	980
Total Pacemaker units implanted	93.520	93.315
Thereof, New implants	76.282	75.575
Thereof, Replacements	17.238	17.740

Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	Yes	not available

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	465	670
Total CRT units implanted	8.859	10.378
Thereof, CRT pacemaker	not available	1.294
Thereof, CRT ICD	8.859	9.084

Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	Yes	not available



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	654	670
Total ICD units implanted	27.241*	48.595*
Thereof, Single chamber	12.070	12.186
Thereof, Dual chamber	8.105	6.365
First implants	20.175*	29.620*
Replacements	7.066*	18.975*
* CRT-D units included		
Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	Yes	not available

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	not available
Total loop recorders implanted	0	not available
Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	Yes	not available

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	not available	560
Total lead extraction procedures	0	4.963
Specialist performing lead extractions		
Cardiologists	Yes	not available
Surgeons	Yes	not available



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	Yes
-------------------------------------------------------------------------------------	------------

Official name: BOS

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	122	100
Number of ablations performed	33.420*	60.000
Mean number of ablations per centre	274	600
Number of AF ablations	11.697*	40.000
Number of ablation centres (> 50 AF ablations)	99	80
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	81	10
Number of LAA closures	not available	3.500
Number of centres (LAA closures)	not available	100

* strongly estimated

Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	not available


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					Ranking of importance*
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of referral	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

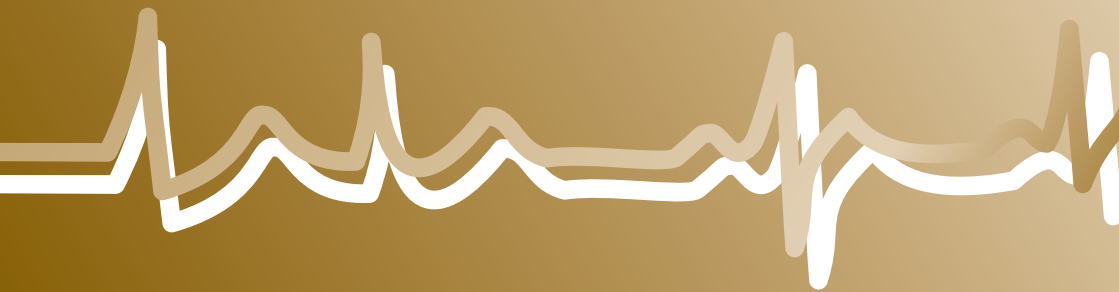
Name of National Cardiac Society, National Working Group or arrhythmia body

· Deutsche Gesellschaft für Kardiologie, Arbeitsgruppe Rhythmologie

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

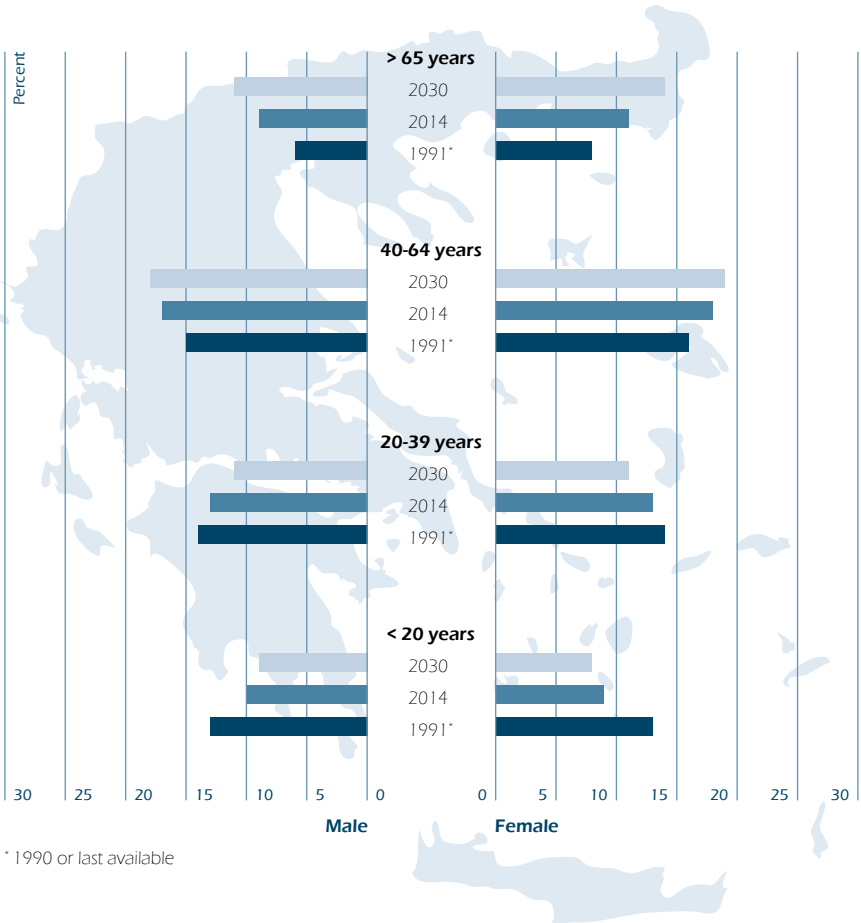
- EHRA White Book 2014
- Official statistics
- Survey from professional association
- Sales data
- Estimation

GREECE



1. Statistics

Age pyramid for Greece





Healthcare data		
Hospitals (per 100.000 population)	2,8	2009
Beds (per 100.000 population)	484,9	2009
Density of physicians (per 1.000 population)	6,1	2011
Density of nurses (per 1.000 population)	3,5	2009

Demographic information		
Population	10.775.557	2014
Population annual growth rate (%)	0,0	2014
Life expectancy at birth	80	2014
Death rate (per 1.000 population)	9,8	2011
Live births (per 1.000 population)	9,1	2012

Economic information		
Gross domestic product (U.S dollar-billions)	246,40	2014*
Gross domestic product per capita (U.S dollar-units)	22.317,82	2014*
Total expenditure on health as % of GDP	9,3	2012
General government expenditure on health as % of total expenditure on health	66,1	2011
Private expenditure on health as % of total expenditure on health	33,9	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

The Greek healthcare system is characterized by the coexistence of NHS, a compulsory social insurance and a voluntary private health insurance system. The NHS provides universal coverage to the population and offers equal access to health services for all and social cohesion. (WHO 2004)

Basic insurance availability	Yes
------------------------------	-----

Requirements for citizens to qualify for public insurance: Citizens have to pay every year their contribution to the public insurance system.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	85%	80%
Uninsured citizens	15%	20%

Distribution of insurance modality		
	2013	2014
Public insurance company	89%	89%
Private insurance company	10%	10%
Private co-payment	1%	1%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No

Comments: Yes, only in the private sector.



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input checked="" type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	National accreditation for pacemaker and ICD therapy. It is required a minimum of one year of training at an implanting centre.
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	Yes	1 year
-------------------------------------------------------------	------------	---------------

Suggested period of training to perform implantations	Yes	1 year
--------------------------------------------------------------	------------	---------------

Training centres availability	
Pacemaker	15
ICD implantation	8
CRT implantation	8
Electrophysiological studies and catheter ablation	8
Atrial fibrillation ablation	8

Number of universities (Schools of Medicine)	7
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	25%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	12%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	56	56
Total Pacemaker units implanted	7.800	8.000
Thereof, New implants	5.750	5.900
Thereof, Replacements	2.050	2.100

Specialist performing implants		
Cardiologists	Yes	97%
Surgeons	Yes	3%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	16	16
Total CRT units implanted	500	580
Thereof, CRT pacemaker	50	80
Thereof, CRT ICD	450	500

Specialist performing implants		
Cardiologists	Yes	98%
Surgeons	Yes	2%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	24	24
Total ICD units implanted	1.050	1.080
Thereof, Single chamber	210	250
Thereof, Dual chamber	840	830
First implants	815	818
Replacements	235	262

Specialist performing implants		
Cardiologists	Yes	98%
Surgeons	Yes	2%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	16	16
Total loop recorders implanted	120	150

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	4	4
Total lead extraction procedures	30	50

Specialist performing lead extractions		
Cardiologists	Yes	90%
Surgeons	Yes	10%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	Yes	Working Group on Cardiac Pacing and Electrophysiology

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
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11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	29	29
Number of ablations performed	1,440	1,653
Mean number of ablations per centre	50	57
Number of AF ablations	430	560
Number of ablation centres (> 50 AF ablations)	6	6
Number of VT/VF ablations	not available	180
Number of ablation centres (> 10 VT ablations on structural heart diseases)	6	6
Number of LAA closures	not available	10
Number of centres (LAA closures)	not available	2
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	75
Number of physicians under training to become independent electrophysiologists	not available	not available



Availability of a national registry for interventional electrophysiology	Yes
---------------------------------------------------------------------------------	------------

Official name: Working Group on Cardiac Pacing and Electrophysiology

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

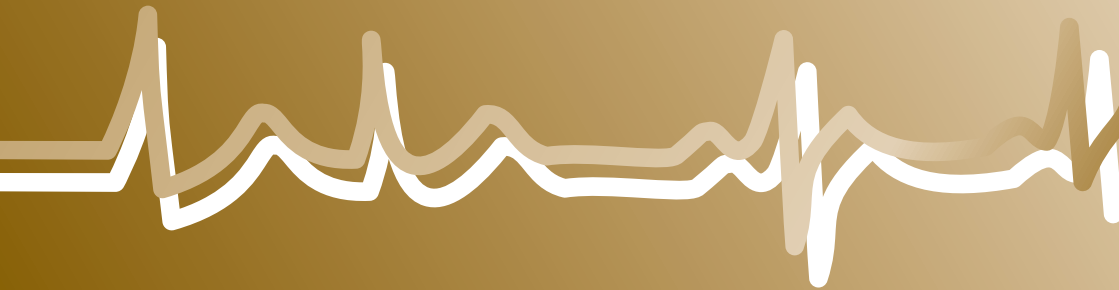
Name of National Cardiac Society, National Working Group or arrhythmia body

· Hellenic National Working Group on Cardiac Pacing and Electrophysiology

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

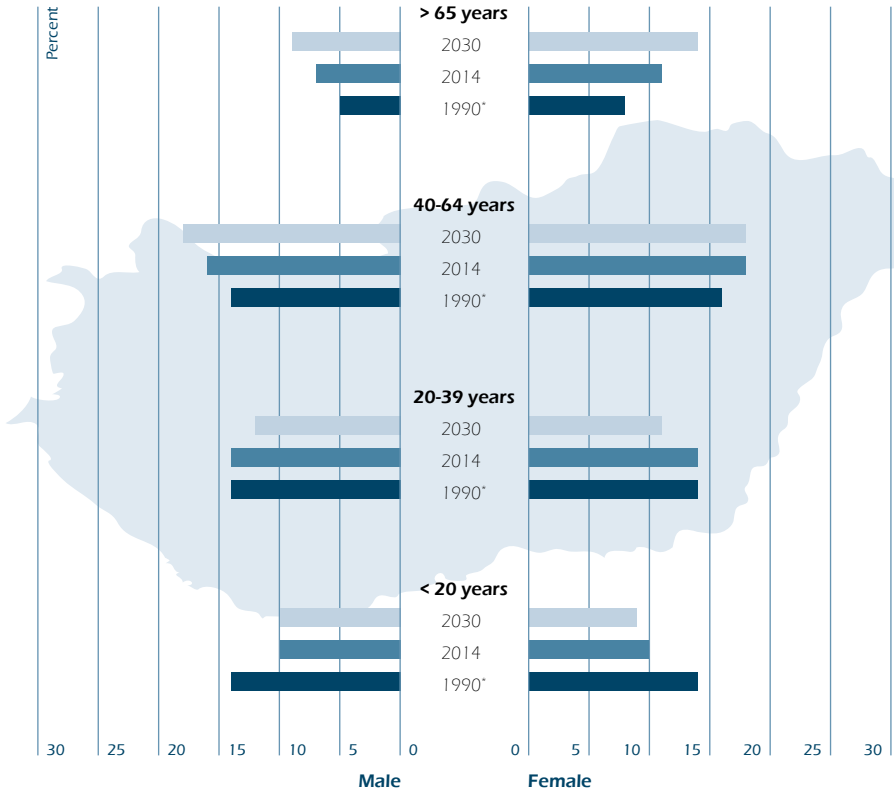
- EHRA White Book 2014
- Official statistics
- Survey from professional association
- Sales data
- Estimation

HUNGARY



1. Statistics

Age pyramid for Hungary



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	1,7	2011
Beds (per 100.000 population)	718,7	2011
Density of physicians (per 1.000 population)	3,0	2011
Density of nurses (per 1.000 population)	6,4	2011

Demographic information		
Population	9.919.128	2014
Population annual growth rate (%)	-0,2	2014
Life expectancy at birth	76	2014
Death rate (per 1.000 population)	13,1	2012
Live births (per 1.000 population)	9,1	2012

Economic information		
Gross domestic product (U.S dollar-billions)	129,69	2014*
Gross domestic product per capita (U.S dollar-units)	13.153,84	2014*
Total expenditure on health as % of GDP	7,8	2012
General government expenditure on health as % of total expenditure on health	65,0	2011
Private expenditure on health as % of total expenditure on health	35,0	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

The Hungarian Healthcare System is organised through a National Health Insurance Fund which is available for all citizens registered at the Fund.

Basic insurance availability	Yes
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Requirements for citizens to qualify for public insurance: Age under 18 or retired; or valid job contract; or regular payment of the insurance fee.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	98%	98%
Uninsured citizens	2%	2%

Distribution of insurance modality		
	2013	2014
Public insurance company	99%	99%
Private insurance company	1%	1%
Private co-payment	0%	0%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Arrhythmologist Licence for Pacemaker/ICD/CRT (Device Therapy)
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Arrhythmologist Licence for Cardiac Electrophysiology and Ablation
Allied professionals	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Arrhythmologist Licence for Pacemaker/ICD/CRT (Device Therapy) for Allied Professionals
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
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Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input checked="" type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
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		Specialist
Catheter ablation	Yes	Cardiologist, cardiologist fellow
ICD or pacemaker implants	Yes	Cardiologist, cardiologist fellow, heart surgeon, anaesthesiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
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Hungarian Society of Cardiology

Required period of training to perform implantations	No
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Suggested period of training to perform implantations	Yes	2 years
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Training centres availability	
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Pacemaker	6
ICD implantation	6
CRT implantation	6
Electrophysiological studies and catheter ablation	6
Atrial fibrillation ablation	6

Number of universities (Schools of Medicine)	4
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Percentage of academic centres among all practicing EP centres	36%
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Percentage of academic centres among all practicing implanting devices centres	22%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	17	18
Total Pacemaker units implanted	6.143	6.393
Thereof, New implants	4.733	4.880
Thereof, Replacements	1.410	1.513

Specialist performing implants		
Cardiologists	Yes	90%
Surgeons	Yes	5%
Others: Anaesthesiologists	Yes	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	13	13
Total CRT units implanted	984	941
Thereof, CRT pacemaker	483	471
Thereof, CRT ICD	501	470

Specialist performing implants		
Cardiologists	Yes	95%
Surgeons	Yes	2%
Others: Anaesthesiologists	Yes	3%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	14	13
Total ICD units implanted	940	956
Thereof, Single chamber	497	729
Thereof, Dual chamber	443	227
First implants	710	753
Replacements	230	203

Specialist performing implants		
Cardiologists	Yes	95%
Surgeons	Yes	2%
Others: Anaesthesiologists	Yes	3%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	11	12
Total loop recorders implanted	77	120

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	7	8
Total lead extraction procedures	126	97

Specialist performing lead extractions		
Cardiologists	Yes	95%
Surgeons	Yes	5%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	Hungarian Online Pacemaker Registry
Pacing	Yes	Hungarian Online Pacemaker Registry
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	Yes
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Official name: Hungarian Online Pacemaker Registry and individual paper based data collection from centers.

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
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Official name: National Health Insurance Fund.

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	11	11
Number of ablations performed	3.356	3.469
Mean number of ablations per centre	305	315
Number of AF ablations	859	1.081
Number of ablation centres (> 50 AF ablations)	5	6
Number of VT/VF ablations	not available	81
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	4
Number of LAA closures	not available	67
Number of centres (LAA closures)	not available	6
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	25
Number of physicians under training to become independent electrophysiologists	not available	15



Availability of a national registry for interventional electrophysiology	No
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12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	Yes
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

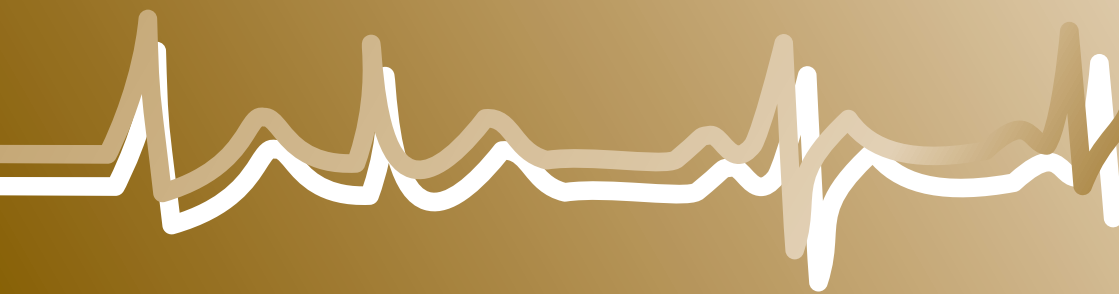
Name of National Cardiac Society, National Working Group or arrhythmia body

· Working Group on Cardiac Arrhythmias and Pacing, Hungarian Society of Cardiology

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

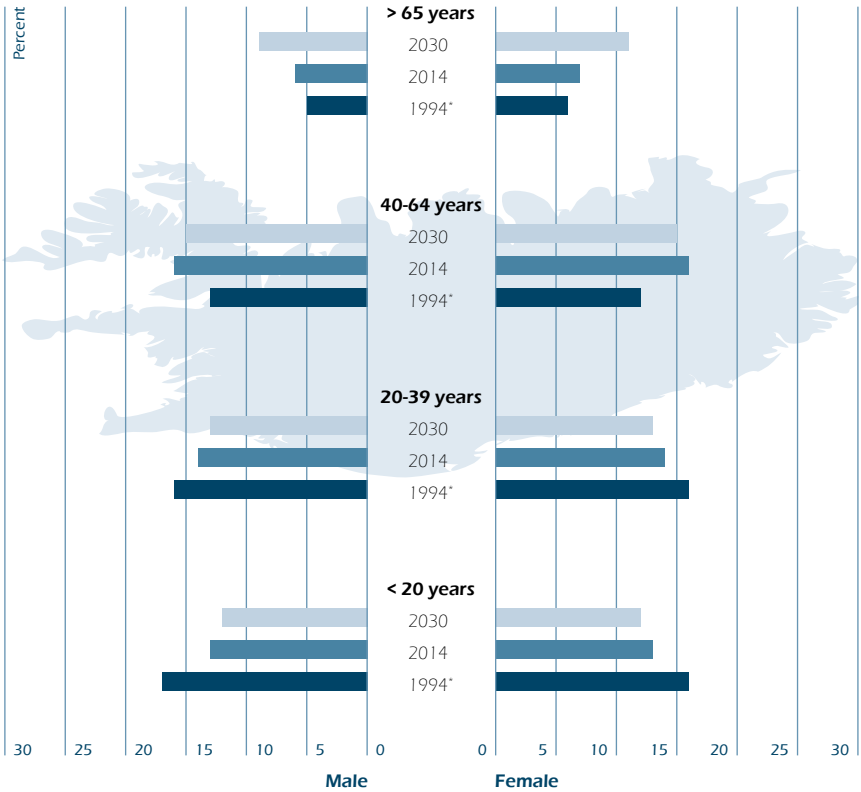
- EHRA White Book 2014
- Official statistics - National Health Insurance Fund
- Survey from professional association - Working Group on Cardiac Arrhythmias and Pacing, Hungarian Society of Cardiology

ICELAND



1. Statistics

Age pyramid for Iceland



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	2,5	2012
Beds (per 100.000 population)	327,4	2012
Density of physicians (per 1.000 population)	3,6	2012
Density of nurses (per 1.000 population)	16,0	2012

Demographic information

Population	317.351	2014
Population annual growth rate (%)	0,7	2014
Life expectancy at birth	81	2014
Death rate (per 1.000 population)	6,3	2009
Live births (per 1.000 population)	14,1	2012

Economic information

Gross domestic product (U.S dollar-billions)	16,20	2014*
Gross domestic product per capita (U.S dollar-units)	50.006,39	2014*
Total expenditure on health as % of GDP	9,1	2012
General government expenditure on health as % of total expenditure on health	80,7	2011
Private expenditure on health as % of total expenditure on health	19,3	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	45%	45%

3. Healthcare System

National Health System with universal access.

Basic insurance availability	Yes
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Requirements for citizens to qualify for public insurance: Permanent resident.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	0%	0%

Possibility to subscribing to private health insurance plans	No
--------------------------------------------------------------	----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
----------------------------------------------------------------------	--

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
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		Specialist
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist/Cardiac Surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	No
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Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
--------------------------------------	--

Pacemaker	0
ICD implantation	0
CRT implantation	0
Electrophysiological studies and catheter ablation	0
Atrial fibrillation ablation	0

Number of universities (Schools of Medicine)	1
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	100%
-----------------------------------------------------------------------	-------------

Percentage of academic centres among all practicing implanting devices centres	100%
---------------------------------------------------------------------------------------	-------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	2	2
Total Pacemaker units implanted	314	298
Thereof, New implants	259	257
Thereof, Replacements	55	41

Specialist performing implants		
Cardiologists	Yes	50%
Surgeons	Yes	50%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	1	1
Total CRT units implanted	14	26
Thereof, CRT pacemaker	8	16
Thereof, CRT ICD	6	10

Specialist performing implants		
Cardiologists	Yes	75%
Surgeons	Yes	25%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	1	1
Total ICD units implanted	54	59
Thereof, Single chamber	29	22
Thereof, Dual chamber	25	37
First implants	31	55
Replacements	23	4
Specialist performing implants		
Cardiologists	Yes	50%
Surgeons	Yes	50%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	1	1
Total loop recorders implanted	6	4
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	0	1
Total lead extraction procedures	0	1
Specialist performing lead extractions		
Cardiologists	Yes	50%
Surgeons	Yes	50%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for

	Official name
ICD	No
Pacing	No
Electrophysiology	No

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	1	1
Number of ablations performed	80	76
Mean number of ablations per centre	80	76
Number of AF ablations	23	33
Number of ablation centres (> 50 AF ablations)	0	0
Number of VT/VF ablations	not available	6
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0
Number of LAA closures	not available	0
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	2
Number of physicians under training to become independent electrophysiologists	not available	0


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No answer
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

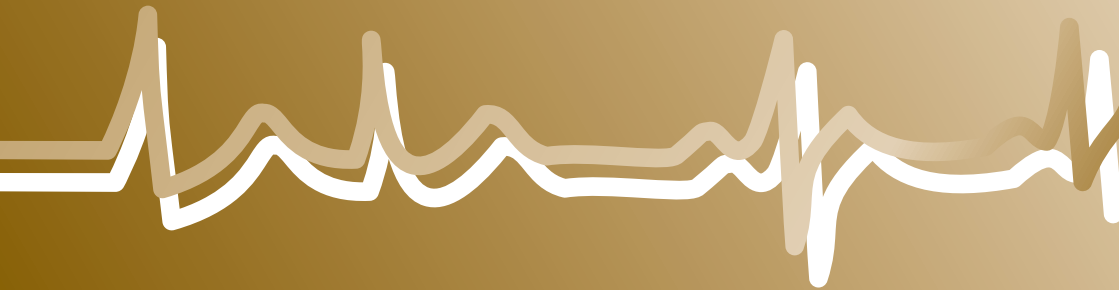
Name of National Cardiac Society, National Working Group or arrhythmia body

· Icelandic Cardiac Society

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

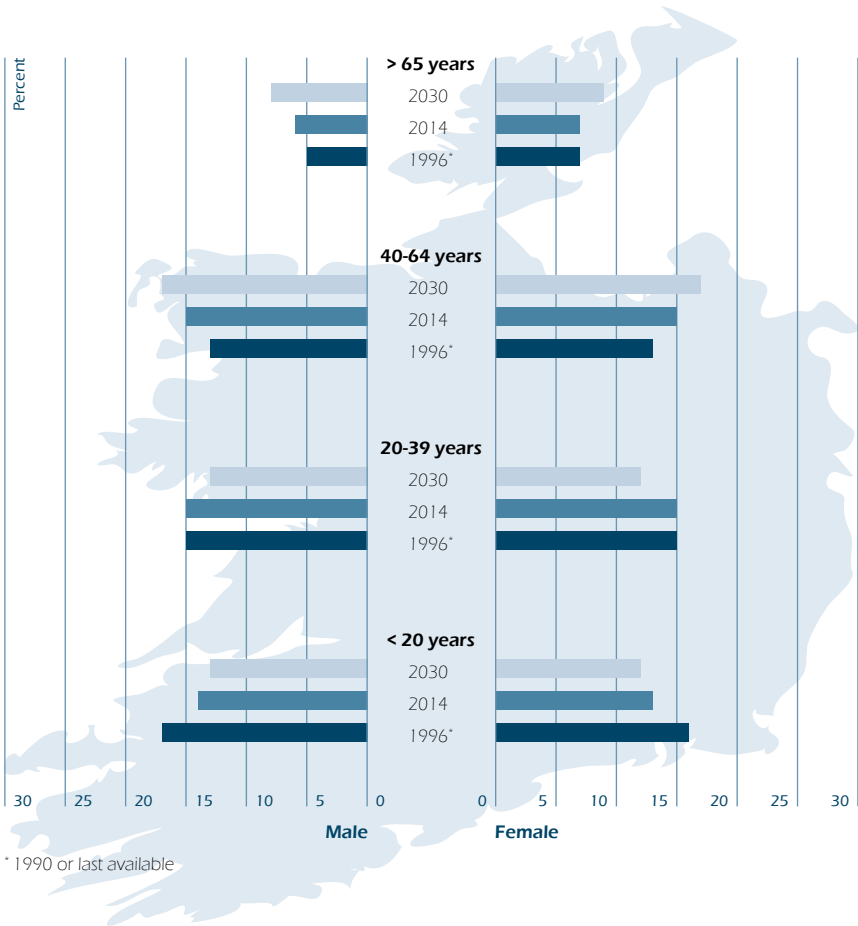
- EHRA White Book 2014
- Survey from professional association
- Hospital Statistics

IRELAND



1. Statistics

Age pyramid for Ireland



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	2,1	2012
Beds (per 100.000 population)	294,8	2011
Density of physicians (per 1.000 population)	2,7	2012
Density of nurses (per 1.000 population)	12,2	2011

Demographic information

Population	4.832.765	2014
Population annual growth rate (%)	1,2	2014
Life expectancy at birth	81	2014
Death rate (per 1.000 population)	6,1	2010
Live births (per 1.000 population)	15,8	2012

Economic information

Gross domestic product (U.S dollar-billions)	245,82	2014*
Gross domestic product per capita (U.S dollar-units)	51.158,71	2014*
Total expenditure on health as % of GDP	8,1	2012
General government expenditure on health as % of total expenditure on health	67,0	2011
Private expenditure on health as % of total expenditure on health	33,0	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

National Health System and Private Healthcare.

Basic insurance availability	Yes
------------------------------	-----

Requirements for citizens to qualify for public insurance: All citizens entitled to national health service.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	48%	48%
Uninsured citizens	52%	52%

Distribution of insurance modality		
	2013	2014
Public insurance company	48%	48%
Private insurance company	52%	52%
Private co-payment	0%	0%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments:	Above answers apply to the national health Service where physicians are salaried in the private healthcare system physicians are reimbursed per procedure.				Above answers apply to the national health Service which operate under a fixed budget. In the private healthcare system the private hospitals are reimbursed per procedure.			

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input checked="" type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Majority are trained in USA in accredited programs
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Majority are trained in USA in accredited programs
Allied professionals	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HRS exam is encouraged
Training centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RCPI



National Cardiac Society supporting EHRA certification system	
Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input checked="" type="checkbox"/>

Specialist required for		
	Specialist	
Catheter ablation	Yes	Majority are trained in USA in accredited programs
ICD or pacemaker implants	Yes	Majority are trained in USA in accredited programs

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
------------------------------------------------------------------------------------------------------	------------

Comments: Majority are trained in USA in accredited programs - accredited by ACC - HRS. There is not a separate accreditation process for the subspecialty of cardiac electrophysiology in Ireland as majority are trained in USA.

Required period of training to perform implantations	Yes	6 years
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Cardiology training program

Suggested period of training to perform implantations	Yes	6 years
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Cardiology training program

Training centres availability	
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Pacemaker	10
ICD implantation	10
CRT implantation	10
Electrophysiological studies and catheter ablation	6
Atrial fibrillation ablation	6

Number of universities (Schools of Medicine)	5
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	50%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	63%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	17	17
Total Pacemaker units implanted	2,288	not available
Thereof, New implants	not available	not available
Thereof, Replacements	not available	not available

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	17	17
Total CRT units implanted	378	not available
Thereof, CRT pacemaker	67	not available
Thereof, CRT ICD	311	not available

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2013		2014
Implanting centres	17		17
Total ICD units implanted	732		not available
Thereof, Single chamber	not available		not available
Thereof, Dual chamber	not available		not available
First implants	not available		not available
Replacements	not available		not available
Specialist performing implants			
Cardiologists		Yes	100%
Surgeons		No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2013		2014
Implanting centres	17		17
Total loop recorders implanted	505		not available
Specialist performing implants			
Cardiologists		Yes	100%
Surgeons		No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions			
	2013		2014
Hospitals performed lead extractions	2		2
Total lead extraction procedures	not available		not available
Specialist performing lead extractions			
Cardiologists		Yes	50%
Surgeons		Yes	50%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for

		Official name
ICD	Yes	G-pace / Heart Rhythm Ireland but not 100% participation
Pacing	Yes	G-pace / Heart Rhythm Ireland but not 100% participation
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No answer
-------------------------------------------------------------------------------------	------------------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
-------------------------------------------------------------------------------------------------------------------------------------	------------

Official name: Irish Medicines Board

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	12	12
Number of ablations performed	1,000	not available
Mean number of ablations per centre	83	not available
Number of AF ablations	450	not available
Number of ablation centres (> 50 AF ablations)	2	not available
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	not available


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No answer
U.S.	Yes
European	No answer

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of referral	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

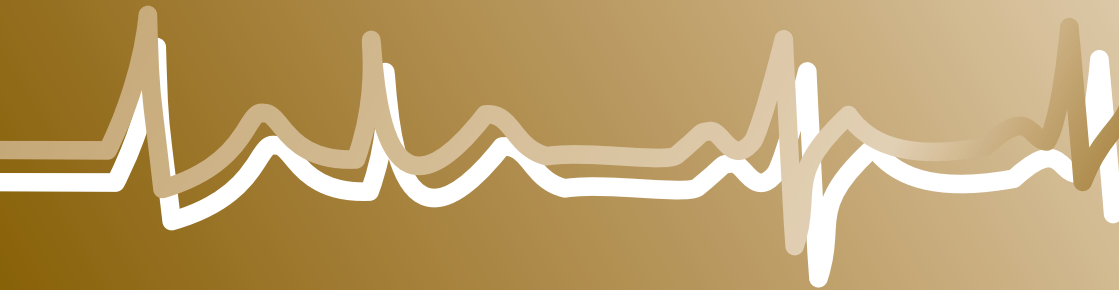
Name of National Cardiac Society, National Working Group or arrhythmia body

· EP Subgroup of Irish Cardiac Society

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

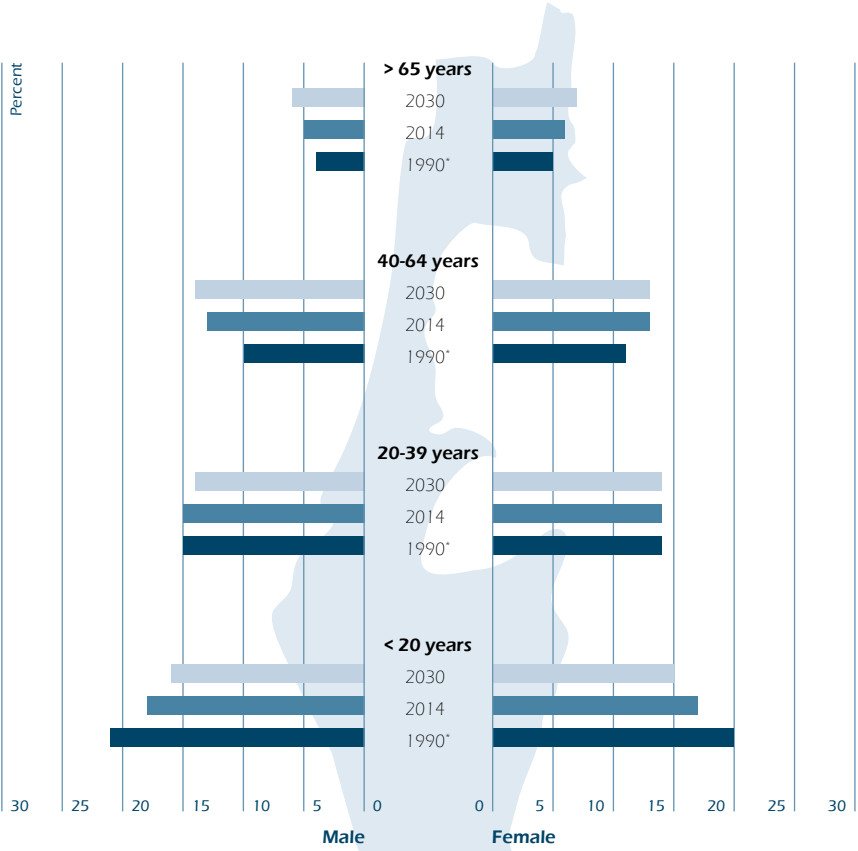
- EHRA White Book 2014
- Central Statistics Office, Health Insurance Authority Report
- Department of Health, Department of Finance
- Industry

ISRAEL



1. Statistics

Age pyramid for Israel



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	1,2	2012
Beds (per 100.000 population)	324,5	2012
Density of physicians (per 1.000 population)	3,3	2011
Density of nurses (per 1.000 population)	5,0	2011

Demographic information

Population	7.821.850	2014
Population annual growth rate (%)	1,5	2014
Life expectancy at birth	81	2014
Death rate (per 1.000 population)	5,2	2011
Live births (per 1.000 population)	21,6	2012

Economic information

Gross domestic product (U.S dollar-billions)	304,98	2014*
Gross domestic product per capita (U.S dollar-units)	37.914,14	2014*
Total expenditure on health as % of GDP	7,5	2012
General government expenditure on health as % of total expenditure on health	61,2	2011
Private expenditure on health as % of total expenditure on health	38,8	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

National Health Care system; National Insurance; Private sector supplements.

Basic insurance availability	Yes

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	0%	0%

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input checked="" type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: ESC/EHRA/ACC/AHA

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ministry of Health
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ministry of Health


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

	Specialist	
Catheter ablation	Yes	Electrophysiologist
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation
No
Required period of training to perform implantations
No
Suggested period of training to perform implantations
No
Training centres availability

Pacemaker	1
ICD implantation	1
CRT implantation	1
Electrophysiological studies and catheter ablation	1
Atrial fibrillation ablation	1

Number of universities (Schools of Medicine)
6



Percentage of academic centres among all practicing EP centres	100%
-----------------------------------------------------------------------	-------------

Percentage of academic centres among all practicing implanting devices centres	100%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	20	20
Total Pacemaker units implanted	3,966	4,200
Thereof, New implants	not available	not available
Thereof, Replacements	not available	not available

Specialist performing implants		
Cardiologists	Yes	98%
Surgeons	Yes	2%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	20	20
Total CRT units implanted	1,216	1,330
Thereof, CRT pacemaker	219	80
Thereof, CRT ICD	997	1,250

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	20	20
Total ICD units implanted	1,277	1,685
Thereof, Single chamber	544	708
Thereof, Dual chamber	733	977
First implants	not available	1,265
Replacements	not available	420

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	20	20
Total loop recorders implanted	240	225

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	5	5
Total lead extraction procedures	not available	80

Specialist performing lead extractions		
Cardiologists	Yes	80%
Surgeons	Yes	20%



10. Device specific

Availability of remote monitoring of devices	Yes
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National registry for

		Official name
ICD	Yes	Israeli ICD registry
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
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11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	16	16
Number of ablations performed	not available	not available
Mean number of ablations per centre	not available	not available
Number of AF ablations	not available	550
Number of ablation centres (> 50 AF ablations)	5	4
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	4	4
Number of LAA closures	not available	30
Number of centres (LAA closures)	not available	5
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	35
Number of physicians under training to become independent electrophysiologists	not available	1


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	Yes
European	Yes

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of referral	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

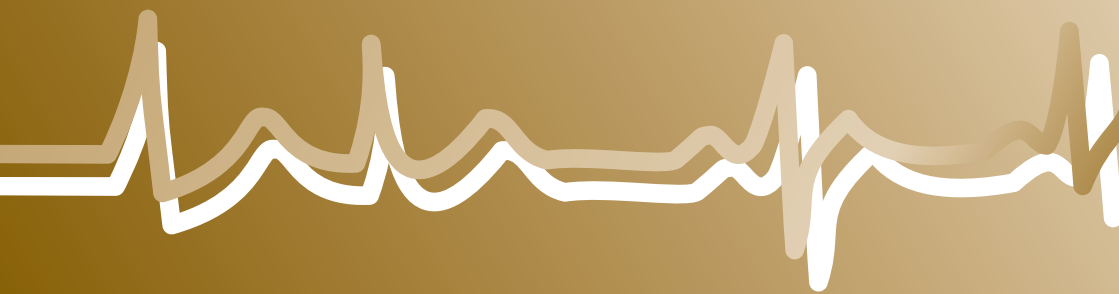
Name of National Cardiac Society, National Working Group or arrhythmia body

· Israeli Working Group for Pacing and Electrophysiology

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

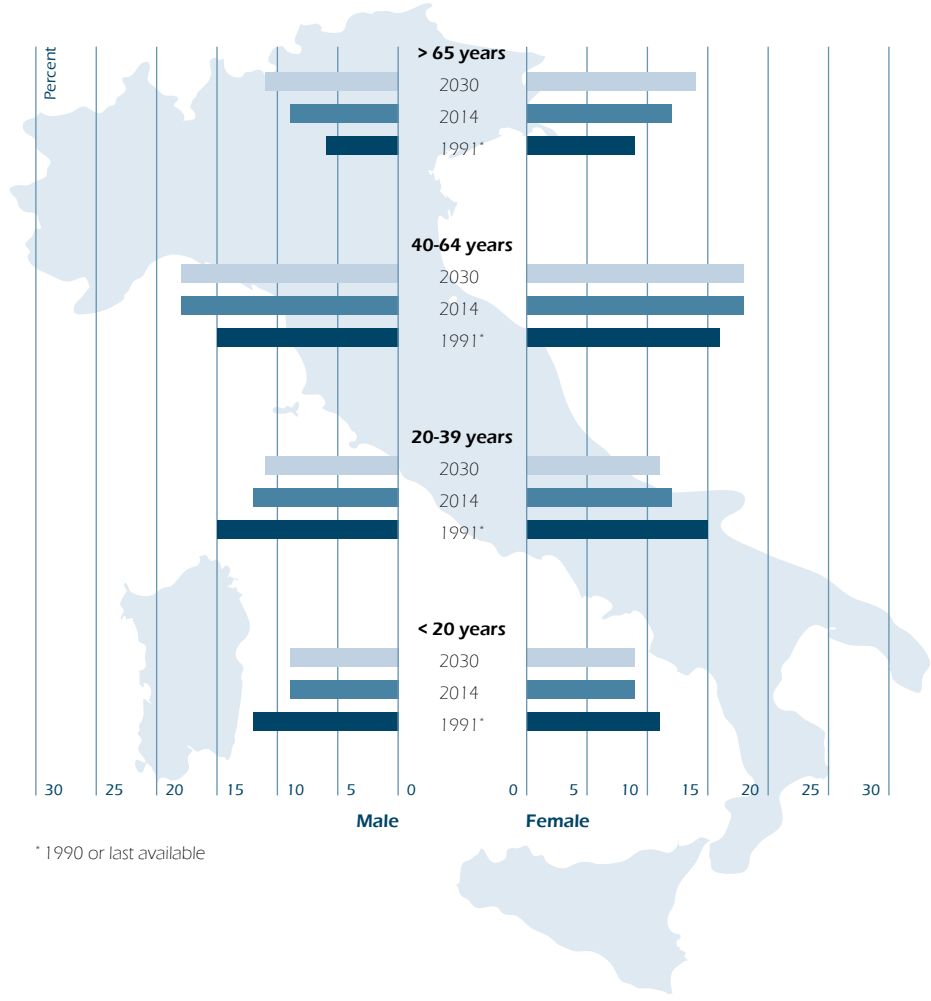
- EHRA White Book 2014
- Survey from professional association
- Sales data
- Estimation

ITALY



1. Statistics

Age pyramid for Italy



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	2,0	2011
Beds (per 100.000 population)	350,2	2011
Density of physicians (per 1.000 population)	4,2	2011
Density of nurses (per 1.000 population)	6,7	2011

Demographic information		
Population	61.680.122	2014
Population annual growth rate (%)	0,3	2014
Life expectancy at birth	82	2014
Death rate (per 1.000 population)	9,7	2010
Live births (per 1.000 population)	8,8	2012

Economic information		
Gross domestic product (U.S dollar-billions)	2.129,28	2014*
Gross domestic product per capita (U.S dollar-units)	35.511,75	2014*
Total expenditure on health as % of GDP	9,2	2012
General government expenditure on health as % of total expenditure on health	77,8	2011
Private expenditure on health as % of total expenditure on health	22,2	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

National Health Care System with the possibility of Private Insurance.

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: Italian citizen.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	0%	0%

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AIAC (Italian Heart Rhythm Association) Certification
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AIAC (Italian Heart Rhythm Association) Certification
Allied professionals	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EHRA Certification
Training centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AIAC (Italian Heart Rhythm Association) Certification



National Cardiac Society supporting EHRA certification system	
----------------------------------------------------------------------	--

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input checked="" type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for	
--------------------------------	--

	Specialist
Catheter ablation	No
ICD or pacemaker implants	No

Official national competency guidelines for electrophysiological studies or catheter ablation	No
------------------------------------------------------------------------------------------------------	-----------

Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
--------------------------------------	--

Pacemaker	not available
ICD implantation	not available
CRT implantation	not available
Electrophysiological studies and catheter ablation	not available
Atrial fibrillation ablation	not available

Number of universities (Schools of Medicine)	35
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Percentage of academic centres among all practicing EP centres	7%
----------------------------------------------------------------	----

Percentage of academic centres among all practicing implanting devices centres	10%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres

	2013	2014
Implanting centres	420	433
Total Pacemaker units implanted	62.198	63.442
Thereof, New implants	44.361*	44.409
Thereof, Replacements	17.837*	19.033

* 2013 data updated

Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2013	2014
Implanting centres	361	378
Total CRT units implanted	12.148	12.336
Thereof, CRT pacemaker	2.010	2.112
Thereof, CRT ICD	10.138	10.224

Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	365	397
Total ICD units implanted	12,556	13,729
Thereof, Single chamber	5,396	6,128
Thereof, Dual chamber	7,160	7,601
First implants	8,538	9,336
Replacements	4,018	4,393

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	365	400
Total loop recorders implanted	3,700	3,900

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	not available	not available
Total lead extraction procedures	not available	not available

Specialist performing lead extractions		
Cardiologists	Yes	100%
Surgeons	No	0%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	RIP&RID
Pacing	Yes	RIP&RID
Electrophysiology	Yes	AIAC (Italian Heart Rhythm Association) EPS Registry

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
-------------------------------------------------------------------------------------------------------------------------------------	------------

Official name: Italian Ministry of Health

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	not available	not available
Number of ablations performed	not available	not available
Mean number of ablations per centre	not available	not available
Number of AF ablations	not available	not available
Number of ablation centres (> 50 AF ablations)	not available	not available
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	not available



Availability of a national registry for interventional electrophysiology

Yes

Official name: AIAC Registry (starting in 2015)

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					Ranking of importance*
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

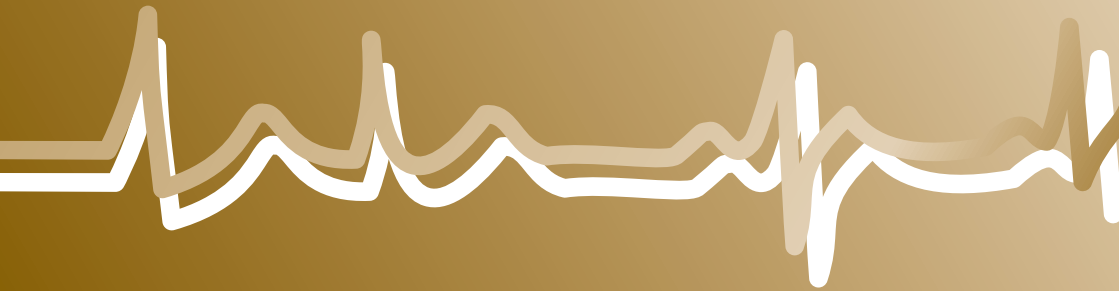
Name of National Cardiac Society, National Working Group or arrhythmia body

· AIAC – Associazione Italiana Aritmologia e Cardioritmologia (Italian Heart Rhythm Association)

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

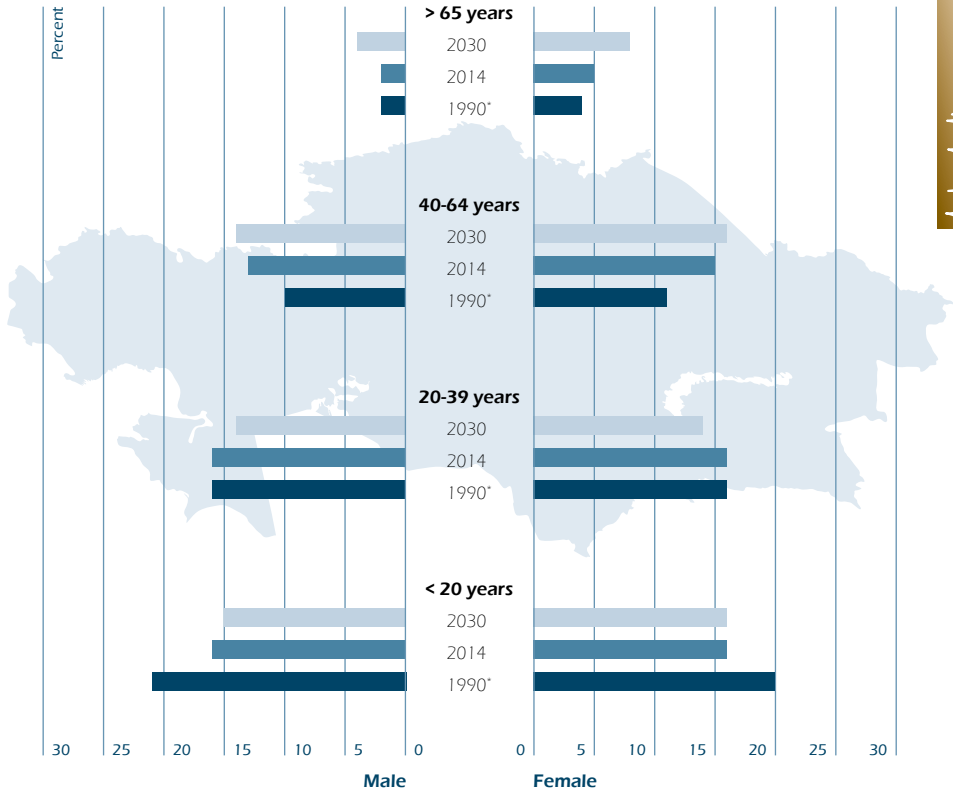
- EHRA White Book 2014
- Official statistics
- Survey from professional association
- Sales data
- Estimation

KAZAKHSTAN



1. Statistics

Age pyramid for Kazakhstan



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	5,5	2012
Beds (per 100.000 population)	700,7	2012
Density of physicians (per 1.000 population)	3,5	2012
Density of nurses (per 1.000 population)	8,0	2012

Demographic information		
Population	17.948.816	2014
Population annual growth rate (%)	1,2	2014
Life expectancy at birth	70	2014
Death rate (per 1.000 population)	8,9	2010
Live births (per 1.000 population)	22,7	2012

Economic information		
Gross domestic product (U.S dollar-billions)	225,62	2014*
Gross domestic product per capita (U.S dollar-units)	12.950,34	2014*
Total expenditure on health as % of GDP	4,2	2012
General government expenditure on health as % of total expenditure on health	57,9	2011
Private expenditure on health as % of total expenditure on health	42,1	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	27%	23,5%

3. Healthcare System

Health care in Kazakhstan is provided by a network of primary, secondary and tertiary care facilities. Health care facilities are largely owned and operated by the public sector represented by the Ministry of Health. Health insurance is now primarily provided by the government in the public sector.

Basic insurance availability	No	
------------------------------	----	--

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2013	2014
Public insurance company	not available	not available
Private insurance company	not available	not available
Private co-payment	not available	not available

Possibility to subscribing to private health insurance plans	Yes	
--------------------------------------------------------------	-----	--

Co-payment necessary for the following therapy		
ICD devices		No
Pacemakers		No
Ablation		No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

The only limit for reimbursement is not to have 2 or more hospitalizations of one patient in period of 1 month.

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input checked="" type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input checked="" type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
		Specialist
Catheter ablation	Yes	Interventional cardiologist or cardiac surgeon, specially trained for catheter ablation
ICD or pacemaker implants	Yes	Interventional cardiologist or cardiac surgeon, specially trained for device implantation

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	Yes	1 year
--------------------------------------------------------------	------------	---------------

Training centres availability	
Pacemaker	2
ICD implantation	2
CRT implantation	2
Electrophysiological studies and catheter ablation	2
Atrial fibrillation ablation	1

Number of universities (Schools of Medicine)	7
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	0%
----------------------------------------------------------------	----

Percentage of academic centres among all practicing implanting devices centres	0%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	27	22
Total Pacemaker units implanted	1,489	2,355
Thereof, New implants	1,396	not available
Thereof, Replacements	93	not available

Specialist performing implants		
Cardiologists	not available	not available
Surgeons	not available	not available

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	9	13
Total CRT units implanted	209	262
Thereof, CRT pacemaker	26	not available
Thereof, CRT ICD	183	not available

Specialist performing implants		
Cardiologists	not available	not available
Surgeons	not available	not available



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	12	15
Total ICD units implanted	221	402
Thereof, Single chamber	52	not available
Thereof, Dual chamber	169	not available
First implants	198	not available
Replacements	23	not available
Specialist performing implants		
Cardiologists		not available
Surgeons		not available

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	6	5
Total loop recorders implanted	42	27
Specialist performing implants		
Cardiologists		not available
Surgeons		not available

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	2	0
Total lead extraction procedures	not available	0
Specialist performing lead extractions		No



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
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Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
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11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	7	9
Number of ablations performed	1,470	2,018
Mean number of ablations per centre	210	224
Number of AF ablations	268	524
Number of ablation centres (> 50 AF ablations)	2	4
Number of VT/VF ablations	not available	298
Number of ablation centres (> 10 VT ablations on structural heart diseases)	14	4
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	4
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	not available


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No answer
U.S.	No answer
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1

1 = no obstacle

13. Sources

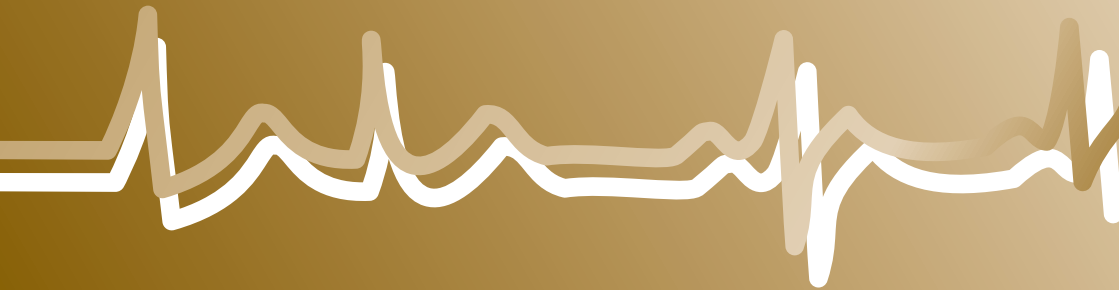
Name of National Cardiac Society, National Working Group or arrhythmia body

· Association of Cardiologists of Kazakhstan, Kazakh Arrhythmological Society

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

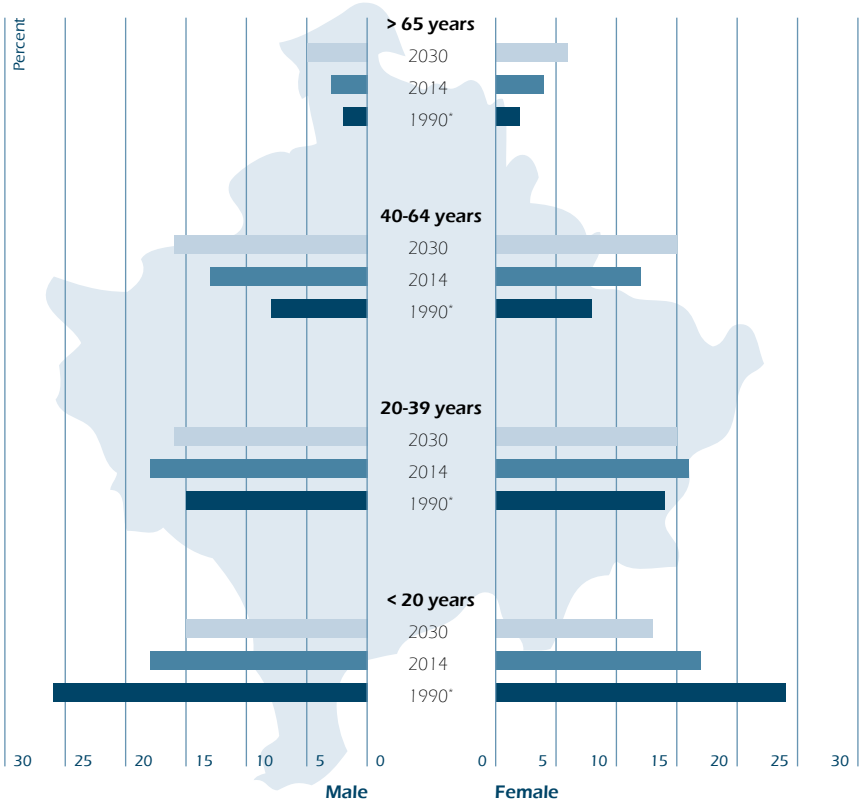
- EHRA White Book 2014
- Survey from professional association
- Official statistics

KOSOVO



1. Statistics

Age pyramid for Kosovo



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	not available	not available
Beds (per 100.000 population)	not available	not available
Density of physicians (per 1.000 population)	not available	not available
Density of nurses (per 1.000 population)	not available	not available

Demographic information

Population	1.859.203	2014
Population annual growth rate (%)	0,6	2014
Life expectancy at birth	71	2014
Death rate (per 1.000 population)	not available	not available
Live births (per 1.000 population)	not available	not available

Economic information

Gross domestic product (U.S dollar-billions)	7,49	2014*
Gross domestic product per capita (U.S dollar-units)	not available	not available
Total expenditure on health as % of GDP	not available	not available
General government expenditure on health as % of total expenditure on health	not available	not available
Private expenditure on health as % of total expenditure on health	not available	not available

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

Public Health Services. Health care system in Kosovo is organized in three sectors including: primary, secondary and tertiary health care. The highest health care authority in Kosovo is Ministry of Health of Kosovo.

Basic insurance availability	No	
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Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2013	2014
Public insurance company	not available	not available
Private insurance company	not available	not available
Private co-payment	not available	not available

Possibility to subscribing to private health insurance plans	No answer	
--------------------------------------------------------------	-----------	--

Co-payment necessary for the following therapy		
ICD devices		No answer
Pacemakers		No answer
Ablation		No answer



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
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Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for	
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	Specialist
Catheter ablation	No answer
ICD or pacemaker implants	Yes Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	No answer
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Suggested period of training to perform implantations	No answer
--------------------------------------------------------------	------------------

Training centres availability	
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Pacemaker	2
ICD implantation	1
CRT implantation	not available
Electrophysiological studies and catheter ablation	not available
Atrial fibrillation ablation	not available

Number of universities (Schools of Medicine)	1
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	not available
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Percentage of academic centres among all practicing implanting devices centres	not available
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	2
Total Pacemaker units implanted	not available	127
Thereof, New implants	not available	120
Thereof, Replacements	not available	7

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	0
Total CRT units implanted	not available	0
Thereof, CRT pacemaker	not available	0
Thereof, CRT ICD	not available	0

Specialist performing implants		
Cardiologists	No	0%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	1
Total ICD units implanted	not available	3
Thereof, Single chamber	not available	0
Thereof, Dual chamber	not available	3
First implants	not available	not available
Replacements	not available	not available

Specialist performing implants		
Cardiologists	Yes	60%
Surgeons	No	0%
Others: Electrophysiology technical specialist	Yes	40%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	0
Total loop recorders implanted	not available	0

Specialist performing implants		
Cardiologists	No	0%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	not available	0
Total lead extraction procedures	not available	0

Specialist performing lead extractions		
Cardiologists	No	0%
Surgeons	No	0%



10. Device specific

Availability of remote monitoring of devices	No
-----------------------------------------------------	-----------

National registry for

	Official name
ICD	No
Pacing	No
Electrophysiology	No

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	not available	0
Number of ablations performed	not available	0
Mean number of ablations per centre	not available	0
Number of AF ablations	not available	0
Number of ablation centres (> 50 AF ablations)	not available	0
Number of VT/VF ablations	not available	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	0
Number of LAA closures	not available	0
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	0
Number of physicians under training to become independent electrophysiologists	not available	0


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No answer
U.S.	No answer
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	3
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	4
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	5

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

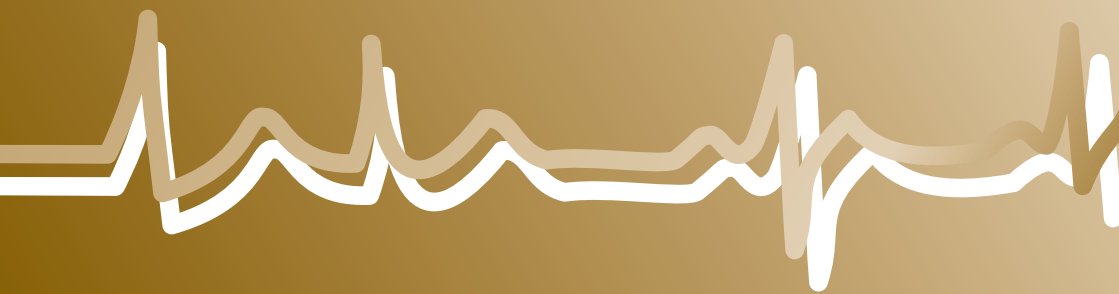
Name of National Cardiac Society, National Working Group or arrhythmia body

· Kosovo Society of Cardiology (KSC)

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

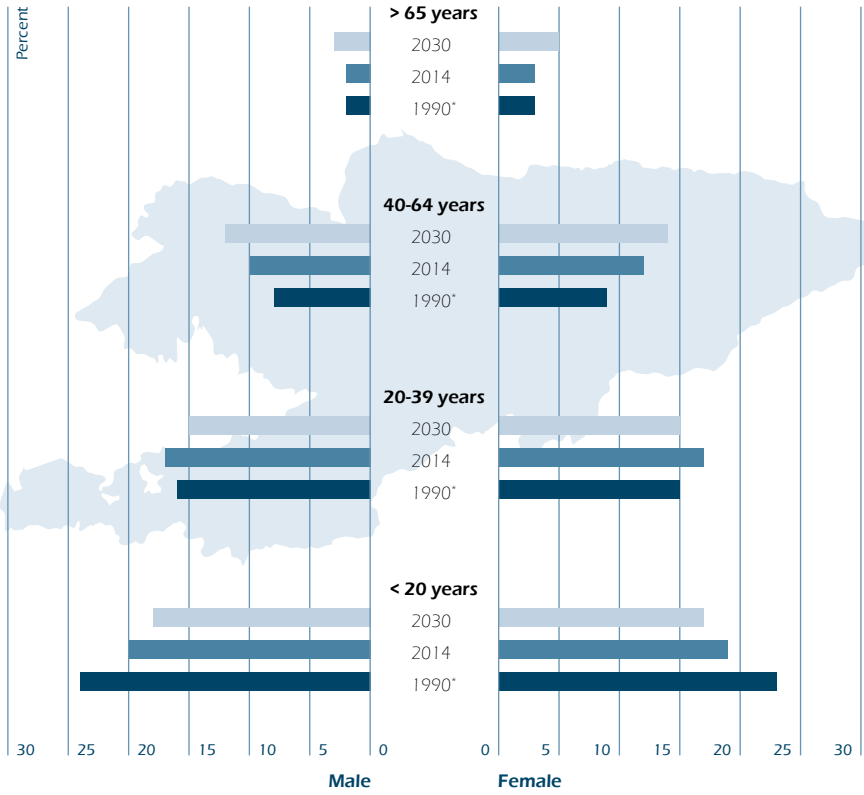
 · Ministry of Health
 · Information from centres

KYRGYZSTAN



1. Statistics

Age pyramid for Kyrgyzstan



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	2,6	2012
Beds (per 100.000 population)	476,1	2012
Density of physicians (per 1.000 population)	2,0	2012
Density of nurses (per 1.000 population)	6,1	2012

Demographic information		
Population	5.604.212	2014
Population annual growth rate (%)	1,0	2014
Life expectancy at birth	70	2014
Death rate (per 1.000 population)	6,6	2010
Live births (per 1.000 population)	27,1	2011

Economic information		
Gross domestic product (U.S dollar-billions)	7,65	2014*
Gross domestic product per capita (U.S dollar-units)	1.341,62	2014*
Total expenditure on health as % of GDP	7,1	2012
General government expenditure on health as % of total expenditure on health	59,9	2011
Private expenditure on health as % of total expenditure on health	40,1	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	50%

3. Healthcare System

National Health System.

Basic insurance availability	Yes	
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Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2013	2014
Public insurance company	not available	not available
Private insurance company	not available	not available
Private co-payment	not available	not available

Possibility to subscribing to private health insurance plans	No	
--------------------------------------------------------------	----	--

Co-payment necessary for the following therapy		
ICD devices		Yes
Pacemakers		Yes
Ablation		Yes



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
----------------------------------------------------------------------	--

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for	
--------------------------------	--

	Specialist	
Catheter ablation	No	
ICD or pacemaker implants	Yes	Cardiosurgeon

Official national competency guidelines for electrophysiological studies or catheter ablation	No answer
------------------------------------------------------------------------------------------------------	------------------

Required period of training to perform implantations	No answer
-------------------------------------------------------------	------------------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
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Pacemaker	2
ICD implantation	2
CRT implantation	1
Electrophysiological studies and catheter ablation	0
Atrial fibrillation ablation	1

Number of universities (Schools of Medicine)	5
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	0%
-----------------------------------------------------------------------	-----------

Percentage of academic centres among all practicing implanting devices centres	0%
---------------------------------------------------------------------------------------	-----------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	2
Total Pacemaker units implanted	not available	126
Thereof, New implants	not available	not available
Thereof, Replacements	not available	not available

Specialist performing implants		
Cardiologists	No	not available
Surgeons	Yes	not available

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	0
Total CRT units implanted	not available	0
Thereof, CRT pacemaker	not available	0
Thereof, CRT ICD	not available	0

Specialist performing implants	no implants
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7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	0
Total ICD units implanted	not available	0
Thereof, Single chamber	not available	0
Thereof, Dual chamber	not available	0
First implants	not available	0
Replacements	not available	0
Specialist performing implants		no implants

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	not available
Total loop recorders implanted	not available	not available
Specialist performing implants		
Cardiologists	No	not available
Surgeons	No	not available

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	not available	not available
Total lead extraction procedures	not available	not available
Specialist performing lead extractions		
Cardiologists	No	not available
Surgeons	No	not available



10. Device specific

Availability of remote monitoring of devices	No answer
-----------------------------------------------------	------------------

National registry for		Official name
ICD	No answer	
Pacing	No answer	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No answer
-------------------------------------------------------------------------------------	------------------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No answer
-------------------------------------------------------------------------------------------------------------------------------------	------------------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	not available	2
Number of ablations performed	not available	58
Mean number of ablations per centre	not available	29
Number of AF ablations	not available	not available
Number of ablation centres (> 50 AF ablations)	not available	not available
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	not available



Availability of a national registry for interventional electrophysiology	No answer
---------------------------------------------------------------------------------	------------------

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No answer
U.S.	No answer
European	No answer

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4

1 = no obstacle

5 = great obstacle

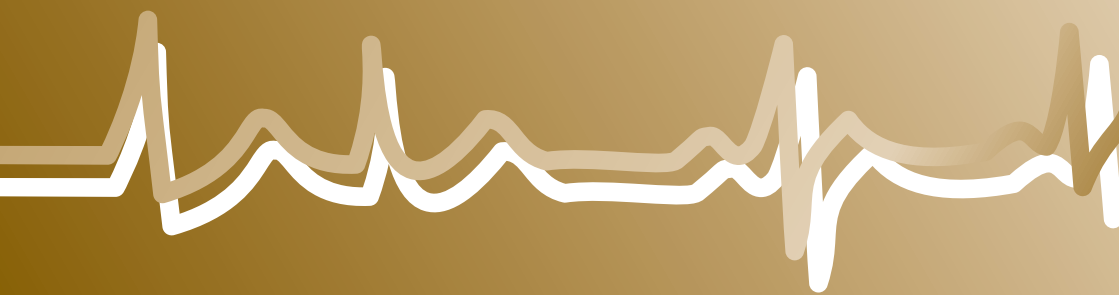
* (1 = top; 6 = lowest)

13. Sources

Name of National Cardiac Society, National Working Group or arrhythmia body
· Kyrgyz Society of Cardiology

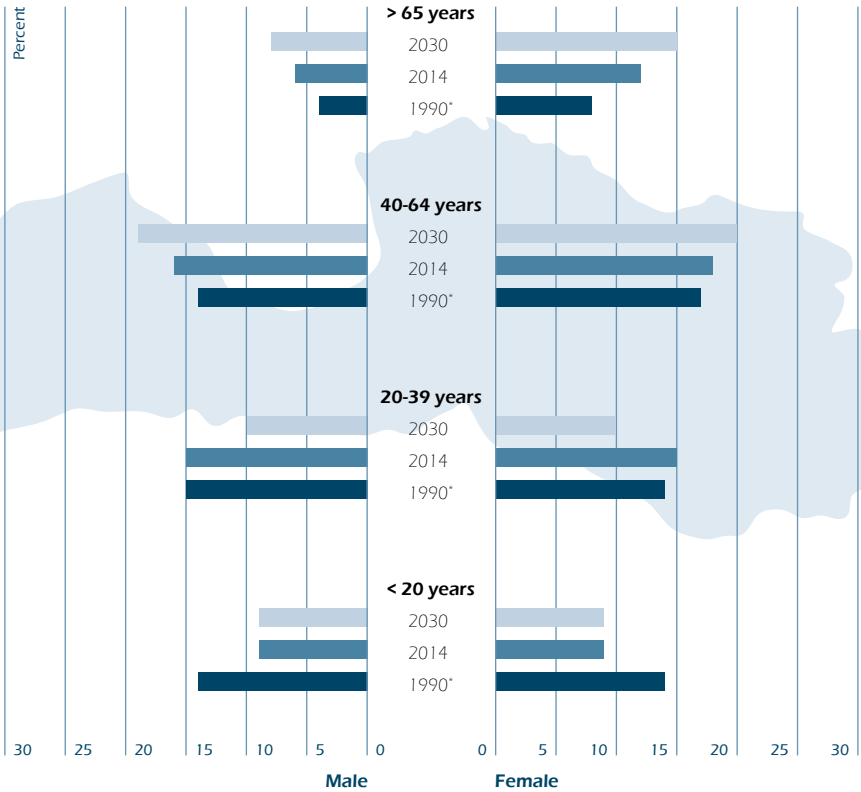
All sources that were used to fill out the questionnaire for the EHRA White Book 2015
· Survey from professional association
· WHO

LATVIA



1. Statistics

Age pyramid for Latvia



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	3,4	2011
Beds (per 100.000 population)	588,0	2011
Density of physicians (per 1.000 population)	3,1	2011
Density of nurses (per 1.000 population)	5,2	2011

Demographic information

Population	2.165.165	2014
Population annual growth rate (%)	-0,6	2014
Life expectancy at birth	73	2014
Death rate (per 1.000 population)	14,3	2012
Live births (per 1.000 population)	9,8	2012

Economic information

Gross domestic product (U.S dollar-billions)	32,82	2014*
Gross domestic product per capita (U.S dollar-units)	16.144,58	2014*
Total expenditure on health as % of GDP	6,0	2012
General government expenditure on health as % of total expenditure on health	57,1	2011
Private expenditure on health as % of total expenditure on health	42,9	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	53,2%	53,4%

3. Healthcare System

National Health system

Basic insurance availability	Yes
------------------------------	-----

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	88%	82%
Private insurance company	12%	18%
Private co-payment	0%	0%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	Yes
Pacemakers	Yes
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input checked="" type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	National Society of Cardiology
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	National Society of Cardiology
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	National Society of Cardiology
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	National Society of Cardiology



National Cardiac Society supporting EHRA certification system	
Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist, cardiac surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
National Society of Cardiology	

Required period of training to perform implantations	Yes	1 year

Suggested period of training to perform implantations	Yes	1 year

Training centres availability	
Pacemaker	1
ICD implantation	1
CRT implantation	1
Electrophysiological studies and catheter ablation	1
Atrial fibrillation ablation	1

Number of universities (Schools of Medicine)	2



Percentage of academic centres among all practicing EP centres	100%
-----------------------------------------------------------------------	-------------

Percentage of academic centres among all practicing implanting devices centres	100%
---------------------------------------------------------------------------------------	-------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres

	2013	2014
Implanting centres	3	3
Total Pacemaker units implanted	1.288	1.236
Thereof, New implants	996	1.023
Thereof, Replacements	292	213

Specialist performing implants

Cardiologists	Yes	70%
Surgeons	Yes	30%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2013	2014
Implanting centres	2	2
Total CRT units implanted	63	105
Thereof, CRT pacemaker	17	28
Thereof, CRT ICD	46	77

Specialist performing implants

Cardiologists	Yes	70%
Surgeons	Yes	30%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	2	3
Total ICD units implanted	88	75
Thereof, Single chamber	34	24
Thereof, Dual chamber	54	51
First implants	78	67
Replacements	10	8

Specialist performing implants		
Cardiologists	Yes	70%
Surgeons	Yes	30%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	3	2
Total loop recorders implanted	18	24

Specialist performing implants		
Cardiologists	Yes	70%
Surgeons	Yes	30%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	1	1
Total lead extraction procedures	8	10

Specialist performing lead extractions		
Cardiologists	No	0%
Surgeons	Yes	100%



10. Device specific

Availability of remote monitoring of devices **Yes**

National registry for		Official name
ICD	Yes	National Register of Implantable Devices and EP procedures. National Society of Cardiology
Pacing	Yes	National Register of Implantable Devices and EP procedures. National Society of Cardiology
Electrophysiology	Yes	National Register of Implantable Devices and EP procedures. National Society of Cardiology

Availability of a national quality insurance system or complication registry **Yes**

Official name: National Healthcare system in collaboration with Nacional Society of Cardiology

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions **Yes**

Official name: National Healthcare system in collaboration with Nacional Society of Cardiology

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	2	2
Number of ablations performed	518	638
Mean number of ablations per centre	259	319
Number of AF ablations	64	75
Number of ablation centres (> 50 AF ablations)	1	1
Number of VT/VF ablations	not available	25
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	1
Number of LAA closures	not available	18
Number of centres (LAA closures)	not available	1
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	5
Number of physicians under training to become independent electrophysiologists	not available	2


Availability of a national registry for interventional electrophysiology

Yes

Official name: National Register. National Society of Cardiology

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					Ranking of importance*
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

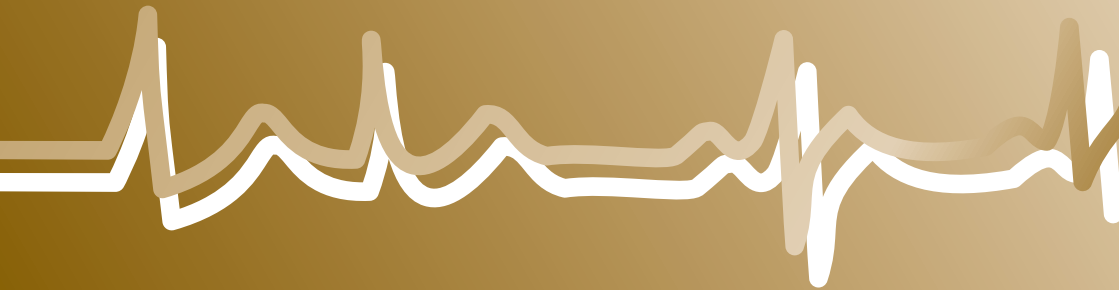
Name of National Cardiac Society, National Working Group or arrhythmia body

· Latvian National Society of Cardiology, Working Group of Arrhythmology

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

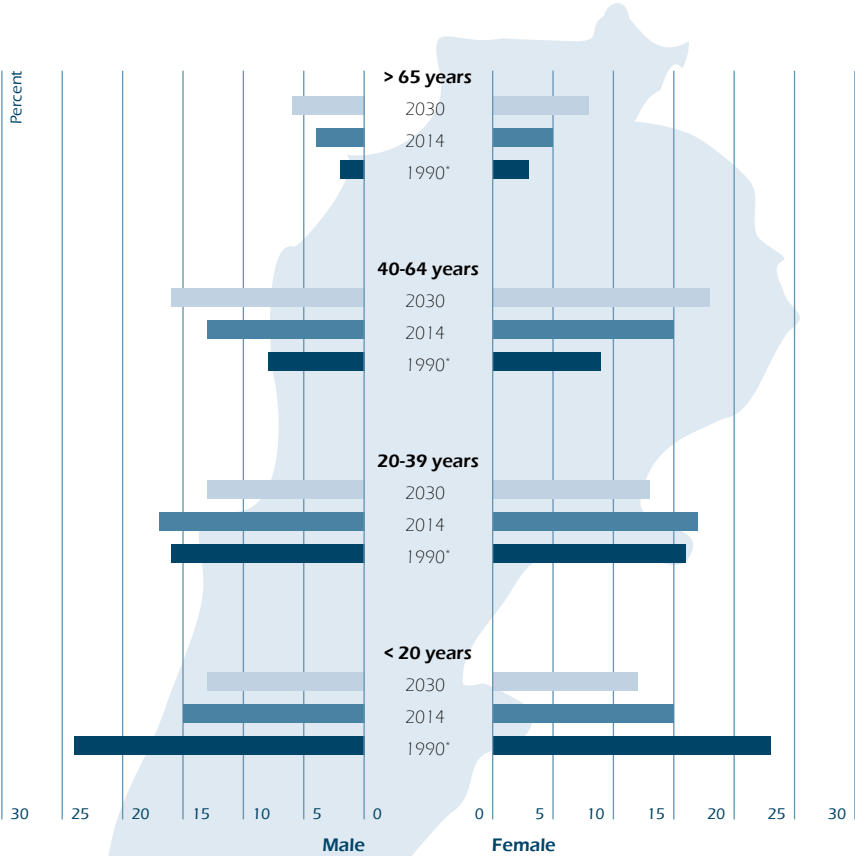
- EHRA White Book 2014
- Official statistics
- Survey from professional association
- Sample short survey

LEBANON



1. Statistics

Age pyramid for Lebanon



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	not available	not available
Beds (per 100.000 population)	not available	not available
Density of physicians (per 1.000 population)	not available	not available
Density of nurses (per 1.000 population)	not available	not available

Demographic information

Population	4.136.895	2014
Population annual growth rate (%)	0,1	2014
Life expectancy at birth	76	2014
Death rate (per 1.000 population)	not available	not available
Live births (per 1.000 population)	not available	not available

Economic information

Gross domestic product (U.S dollar-billions)	47,50	2014*
Gross domestic product per capita (U.S dollar-units)	10.530,76	2014*
Total expenditure on health as % of GDP	not available	not available
General government expenditure on health as % of total expenditure on health	38,0	2011
Private expenditure on health as % of total expenditure on health	62,0	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

National Health System ~ 35%, Private insurance ~ 15%, Ministry of Health ~ 20%, Non insured ~ 30%

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: being an employee or requesting a personal demand.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	60%	70%
Uninsured citizens	40%	30%

Distribution of insurance modality		
	2013	2014
Public insurance company	25%	25%
Private insurance company	25%	25%
Private co-payment	10%	10%

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	Yes
Pacemakers	Yes
Ablation	Yes

Comments: Yes, only in the private sector and with private companies.



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ICD primary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: Ministry of Health, National Social security

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
----------------------------------------------------------------------	--

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for	
--------------------------------	--

	Specialist	
Catheter ablation	Yes	Electrophysiologist
ICD or pacemaker implants	No	

Official national competency guidelines for electrophysiological studies or catheter ablation	No
------------------------------------------------------------------------------------------------------	-----------

Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
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Pacemaker	5
ICD implantation	5
CRT implantation	5
Electrophysiological studies and catheter ablation	5
Atrial fibrillation ablation	2

Number of universities (Schools of Medicine)	7
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	80%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	80%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres

	2013	2014
Implanting centres	15	15
Total Pacemaker units implanted	900	900
Thereof, New implants	600	600
Thereof, Replacements	300	300

Specialist performing implants

Cardiologists	Yes	75%
Surgeons	Yes	20%
Other: General surgeons	Yes	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2013	2014
Implanting centres	5	15
Total CRT units implanted	100	160
Thereof, CRT pacemaker	10	10
Thereof, CRT ICD	90	150

Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	10	15
Total ICD units implanted	300	300
Thereof, Single chamber	150	100
Thereof, Dual chamber	150	200
First implants	200	200
Replacements	100	100
Specialist performing implants		
Cardiologists	Yes	75%
Surgeons	Yes	25%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	3	5
Total loop recorders implanted	6	5
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	5	5
Total lead extraction procedures	not available	not available
Specialist performing lead extractions		
Cardiologists	Yes	80%
Surgeons	Yes	20%



10. Device specific

Availability of remote monitoring of devices	No
-----------------------------------------------------	-----------

National registry for

	Official name
ICD	No
Pacing	No
Electrophysiology	No

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	5	5
Number of ablations performed	100	150
Mean number of ablations per centre	20	30
Number of AF ablations	not available	not available
Number of ablation centres (> 50 AF ablations)	0	not available
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	not available
Number of LAA closures	not available	0
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	5
Number of physicians under training to become independent electrophysiologists	not available	not available


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	Yes
European	Yes

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

Name of National Cardiac Society, National Working Group or arrhythmia body

- Lebanese Society of Cardiology
- Arrhythmia Working Group

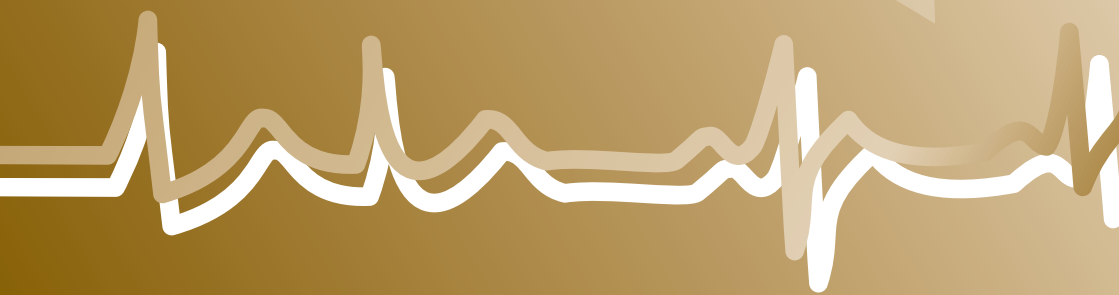
All sources that were used to fill out the questionnaire for the EHRA White Book 2015

- EHRA White Book 2014
- Official statistics
- Survey from professional association
- Sales data
- Estimation

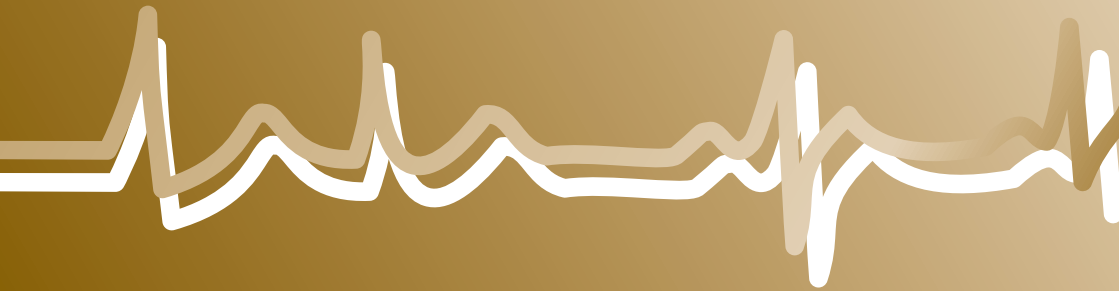
A stylized, light-colored map of Libya is centered in the upper half of the page. The map is rendered in a simple, clean style, showing the country's outline against the background. The background is a solid, warm brown color with a subtle gradient.

LIBYA

Data not submitted.

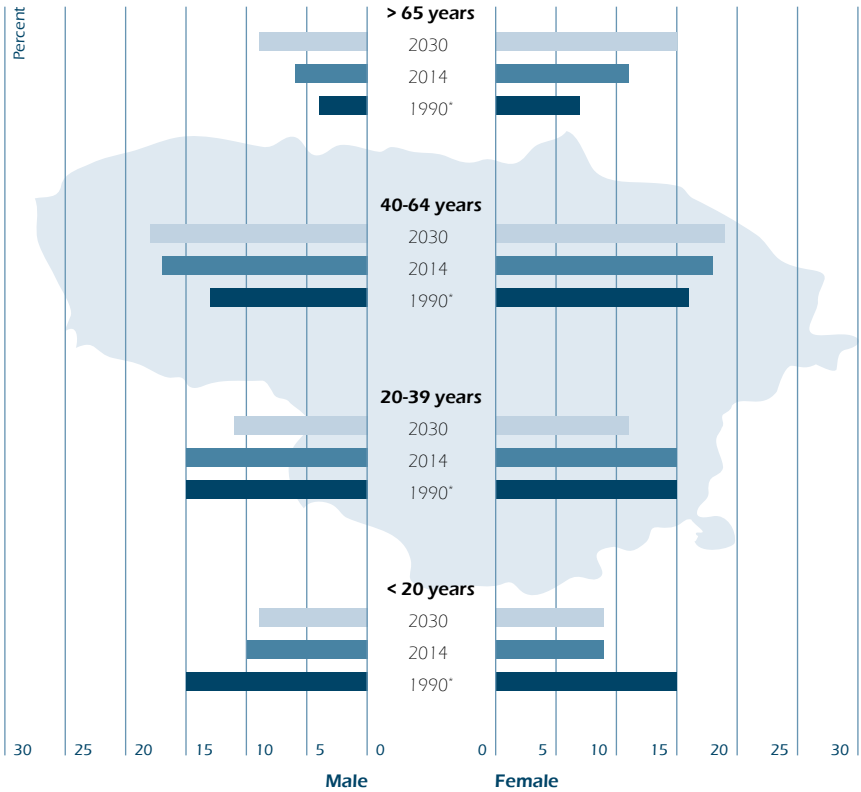


LITHUANIA



1. Statistics

Age pyramid for Lithuania



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	3,5	2011
Beds (per 100.000 population)	744,7	2011
Density of physicians (per 1.000 population)	4,1	2011
Density of nurses (per 1.000 population)	7,8	2011

Demographic information		
Population	3.505.738	2014
Population annual growth rate (%)	-0,3	2014
Life expectancy at birth	76	2014
Death rate (per 1.000 population)	12,8	2010
Live births (per 1.000 population)	10,2	2012

Economic information		
Gross domestic product (U.S dollar-billions)	48,72	2014*
Gross domestic product per capita (U.S dollar-units)	16.476,46	2014*
Total expenditure on health as % of GDP	6,7	2012
General government expenditure on health as % of total expenditure on health	71,4	2011
Private expenditure on health as % of total expenditure on health	28,6	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

Provision of health services is regulated by National Health insurance Fund under the ministry of Health.

Basic insurance availability	Yes
------------------------------	-----

Requirements for citizens to qualify for public insurance: All permanent residents and officially employed non-permanent residents have basic insurance.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	not available
Uninsured citizens	0%	not available

Distribution of insurance modality		
	2013	2014
Public insurance company	98%	not available
Private insurance company	2%	not available
Private co-payment	0%	not available

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist or cardiac surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation	No
------------------------------------------------------------------------------------------------------	-----------

Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
Pacemaker	2
ICD implantation	2
CRT implantation	2
Electrophysiological studies and catheter ablation	2
Atrial fibrillation ablation	2

Number of universities (Schools of Medicine)	2
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	50%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	50%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	4	4
Total Pacemaker units implanted	2.716	2.767
Thereof, New implants	2.302	2.447
Thereof, Replacements	414	320

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	3	3
Total CRT units implanted	165	192
Thereof, CRT pacemaker	134	160
Thereof, CRT ICD	31	32

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	3	3
Total ICD units implanted	124	134
Thereof, Single chamber	38	45
Thereof, Dual chamber	86	89
First implants	102	97
Replacements	22	37

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	2	2
Total loop recorders implanted	10	9

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	2	2
Total lead extraction procedures	11	12

Specialist performing lead extractions		
Cardiologists	Yes	83%
Surgeons	Yes	17%



10. Device specific

Availability of remote monitoring of devices	No
-----------------------------------------------------	-----------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	Yes
-------------------------------------------------------------------------------------	------------

Official name: State Healthcare Accreditation Agency

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
-------------------------------------------------------------------------------------------------------------------------------------	------------

Official name: State Healthcare Accreditation Agency

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	3	3
Number of ablations performed	840	885
Mean number of ablations per centre	280	295
Number of AF ablations	30	74
Number of ablation centres (> 50 AF ablations)	0	0
Number of VT/VF ablations	not available	6
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0
Number of LAA closures	not available	2
Number of centres (LAA closures)	not available	2
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	14
Number of physicians under training to become independent electrophysiologists	not available	1


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

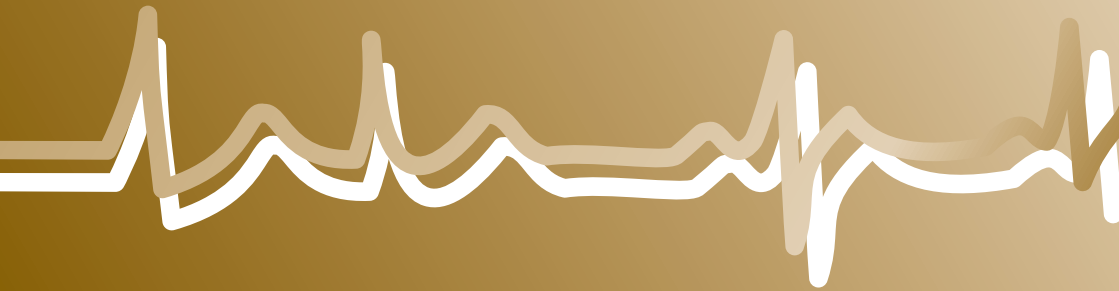
Name of National Cardiac Society, National Working Group or arrhythmia body

· Lithuanian Society of Cardiology, Heart Rhythm Working Group

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

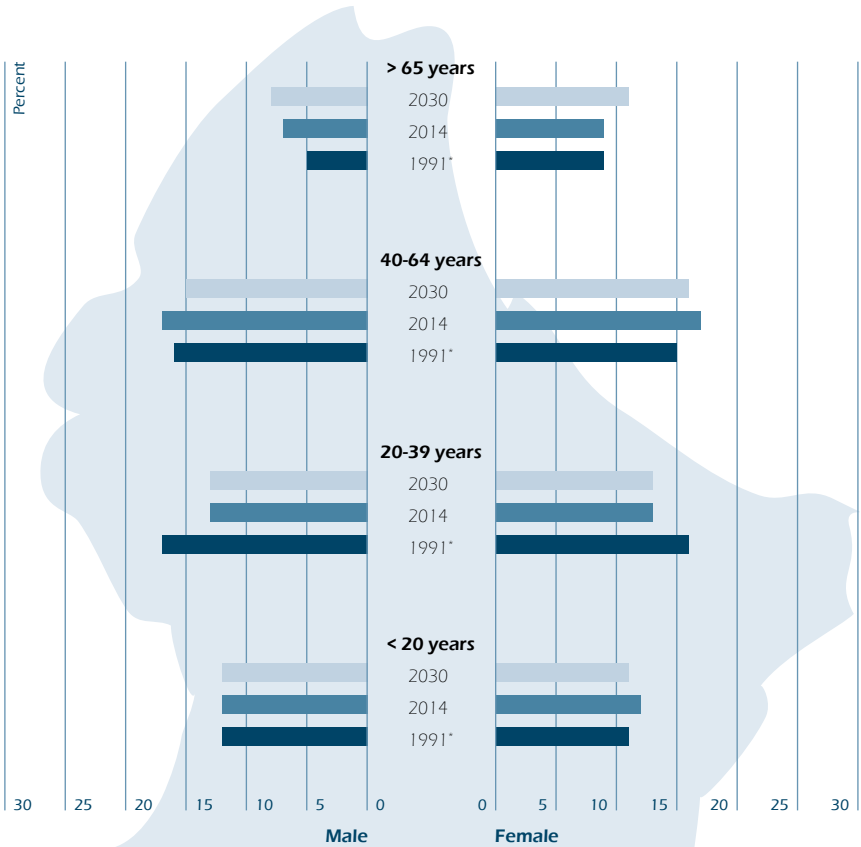
- EHRA White Book 2014
- Sample short survey

LUXEMBOURG



1. Statistics

Age pyramid for Luxembourg



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	2,3	2012
Beds (per 100.000 population)	536,7	2010
Density of physicians (per 1.000 population)	2,8	2012
Density of nurses (per 1.000 population)	12,3	2012

Demographic information		
Population	520.672	2014
Population annual growth rate (%)	1,1	2014
Life expectancy at birth	80	2014
Death rate (per 1.000 population)	7,2	2011
Live births (per 1.000 population)	11,4	2012

Economic information		
Gross domestic product (U.S dollar-billions)	63,93	2014*
Gross domestic product per capita (U.S dollar-units)	116.752,49	2014*
Total expenditure on health as % of GDP	6,9	2012
General government expenditure on health as % of total expenditure on health	84,1	2011
Private expenditure on health as % of total expenditure on health	15,9	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	31,8*	not available

* 2013 data have been updated.

3. Healthcare System

National Health System

Basic insurance availability	Yes
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Requirements for citizens to qualify for public insurance: Paid 1/2 by yourself and 1/2 by your employer.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	100%	100%
Private insurance company	not available	not available
Private co-payment	not available	not available

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input checked="" type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
----------------------------------------------------------------------	--

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
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	Specialist	
Catheter ablation	Yes	Trained Cardiologist
ICD or pacemaker implants	Yes	Trained Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
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Pacemaker	0
ICD implantation	0
CRT implantation	0
Electrophysiological studies and catheter ablation	0
Atrial fibrillation ablation	0

Number of universities (Schools of Medicine)	0
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	0%
-----------------------------------------------------------------------	-----------

Percentage of academic centres among all practicing implanting devices centres	0%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	5	5
Total Pacemaker units implanted	188	349
Thereof, New implants	125	267
Thereof, Replacements	63	82

Specialist performing implants		
Cardiologists	Yes	85%
Surgeons	Yes	15%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	1	1
Total CRT units implanted	22	34
Thereof, CRT pacemaker	7	10
Thereof, CRT ICD	15	24

Specialist performing implants		
Cardiologists	Yes	95%
Surgeons	Yes	5%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	1	1
Total ICD units implanted	71	62
Thereof, Single chamber	41	53
Thereof, Dual chamber	15	9
First implants	58	45
Replacements	13	17

Specialist performing implants		
Cardiologists	Yes	97%
Surgeons	Yes	3%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	1	2
Total loop recorders implanted	17	23

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	1	1
Total lead extraction procedures	not available	7

Specialist performing lead extractions		
Cardiologists	No	0%
Surgeons	Yes	100%

10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	INCCI (Institut National de Chirurgie Cardiaque et de Cardiologie Invasive)
Pacing	No	
Electrophysiology	Yes	INCCI (Institut National de Chirurgie Cardiaque et de Cardiologie Invasive)

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
-------------------------------------------------------------------------------------------------------------------------------------	------------

Official name: Ministry of Health

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	1	1
Number of ablations performed	129	158
Mean number of ablations per centre	129	158
Number of AF ablations	31	57
Number of ablation centres (> 50 AF ablations)	0	1
Number of VT/VF ablations	not available	2
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0
Number of LAA closures	not available	0
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	3
Number of physicians under training to become independent electrophysiologists	not available	0

Availability of a national registry for interventional electrophysiology	Yes
---------------------------------------------------------------------------------	------------

Official name: INCCI (Institut National de Chirurgie Cardiaque et de Cardiologie Invasive)

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of reimbursement, limited financial resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of referral	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

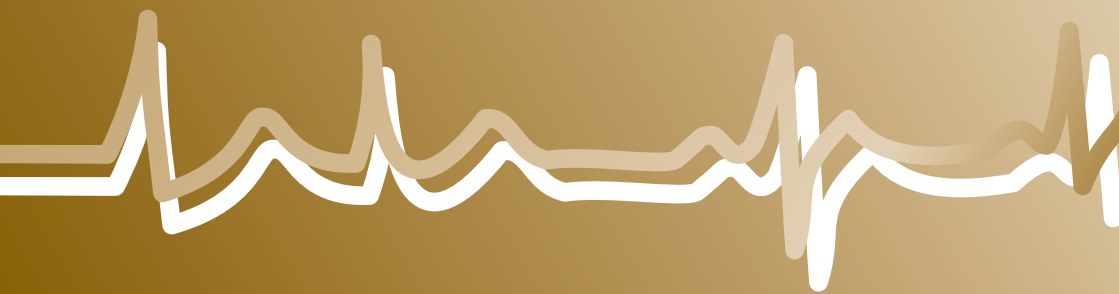
Name of National Cardiac Society, National Working Group or arrhythmia body

· SLC (Société Luxembourgeoise de Cardiologie)

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

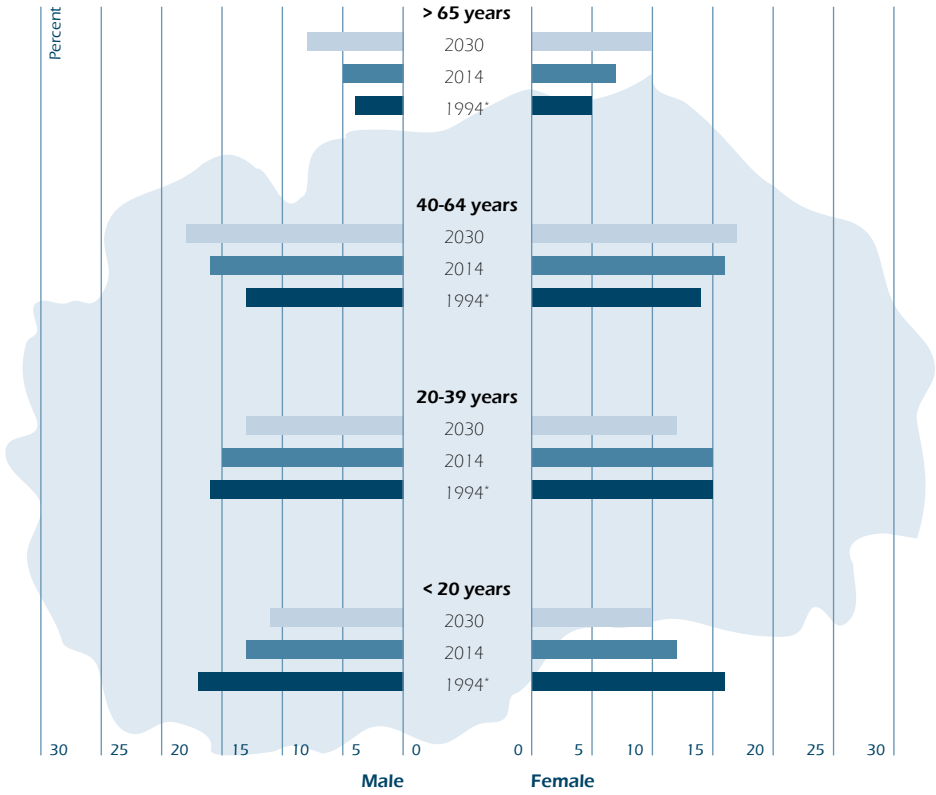
- EHRA White Book 2014
- Official statistics
- Survey from professional association

MACEDONIA FYR



1. Statistics

Age pyramid for Macedonia FYR



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	3,2	2011
Beds (per 100.000 population)	449,6	2011
Density of physicians (per 1.000 population)	2,7	2011
Density of nurses (per 1.000 population)	4,2	2011

Demographic information		
Population	2.091.719	2014
Population annual growth rate (%)	0,2	2014
Life expectancy at birth	76	2014
Death rate (per 1.000 population)	9,3	2010
Live births (per 1.000 population)	11,4	2012

Economic information		
Gross domestic product (U.S dollar-billions)	10,92	2014*
Gross domestic product per capita (U.S dollar-units)	5.262,37	2014*
Total expenditure on health as % of GDP	7,1	2012
General government expenditure on health as % of total expenditure on health	63,6	2011
Private expenditure on health as % of total expenditure on health	36,4	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	52%	52%

3. Healthcare System

National Health System.

Basic insurance availability	Yes
Requirements: Employment, social welfare, unemployment benefits, international health coverage for foreigners.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	90%	90%
Uninsured citizens	10%	10%

Distribution of insurance modality		
	2013	2014
Public insurance company	80%	80%
Private insurance company	10%	10%
Private co-payment	10%	10%

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No

Comments: Co-payment is not required in public hospitals, co-payment is required in private hospitals.



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comments: In private hospital physicians receive per process reimbursement.

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: No restrictions in private hospitals, but indications follow ESC guidelines.

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
----------------------------------------------------------------------	--

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input checked="" type="checkbox"/>

Specialist required for		
--------------------------------	--	--

	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
------------------------------------------------------------------------------------------------------	------------

Comments: Until proficiency and independent work is achieved.

Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
--------------------------------------	--

Pacemaker	2
ICD implantation	2
CRT implantation	2
Electrophysiological studies and catheter ablation	2
Atrial fibrillation ablation	0

Number of universities (Schools of Medicine)	3
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	33%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	33%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres

	2013	2014
Implanting centres	2	3
Total Pacemaker units implanted	322	356
Thereof, New implants	240	296
Thereof, Replacements	82	60

Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2013	2014
Implanting centres	2	2
Total CRT units implanted	16	28
Thereof, CRT pacemaker	11	25
Thereof, CRT ICD	5	3

Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	2	2
Total ICD units implanted	12	11
Thereof, Single chamber	8	7
Thereof, Dual chamber	4	4
First implants	8	9
Replacements	4	2

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	2	2
Total loop recorders implanted	1	0

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	2	2
Total lead extraction procedures	0	0

Specialist performing lead extractions		
Cardiologists	No	0%
Surgeons	Yes	100%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	National ICD Registry
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
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11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	3	3
Number of ablations performed	80	105
Mean number of ablations per centre	27	35
Number of AF ablations	0	0
Number of ablation centres (> 50 AF ablations)	1	0
Number of VT/VF ablations	not available	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0
Number of LAA closures	not available	0
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	4
Number of physicians under training to become independent electrophysiologists	not available	1



Availability of a national registry for interventional electrophysiology	No
---------------------------------------------------------------------------------	-----------

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No answer
U.S.	No answer
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5

1 = no obstacle

5 = great obstacle

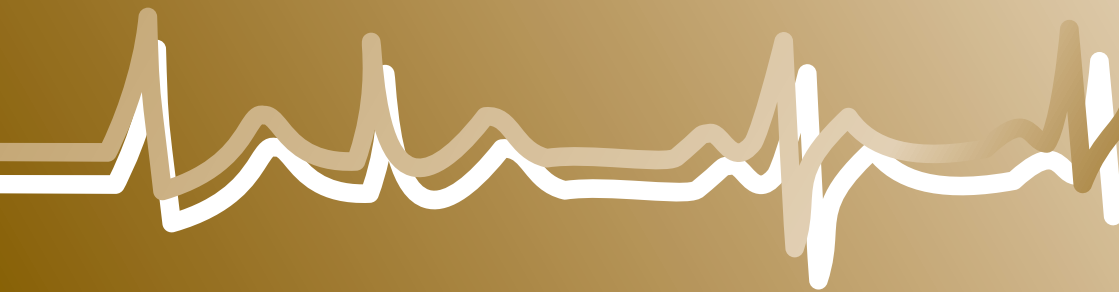
* (1 = top; 6 = lowest)

13. Sources

Name of National Cardiac Society, National Working Group or arrhythmia body
· Macedonian Society of Cardiology

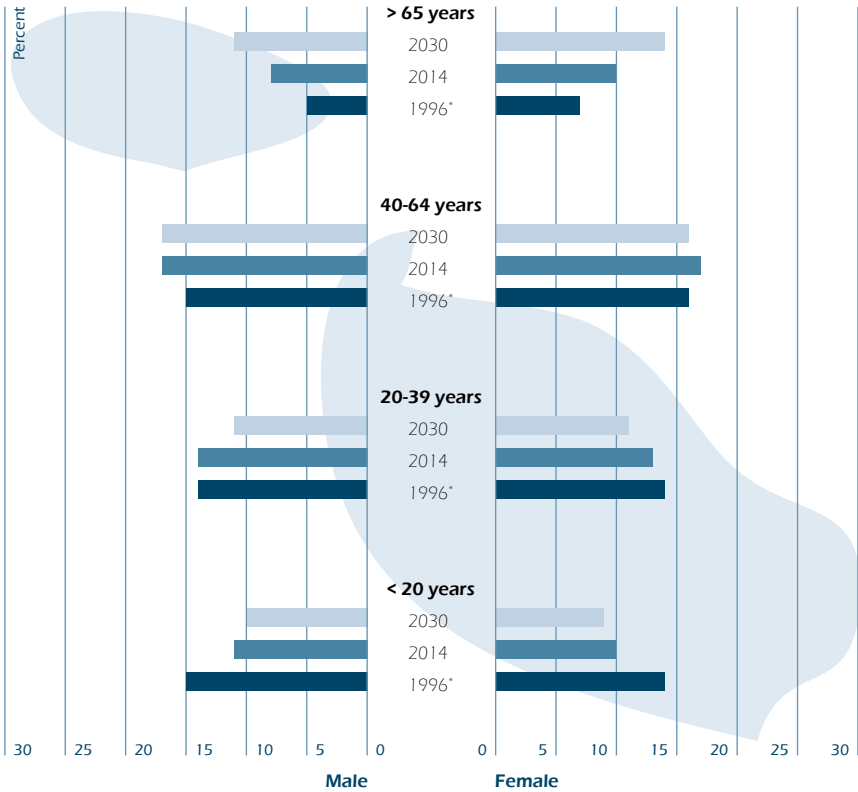
All sources that were used to fill out the questionnaire for the EHRA White Book 2015
· EHRA White Book 2014
· Official statistics
· Survey from professional association
· Estimation

MALTA



1. Statistics

Age pyramid for Malta



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	1,9	2012
Beds (per 100.000 population)	478,4	2012
Density of physicians (per 1.000 population)	3,5	2012
Density of nurses (per 1.000 population)	7,1	2012

Demographic information

Population	412.655	2014
Population annual growth rate (%)	0,3	2014
Life expectancy at birth	80	2014
Death rate (per 1.000 population)	7,9	2011
Live births (per 1.000 population)	10,1	2012

Economic information

Gross domestic product (U.S dollar-billions)	10,26	2014*
Gross domestic product per capita (U.S dollar-units)	24.313,95	2014*
Total expenditure on health as % of GDP	9,1	2012
General government expenditure on health as % of total expenditure on health	63,9	2011
Private expenditure on health as % of total expenditure on health	36,1	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	34%	40%

3. Healthcare System

National Health System financed by public funding.

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: Maltese residents.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	100%	90%
Private insurance company	0%	0%
Private co-payment	0%	10%

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EHRA certification exam
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EHRA certification exam
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Local certification system
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input checked="" type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

	Specialist	
Catheter ablation	Yes	Electrophysiologist
ICD or pacemaker implants	Yes	Invasive cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation
No
Required period of training to perform implantations
Yes
4 years
Suggested period of training to perform implantations
Yes
4 years
Training centres availability

Pacemaker	1
ICD implantation	1
CRT implantation	1
Electrophysiological studies and catheter ablation	1
Atrial fibrillation ablation	0

Number of universities (Schools of Medicine)
1



Percentage of academic centres among all practicing EP centres	100%
----------------------------------------------------------------	------

Percentage of academic centres among all practicing implanting devices centres	100%
--------------------------------------------------------------------------------	------

5. Pacemakers

Pacemaker units implanted and number of implanting centres

	2013	2014
Implanting centres	2	1
Total Pacemaker units implanted	227	366
Thereof, New implants	143	240
Thereof, Replacements	84	126

Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2013	2014
Implanting centres	1	1
Total CRT units implanted	16	48
Thereof, CRT pacemaker	1	5
Thereof, CRT ICD	15	43

Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2013		2014
Implanting centres	1		1
Total ICD units implanted	67		36
Thereof, Single chamber	11		3
Thereof, Dual chamber	56		33
First implants	47		26
Replacements	20		10
Specialist performing implants			
Cardiologists		Yes	100%
Surgeons		No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2013		2014
Implanting centres	1		1
Total loop recorders implanted	7		13
Specialist performing implants			
Cardiologists		Yes	100%
Surgeons		No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions			
	2013		2014
Hospitals performed lead extractions	0		1
Total lead extraction procedures	0		7
Specialist performing lead extractions			
Cardiologists		Yes	100%
Surgeons		No	0%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for

		Official name
ICD	No	
Pacing	No	
Electrophysiology	Yes	Atrial fibrillation

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	1	1
Number of ablations performed	12	30
Mean number of ablations per centre	12	30
Number of AF ablations	1	0
Number of ablation centres (> 50 AF ablations)	0	0
Number of VT/VF ablations	not available	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0
Number of LAA closures	not available	0
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	2
Number of physicians under training to become independent electrophysiologists	not available	1


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No answer
U.S.	Yes
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

Name of National Cardiac Society, National Working Group or arrhythmia body

· Maltese Cardiac Society

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

- EHRA White Book 2014
- Official statistics
- Estimation

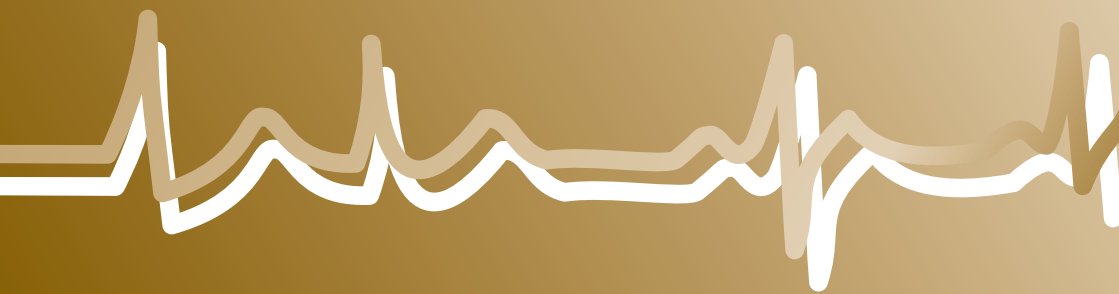


MOLDOVA

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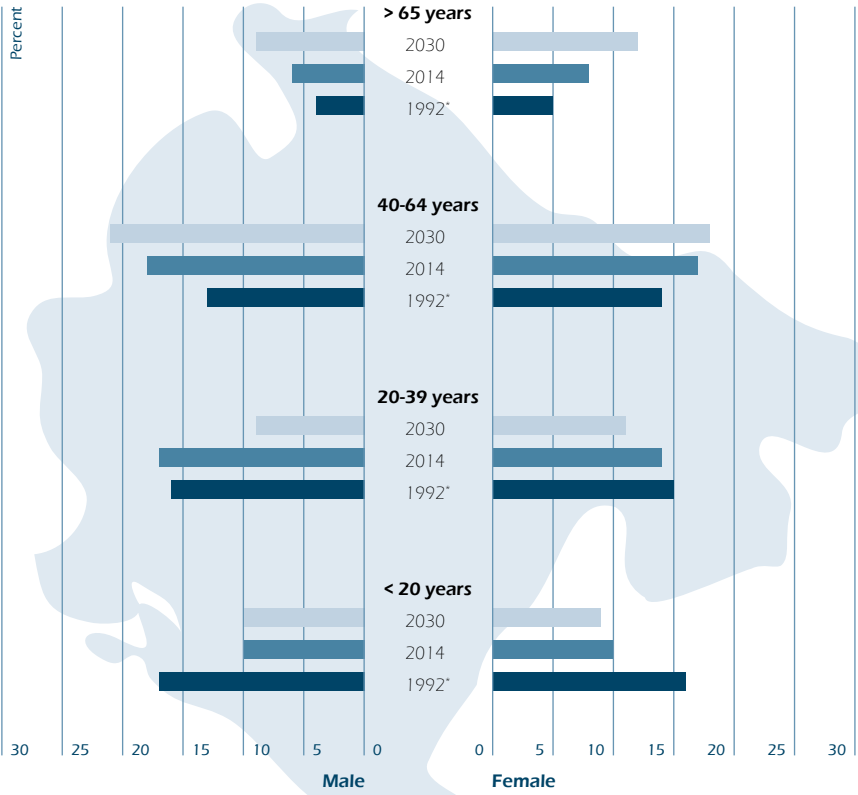


MONTENEGRO



1. Statistics

Age pyramid for Montenegro



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	1,8	2011
Beds (per 100.000 population)	397,4	2011
Density of physicians (per 1.000 population)	2,0	2011
Density of nurses (per 1.000 population)	5,3	2011

Demographic information		
Population	650.036	2014
Population annual growth rate (%)	-0,5	2014
Life expectancy at birth	78	2014
Death rate (per 1.000 population)	9,3	2009
Live births (per 1.000 population)	12,0	2012

Economic information		
Gross domestic product (U.S dollar-billions)	4,66	2014*
Gross domestic product per capita (U.S dollar-units)	7.466,17	2014*
Total expenditure on health as % of GDP	7,6	2012
General government expenditure on health as % of total expenditure on health	58,2	2011
Private expenditure on health as % of total expenditure on health	41,8	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	54%	54%

3. Healthcare System

First of all we have primary health system with family doctors, 7 general hospitals and one Clinical Center where we perform angiography, electrophysiology procedures and cardiovascular surgery.

Basic insurance availability	Yes
------------------------------	-----

Requirements for citizens to qualify for public insurance: All employees, farmers, priests, unemployed persons registered at the Employment Bureau, retirees.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	not available	100%
Uninsured citizens	not available	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	0%	0%

Possibility to subscribing to private health insurance plans	No
--------------------------------------------------------------	----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No

Comments: Absolutely there is no necessary for co-payment for implantation any devices.



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comments:	We have remnants socialism in regulating system.				We have remnants socialism in regulating system.			

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input checked="" type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>
Comments:	Montenegro Society of Cardiology, supports ESC Guidelines. Montenegro is a country in transition and must be adapted to the actual situation.

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Educations and practice in Institute for cardiovascular disease Dedinje in Belgrade, Serbia Educations and practice in Center for pace maker Clinical center Serbia Belgrade
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Educations and practice in Institute for cardiovascular disease Dedinje in Belgrade, Serbia, Educations and practice in Center for pace maker Clinical center Serbia Belgrade
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Allied professionals from Institute for cardiovascular disease Dedinje in Belgrade, Serbia, Allied professionals from Center for electrophysiology Clinical center Serbia Belgrade
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Institute for cardiovascular disease Dedinje Belgrade, Serbia, Center for pacemaker Clinical center Serbia, Belgrade


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: We have only two young cardiologist which have just started with procedures.

Specialist required for

	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist, vascular surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation **No**

Required period of training to perform implantations **No**

Suggested period of training to perform implantations **No**

Training centres availability

Pacemaker	1
ICD implantation	1
CRT implantation	1
Electrophysiological studies and catheter ablation	1
Atrial fibrillation ablation	1

Number of universities (Schools of Medicine) **1**

Percentage of academic centres among all practicing EP centres **100%**



Percentage of academic centres among all practicing implanting devices centres	100%
---------------------------------------------------------------------------------------	-------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	1	1
Total Pacemaker units implanted	204	182
Thereof, New implants	194	150
Thereof, Replacements	10	32

Specialist performing implants		
Cardiologists	Yes	60%
Surgeons	Yes	40%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	1	1
Total CRT units implanted	10	22
Thereof, CRT pacemaker	5	12
Thereof, CRT ICD	5	10

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	1	1
Total ICD units implanted	38	41
Thereof, Single chamber	30	27
Thereof, Dual chamber	8	14
First implants	30	35
Replacements	8	6

Specialist performing implants		
Cardiologists	Yes	50%
Surgeons	Yes	50%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	1	1
Total loop recorders implanted	2	0

Specialist performing implants		
Cardiologists	Yes	50%
Surgeons	Yes	50%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	0	0
Total lead extraction procedures	0	0

Specialist performing lead extractions		
Cardiologists	No	0%
Surgeons	No	0%

Comments: we do not perform lead extractions.



10. Device specific

Availability of remote monitoring of devices No

Reasons why remote monitoring is not available: It is very expensive version for us.

National registry for

		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry No

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions Yes

Official name: The Agency for Drugs and Medical Devices

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	1	1
Number of ablations performed	45	66
Mean number of ablations per centre	45	66
Number of AF ablations	0	17
Number of ablation centres (> 50 AF ablations)	0	0
Number of VT/VF ablations	not available	3
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0
Number of LAA closures	not available	0
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	1
Number of physicians under training to become independent electrophysiologists	not available	2

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1

Other obstacles to guideline implementation: Yes, there are obstacles to guidelines implementations.

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

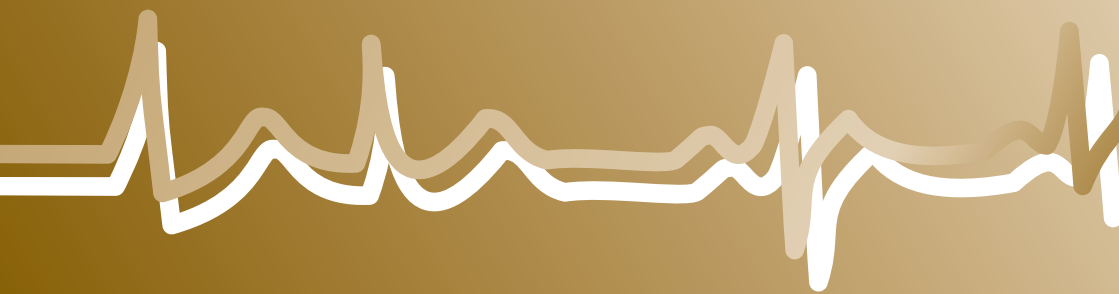
Name of National Cardiac Society, National Working Group or arrhythmia body

· Montenegrin Society of Cardiology

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

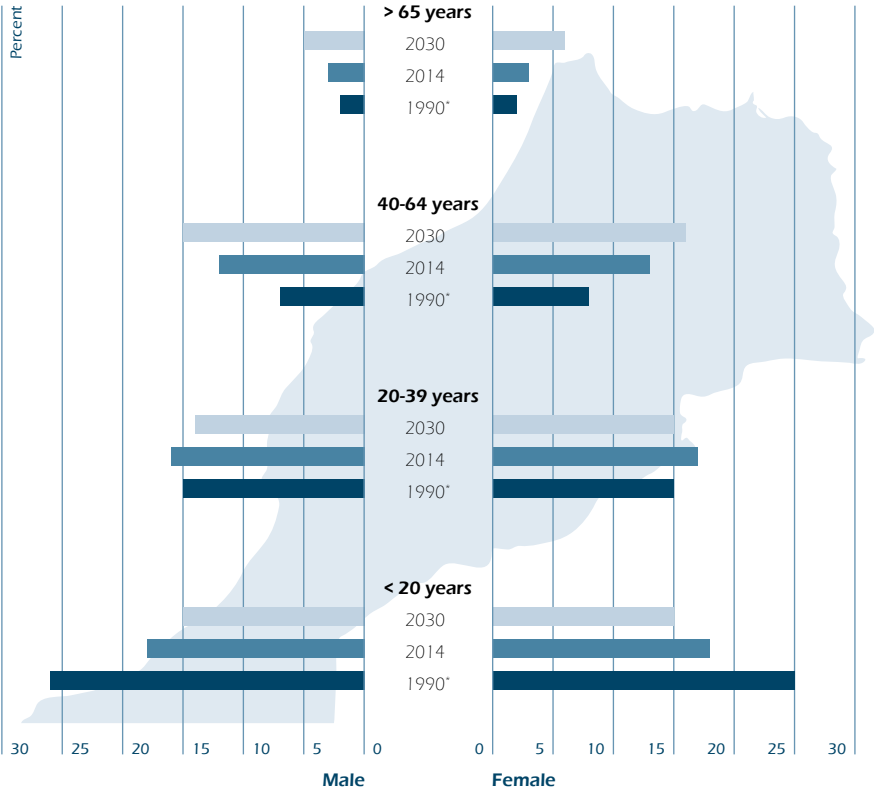
- EHRA White Book 2014
- Institute for Public Health
- The Tax Administration
- Sample short survey
- Survey from professional association

MOROCCO



1. Statistics

Age pyramid for Morocco



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	not available	not available
Beds (per 100.000 population)	110	2014**
Density of physicians (per 1.000 population)	not available	not available
Density of nurses (per 1.000 population)	not available	not available

Demographic information		
Population	33.478.299	2014
Population annual growth rate (%)	1,0	2014
Life expectancy at birth	77	2014
Death rate (per 1.000 population)	not available	not available
Live births (per 1.000 population)	not available	not available

Economic information		
Gross domestic product (U.S dollar-billions)	112,55	2014*
Gross domestic product per capita (U.S dollar-units)	3.392,27	2014*
Total expenditure on health as % of GDP	7,0	2014**
General government expenditure on health as % of total expenditure on health	33,1	2011
Private expenditure on health as % of total expenditure on health	66,9	2011

* IMF estimative

** Source: Economic and Health ministry



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	40%	40%

3. Healthcare System

National Health System; two types of health insurance: 1 public and 1 private.

Basic insurance availability	No	
------------------------------	----	--

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	65%	70%
Uninsured citizens	35%	30%

Distribution of insurance modality		
	2013	2014
Public insurance company	70%	80%
Private insurance company	25%	15%
Private co-payment	5%	5%

Possibility to subscribing to private health insurance plans	Yes	
--------------------------------------------------------------	-----	--

Co-payment necessary for the following therapy		
ICD devices	No	
Pacemakers	No	
Ablation	No	



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ICD primary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: only in private hospital.

if ICD primary prevention accorded reimbursement is received in private and public hospital.

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: for primary prevention there is restriction regarding national health budget.

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DEU of Cardiac Pacing
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DEU of Invasive Electrophysiology
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: All electrophysiologists have European DEU.

Specialist required for

	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist, cardiac surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation **No**

Required period of training to perform implantations **Yes** **minimum 1 year**

Suggested period of training to perform implantations **Yes** **minimum 1 year**

Training centres availability

Pacemaker	11
ICD implantation	7
CRT implantation	6
Electrophysiological studies and catheter ablation	5
Atrial fibrillation ablation	not available

Number of universities (Schools of Medicine) **5**



Percentage of academic centres among all practicing EP centres	60%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	40%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	11	11
Total Pacemaker units implanted	1.109	1.465
Thereof, New implants	1.069	not available
Thereof, Replacements	not available	not available

Specialist performing implants		
Cardiologists	Yes	98%
Surgeons	Yes	2%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	5	7
Total CRT units implanted	75	62
Thereof, CRT pacemaker	41	45
Thereof, CRT ICD	34	17

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2013		2014
Implanting centres	5		7
Total ICD units implanted	34		27
Thereof, Single chamber	8		16
Thereof, Dual chamber	26		11
First implants	not available		not available
Replacements	not available		not available
Specialist performing implants			
Cardiologists		Yes	98%
Surgeons		Yes	2%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2013		2014
Implanting centres	not available		not available
Total loop recorders implanted	not available		not available
Specialist performing implants			
Cardiologists		No	not available
Surgeons		No	not available

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions			
	2013		2014
Hospitals performed lead extractions	2		2
Total lead extraction procedures	10		10
Specialist performing lead extractions			
Cardiologists		Yes	99%
Surgeons		Yes	1%



10. Device specific

Availability of remote monitoring of devices No

Reasons why remote monitoring is not available: infrastructure not available.

National registry for

		Official name
ICD	Yes	SMC Registry
Pacing	Yes	SMC Registry
Electrophysiology	Yes	SMC Registry

Availability of a national quality insurance system or complication registry No answer

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions No

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	4	5
Number of ablations performed	150	170
Mean number of ablations per centre	38	34
Number of AF ablations	not available	not available
Number of ablation centres (> 50 AF ablations)	not available	not available
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	7
Number of physicians under training to become independent electrophysiologists	not available	not available



Availability of a national registry for interventional electrophysiology	Yes
---------------------------------------------------------------------------------	------------

Official name: SMC Registry

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
------------------------------------------------------------------	--

National	Yes
U.S.	Yes
European	Yes

Obstacles to guideline implementation	Ranking of importance*				
---------------------------------------	------------------------	--	--	--	--

	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
Lack of referral	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Others: The price of ICD						

1 = no obstacle 5 = great obstacle * (1 = top; 6 = lowest)

13. Sources

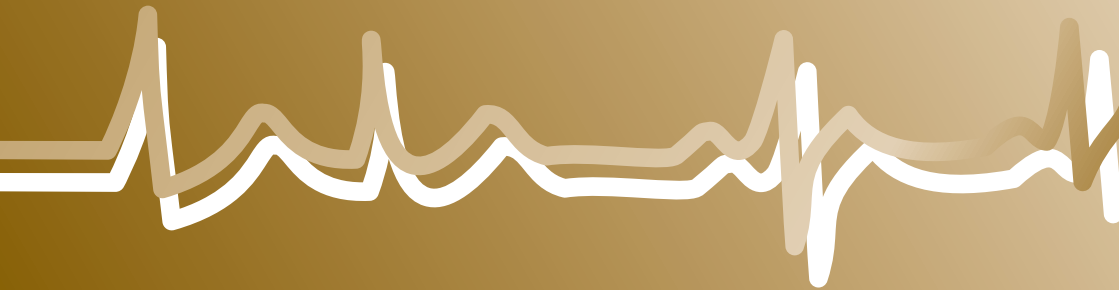
Name of National Cardiac Society, National Working Group or arrhythmia body

· SMC: société marocaine de cardiologie

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

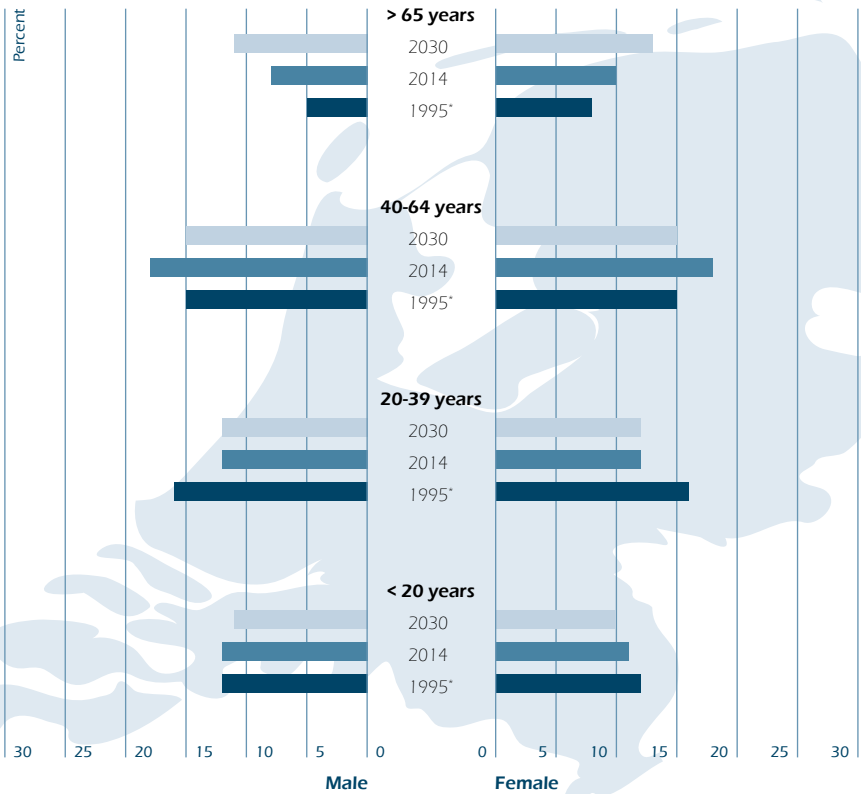
- EHRA White Book 2014
- Official statistics
- Sales data
- Estimation

NETHERLANDS



1. Statistics

Age pyramid for Netherlands



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	1,6	2011
Beds (per 100.000 population)	465,7	2009
Density of physicians (per 1.000 population)	3,0	2010
Density of nurses (per 1.000 population)	8,6	2008

Demographic information		
Population	16.877.351	2014
Population annual growth rate (%)	0,4	2014
Life expectancy at birth	81	2014
Death rate (per 1.000 population)	8,1	2011
Live births (per 1.000 population)	10,5	2012

Economic information		
Gross domestic product (U.S dollar-billions)	880,39	2014*
Gross domestic product per capita (U.S dollar-units)	52.248,87	2014*
Total expenditure on health as % of GDP	12,4	2012
General government expenditure on health as % of total expenditure on health	79,5	2011
Private expenditure on health as % of total expenditure on health	13,4	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	25%	33%

3. Healthcare System

There is a system of obligatory health insurance, with private health insurance companies. These insurance companies are obliged to provide a package with a defined set of insured treatments.

Basic insurance availability	Yes
------------------------------	-----

Requirements for citizens to qualify for public insurance: Resident in the Netherlands.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	0%	0%
Private insurance company	100%	100%
Private co-payment	0%	0%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments	The hospital receives the total amount of reimbursement of the Insurance companies. Physician receives from the hospital a honorarium for each procedure done.				The hospital receives the total amount of reimbursement of the Insurance companies. Physician receives from the hospital a honorarium for each procedure done.			

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input checked="" type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EHRA or IBHRE certification
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EHRA certification
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EHRA certification
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NVVC practice guidelines and NHRA educational document for invasive electrophysiology


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input checked="" type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

		Specialist
Catheter ablation	Yes	Cardiologist is named in the NHRA (Netherlands Heart Rhythm Association) documents
ICD or pacemaker implants	Yes	Cardiologist is named in the NHRA (Netherlands Heart Rhythm Association) documents

Official national competency guidelines for electrophysiological studies or catheter ablation **Yes**

NHRA

Required period of training to perform implantations **Yes** **1 year**

Suggested period of training to perform implantations **Yes** **2 years**

Training centres availability

Pacemaker	17
ICD implantation	12
CRT implantation	12
Electrophysiological studies and catheter ablation	12
Atrial fibrillation ablation	12

Number of universities (Schools of Medicine) **8**



Percentage of academic centres among all practicing EP centres	47%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	9%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	90	83
Total Pacemaker units implanted	10.174	10.132
Thereof, New implants	7.463	7.467
Thereof, Replacements	2.711	2.665

Specialist performing implants		
Cardiologists	Yes	90%
Surgeons	Yes	5%
Others: Allied professionals	Yes	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	57	31
Total CRT units implanted	2.069	1.931
Thereof, CRT pacemaker	463	514
Thereof, CRT ICD	1.606	1.417

Specialist performing implants		
Cardiologists	Yes	90%
Surgeons	Yes	5%
Others: Allied professionals	Yes	5%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	31	28
Total ICD units implanted	4.096	3.577
Thereof, Single chamber	not available	not available
Thereof, Dual chamber	not available	not available
First implants	2.724	2.373
Replacements	1.372	1.204

Specialist performing implants		
Cardiologists	Yes	90%
Surgeons	Yes	5%
Others: Allied professionals	Yes	5%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	90	83
Total loop recorders implanted	1.095	1.500

Specialist performing implants		
Cardiologists	Yes	80%
Surgeons	No	0%
Others: Allied professionals	Yes	20%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	12	12
Total lead extraction procedures	405	500

Specialist performing lead extractions		
Cardiologists	Yes	90%
Surgeons	Yes	10%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	NCDR (National Cardiovascular Data Registry), DIPR (Dutch ICD and Pacemaker registry)
Pacing	Yes	NCDR (National Cardiovascular Data Registry), DIPR (Dutch ICD and Pacemaker registry)
Electrophysiology	Yes	NCDR (National Cardiovascular Data Registry), NHRA registry

Availability of a national quality insurance system or complication registry	Yes
-------------------------------------------------------------------------------------	------------

Official name: NCDR (National Cardiovascular Data Registry)

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
-------------------------------------------------------------------------------------------------------------------------------------	------------

Official name: Device committee from the NHRA

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	16	16
Number of ablations performed	not available	8.358
Mean number of ablations per centre	not available	522
Number of AF ablations	not available	3.413
Number of ablation centres (> 50 AF ablations)	not available	15
Number of VT/VF ablations	not available	850
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	16
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	4
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	48
Number of physicians under training to become independent electrophysiologists	not available	12



Availability of a national registry for interventional electrophysiology	Yes
---------------------------------------------------------------------------------	------------

Official name: NHRA

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
------------------------------------------------------------------	--

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*				
----------------------------------------------	-------------------------------	--	--	--	--

	1	2	3	4	5
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of referral	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

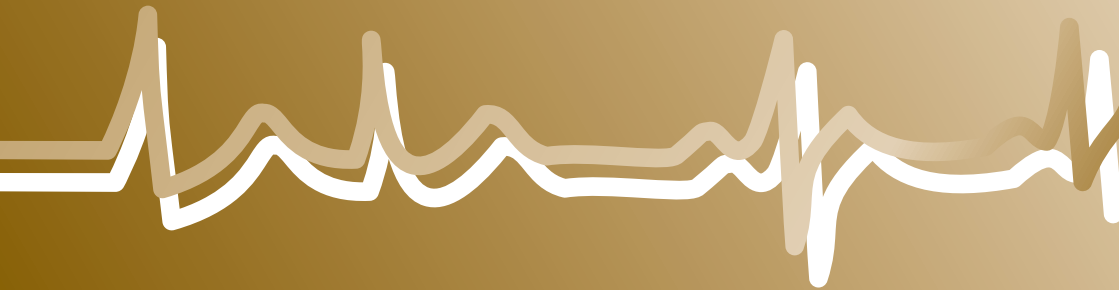
Name of National Cardiac Society, National Working Group or arrhythmia body

· NHRA: Netherlands Heart Rhythm Association

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

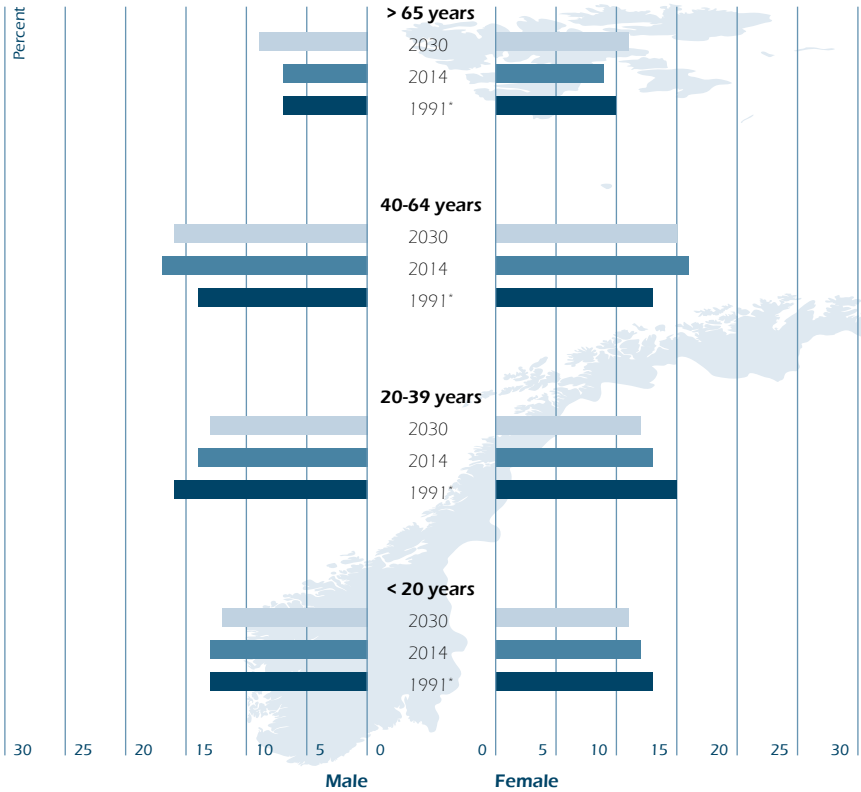
- EHRA White Book 2014
- Official statistics
- Survey from professional association
- Estimation
- NCDR National Cardiovascular Data Registry

NORWAY



1. Statistics

Age pyramid for Norway



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	1,3	2011
Beds (per 100.000 population)	331,6	2011
Density of physicians (per 1.000 population)	3,7	2011
Density of nurses (per 1.000 population)	13,3	2011

Demographic information		
Population	5.147.792	2014
Population annual growth rate (%)	1,2	2014
Life expectancy at birth	82	2014
Death rate (per 1.000 population)	8,4	2012
Live births (per 1.000 population)	12,0	2012

Economic information		
Gross domestic product (U.S dollar-billions)	511,60	2014*
Gross domestic product per capita (U.S dollar-units)	99.294,70	2014*
Total expenditure on health as % of GDP	9,0	2012
General government expenditure on health as % of total expenditure on health	85,1	2011
Private expenditure on health as % of total expenditure on health	14,9	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	32%	not available

3. Healthcare System

National Health System

Basic insurance availability	Yes
------------------------------	-----

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	97%	98%
Private insurance company	not available	0%
Private co-payment	3%	2%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input checked="" type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: There is no national certification, but EHRA certification is recommended.

Specialist required for

		Specialist
Catheter ablation	No answer	
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation **No answer**

Required period of training to perform implantations **No**

Suggested period of training to perform implantations **No**

Training centres availability

Pacemaker	not available
ICD implantation	4
CRT implantation	4
Electrophysiological studies and catheter ablation	4
Atrial fibrillation ablation	3

Number of universities (Schools of Medicine) **4**



Percentage of academic centres among all practicing EP centres	80%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	26%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	23	23
Total Pacemaker units implanted	3,459	3,887
Thereof, New implants	2,610	2,989
Thereof, Replacements	849	898

Specialist performing implants		
Cardiologists	Yes	99,55%
Surgeons	Yes	0,45%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	9	10
Total CRT units implanted	426	514
Thereof, CRT pacemaker	150	197
Thereof, CRT ICD	276	317

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	11	11
Total ICD units implanted	1.089	1.134
Thereof, Single chamber	not available	298
Thereof, Dual chamber	not available	836
First implants	779	803
Replacements	310	331

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	not available
Total loop recorders implanted	not available	not available

Specialist performing implants		
Cardiologists		not available
Surgeons		not available

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	3	3
Total lead extraction procedures	214	219

Specialist performing lead extractions		
Cardiologists	Yes	100%
Surgeons	No	0%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	The Norwegian pacemaker- and ICD registry
Pacing	Yes	The Norwegian pacemaker- and ICD registry
Electrophysiology	No answer	

Availability of a national quality insurance system or complication registry	No answer
-------------------------------------------------------------------------------------	------------------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
-------------------------------------------------------------------------------------------------------------------------------------	-----------

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	5	5
Number of ablations performed	2.578	2.959
Mean number of ablations per centre	516	592
Number of AF ablations	1.488	1.432
Number of ablation centres (> 50 AF ablations)	4	5
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	3	3
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	15
Number of physicians under training to become independent electrophysiologists	not available	2



Availability of a national registry for interventional electrophysiology	No
---------------------------------------------------------------------------------	-----------

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No answer
U.S.	No answer
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

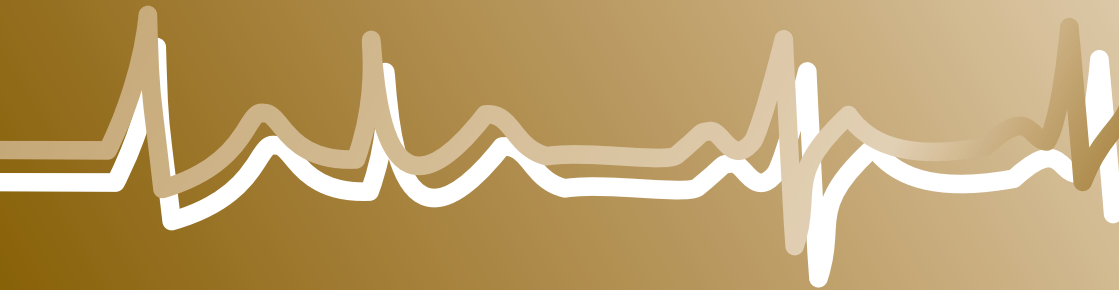
Name of National Cardiac Society, National Working Group or arrhythmia body

· Norwegian Society of Cardiology

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

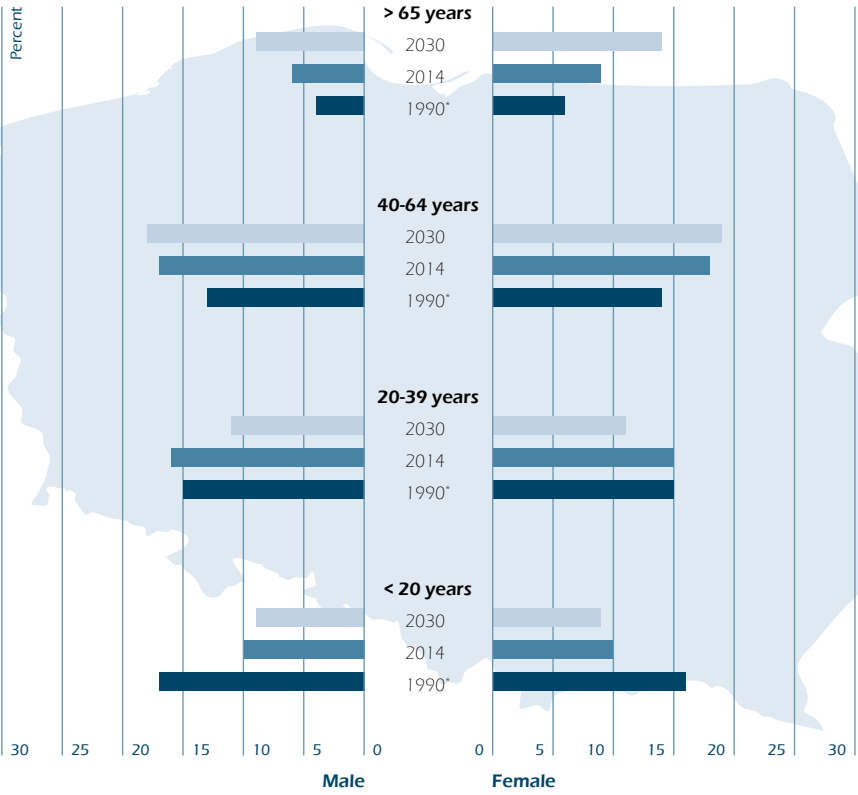
- EHRA White Book 2014
- Ministry of Health
- The Norwegian pacemaker- and ICD registry
- Sample short survey
- Estimation

POLAND



1. Statistics

Age pyramid for Poland



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	2,5	2011
Beds (per 100.000 population)	654,8	2011
Density of physicians (per 1.000 population)	2,2	2011
Density of nurses (per 1.000 population)	5,8	2011

Demographic information		
Population	38.346.279	2014
Population annual growth rate (%)	-0,1	2014
Life expectancy at birth	77	2014
Death rate (per 1.000 population)	9,8	2011
Live births (per 1.000 population)	10,0	2012

Economic information		
Gross domestic product (U.S dollar-billions)	552,23	2014*
Gross domestic product per capita (U.S dollar-units)	14.329,78	2014*
Total expenditure on health as % of GDP	6,7	2012
General government expenditure on health as % of total expenditure on health	70,3	2011
Private expenditure on health as % of total expenditure on health	29,2	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	45%	46%

3. Healthcare System

National Health Fund.

Basic insurance availability	Yes
------------------------------	-----

Requirements for citizens to qualify for public insurance: It is mandatory for employee.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	95%	95%
Uninsured citizens	5%	5%

Distribution of insurance modality		
	2013	2014
Public insurance company	90%	90%
Private insurance company	5%	5%
Private co-payment	5%	5%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Certification of the Heart Rhythm Section of Polish Cardiac Society
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Certification of the Heart Rhythm Section of Polish Cardiac Society
Allied professionals	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Certification of the Heart Rhythm Section of Polish Cardiac Society
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
----------------------------------------------------------------------	--

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for	
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	Specialist
Catheter ablation	No
ICD or pacemaker implants	No

Official national competency guidelines for electrophysiological studies or catheter ablation	No
------------------------------------------------------------------------------------------------------	-----------

Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
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Pacemaker	45
ICD implantation	25
CRT implantation	15
Electrophysiological studies and catheter ablation	10
Atrial fibrillation ablation	7

Number of universities (Schools of Medicine)	13
-----------------------------------------------------	-----------



Percentage of academic centres among all practicing EP centres	16%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	9%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	145	150
Total Pacemaker units implanted	27.500	28.470
Thereof, New implants	22.000	19.873
Thereof, Replacements	5.500	8.597

Specialist performing implants		
Cardiologists	Yes	98%
Surgeons	Yes	1%
Others: Internists	Yes	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	25	35
Total CRT units implanted	3.000	3.718
Thereof, CRT pacemaker	400	717
Thereof, CRT ICD	2.600	3.001

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	118*	120
Total ICD units implanted	8.978*	8.399
Thereof, Single chamber	not available	not available
Thereof, Dual chamber	not available	not available
First implants	7.178*	6.687
Replacements	1.800*	1.712

* 2013 data updated

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	15	20
Total loop recorders implanted	200	250

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	7	10
Total lead extraction procedures	450	600

Specialist performing lead extractions		
Cardiologists	Yes	95%
Surgeons	Yes	5%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
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11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	75	83
Number of ablations performed	9.500	10.922
Mean number of ablations per centre	127	132
Number of AF ablations	1.900	2.169
Number of ablation centres (> 50 AF ablations)	16	20
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	9	not available
Number of LAA closures	not available	200
Number of centres (LAA closures)	not available	15
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	125
Number of physicians under training to become independent electrophysiologists	not available	not available


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of referral	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

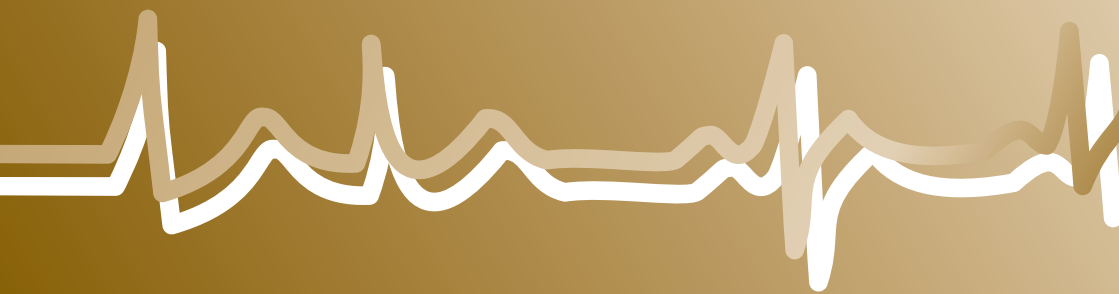
Name of National Cardiac Society, National Working Group or arrhythmia body

· Heart Rhythm Section of Polish Cardiac Society (Sekcja Rytmu Serca Polskiego Towarzystwa Kardiologicznego)

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

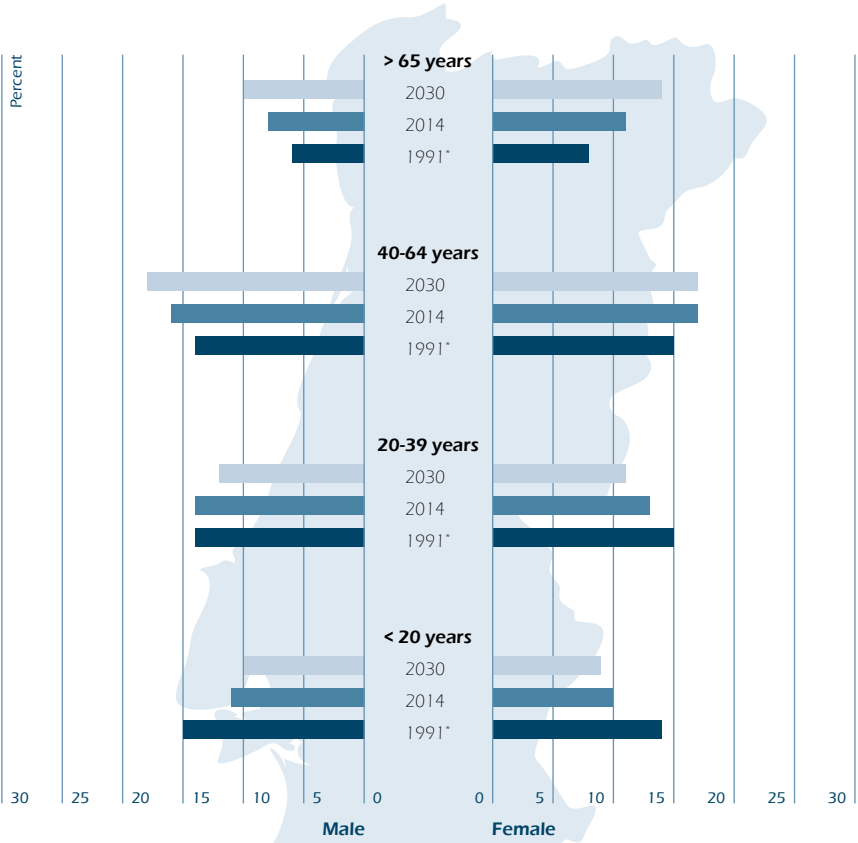
- EHRA White Book 2014
- Ministry of Health
- National Health Fund
- National Consultant

PORTUGAL



1. Statistics

Age pyramid for Portugal



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	2,1	2011
Beds (per 100.000 population)	337,9	2011
Density of physicians (per 1.000 population)	4,0	2011
Density of nurses (per 1.000 population)	6,3	2011

Demographic information		
Population	10.813.834	2014
Population annual growth rate (%)	0,1	2014
Life expectancy at birth	79	2014
Death rate (per 1.000 population)	9,8	2011
Live births (per 1.000 population)	8,5	2012

Economic information		
Gross domestic product (U.S dollar-billions)	228,17	2014*
Gross domestic product per capita (U.S dollar-units)	21.747,73	2014*
Total expenditure on health as % of GDP	9,5	2012
General government expenditure on health as % of total expenditure on health	65,0	2011
Private expenditure on health as % of total expenditure on health	35,0	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

NHS

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: No requirement.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	100%	not available
Private insurance company	0%	not available
Private co-payment	0%	not available

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
	No
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments: In public hospitals the salary is irrespective to the number of procedures.

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it 's required for practice	Yes, but it 's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

		Specialist
Catheter ablation	Yes	Cardiologist and Electrophysiologist
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation
No
Required period of training to perform implantations
Yes
2 years
Suggested period of training to perform implantations
Yes
2 years
Training centres availability

Pacemaker	12
ICD implantation	5
CRT implantation	6
Electrophysiological studies and catheter ablation	6
Atrial fibrillation ablation	4

Number of universities (Schools of Medicine)
8



Percentage of academic centres among all practicing EP centres	not available
----------------------------------------------------------------	---------------

Percentage of academic centres among all practicing implanting devices centres	not available
--------------------------------------------------------------------------------	---------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	40	39
Total Pacemaker units implanted	8.790	8.830
Thereof, New implants	7.124	6.966
Thereof, Replacements	1.666	1.864

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	26	24
Total CRT units implanted	not available	696
Thereof, CRT pacemaker	not available	178
Thereof, CRT ICD	427	518

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	27	31
Total ICD units implanted	not available	not available
Thereof, Single chamber	not available	not available
Thereof, Dual chamber	not available	not available
First implants	1.138	819
Replacements	not available	not available
Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	13
Total loop recorders implanted	not available	152
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	5	5
Total lead extraction procedures	not available	not available
Specialist performing lead extractions		
Cardiologists	Yes	not available
Surgeons	Yes	not available



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	APAPE - Portuguese Association of Arrhythmology Pacing and Electrophysiology
Pacing	Yes	APAPE - Portuguese Association of Arrhythmology Pacing and Electrophysiology
Electrophysiology	Yes	APAPE - Portuguese Association of Arrhythmology Pacing and Electrophysiology

Availability of a national quality insurance system or complication registry	No
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Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
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11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	16	24
Number of ablations performed	2,062	2,324
Mean number of ablations per centre	129	97
Number of AF ablations	556	684
Number of ablation centres (> 50 AF ablations)	not available	5
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	not available



Availability of a national registry for interventional electrophysiology	Yes
---------------------------------------------------------------------------------	------------

Official name: APAPE – Portuguese Association of Arrhythmology Pacing and Electrophysiology

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	Yes
European	Yes

Obstacles to guideline implementation	Ranking of importance*					Ranking of importance*
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4

1 = no obstacle 5 = great obstacle * (1 = top; 6 = lowest)

13. Sources

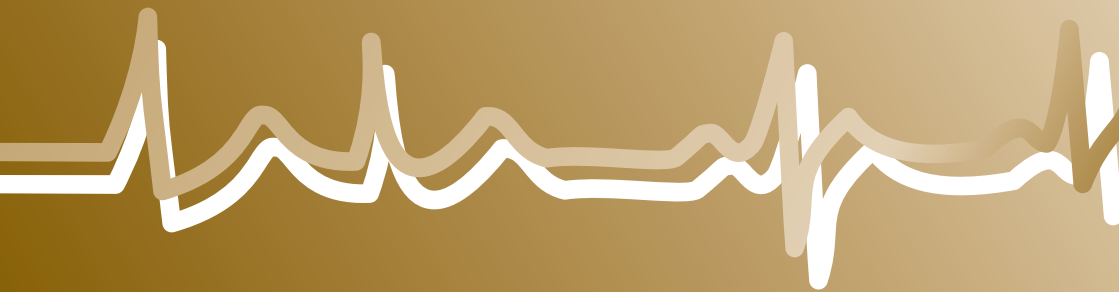
Name of National Cardiac Society, National Working Group or arrhythmia body

· APAPE – Portuguese Association of Arrhythmology Pacing and Electrophysiology

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

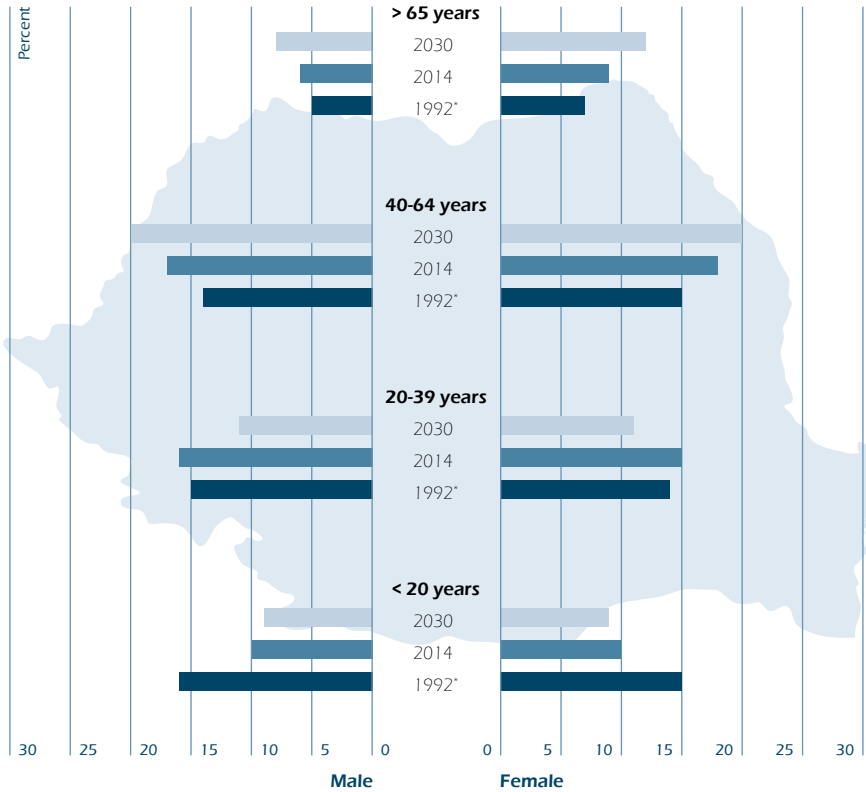
- EHRA White Book 2014
- Survey from professional association
- Estimation

ROMANIA



1. Statistics

Age pyramid for Romania



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	2,3	2011
Beds (per 100.000 population)	610,7	2011
Density of physicians (per 1.000 population)	2,4	2011
Density of nurses (per 1.000 population)	5,5	2011

Demographic information		
Population	21.729.871	2014
Population annual growth rate (%)	-0,3	2014
Life expectancy at birth	75	2014
Death rate (per 1.000 population)	11,7	2011
Live births (per 1.000 population)	9,4	2012

Economic information		
Gross domestic product (U.S dollar-billions)	202,47	2014*
Gross domestic product per capita (U.S dollar-units)	10.160,97	2014*
Total expenditure on health as % of GDP	5,1	2012
General government expenditure on health as % of total expenditure on health	79,2	2011
Private expenditure on health as % of total expenditure on health	20,8	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	50%	60%

3. Healthcare System

National Healthcare System, some private systems, some of them receiving partial funds from NHS (The Ministry of Health is the coordinator of Health System).

Basic insurance availability	Yes
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Requirements for citizens to qualify for public insurance: to be employed, social assisted or to be retired.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2013	2014
Public insurance company	98%	100%
Private insurance company	0%	0%
Private co-payment	2%	0%

Possibility to subscribing to private health insurance plans	No
--------------------------------------------------------------	----

Co-payment necessary for the following therapy	
ICD devices	Yes
Pacemakers	Yes
Ablation	Yes

Comments: Yes, only in private hospitals.



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:	National Programs are available in selected centers, but limited by budget.							

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: National Programms are available in selected centers, but limited by budget.

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
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Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: We are planning to have National Certification and to homologate EHRA certification.

Specialist required for	
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	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	No
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Suggested period of training to perform implantations	Yes	1 year
--------------------------------------------------------------	------------	---------------

Training centres availability	
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Pacemaker	9
ICD implantation	9
CRT implantation	7
Electrophysiological studies and catheter ablation	6
Atrial fibrillation ablation	0

Number of universities (Schools of Medicine)	12
-----------------------------------------------------	-----------



Percentage of academic centres among all practicing EP centres	80%
----------------------------------------------------------------	-----

Percentage of academic centres among all practicing implanting devices centres	90%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	22	24
Total Pacemaker units implanted	2,400	4,258
Thereof, New implants	2,000	not available
Thereof, Replacements	400	not available

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	17	12
Total CRT units implanted	200	289
Thereof, CRT pacemaker	130	166
Thereof, CRT ICD	70	123

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	17	15
Total ICD units implanted	200	332
Thereof, Single chamber	190	307
Thereof, Dual chamber	10	25
First implants	150	not available
Replacements	50	not available

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	5	1
Total loop recorders implanted	10	2

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	2	2
Total lead extraction procedures	10	10

Specialist performing lead extractions		
Cardiologists	Yes	100%
Surgeons	No	0%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
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11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	14	12
Number of ablations performed	1,300	1,358
Mean number of ablations per centre	93	113
Number of AF ablations	120	88
Number of ablation centres (> 50 AF ablations)	1	0
Number of VT/VF ablations	not available	23
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	1
Number of LAA closures	not available	3
Number of centres (LAA closures)	not available	1
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	15
Number of physicians under training to become independent electrophysiologists	not available	3



Availability of a national registry for interventional electrophysiology	No
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12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No answer
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Others: Lack of National Guidelines						

1 = no obstacle

5 = great obstacle

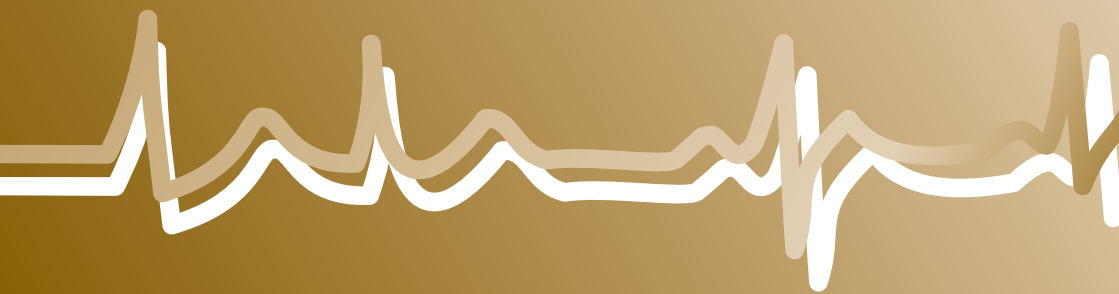
* (1 = top; 6 = lowest)

13. Sources

Name of National Cardiac Society, National Working Group or arrhythmia body
· Romanian Society of Cardiology, Working Group of Arrhythmias, Electrophysiology and Implantable Devices

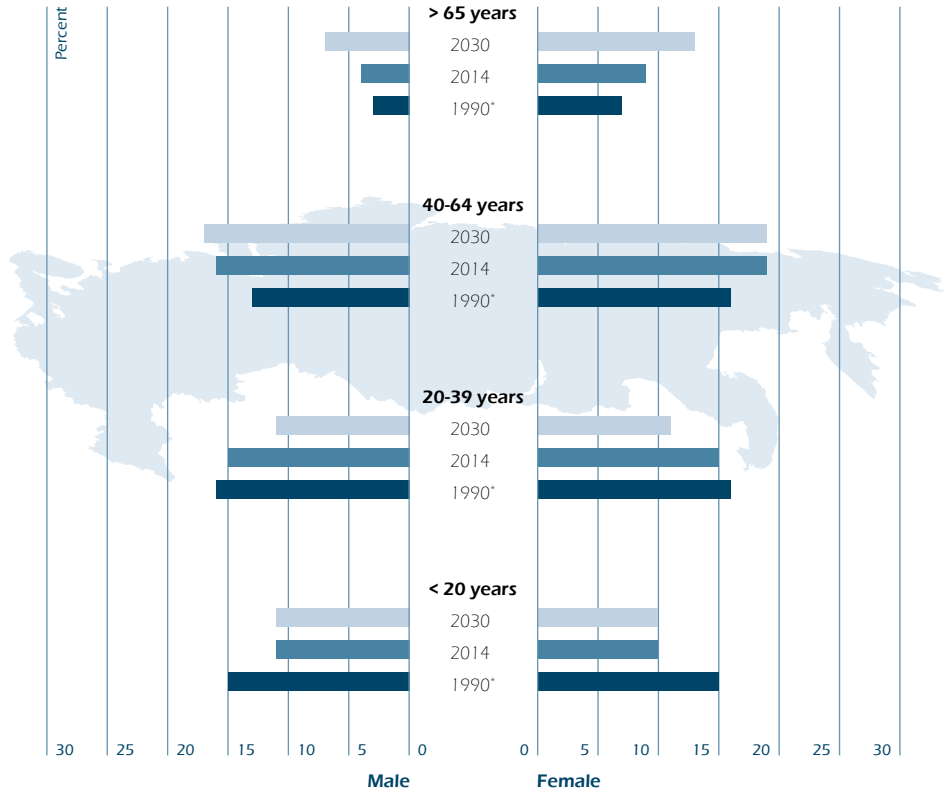
All sources that were used to fill out the questionnaire for the EHRA White Book 2015
· EHRA White Book 2014
· Survey from professional association
· Sales data
· Estimation

RUSSIAN FEDERATION



1. Statistics

Age pyramid for Russian Federation



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	4,5	2006
Beds (per 100.000 population)	965,9	2006
Density of physicians (per 1.000 population)	4,3	2006
Density of nurses (per 1.000 population)	8,5	2006

Demographic information		
Population	142.470.272	2014
Population annual growth rate (%)	0,0	2014
Life expectancy at birth	70	2014
Death rate (per 1.000 population)	14,2	2010
Live births (per 1.000 population)	12,3	2010

Economic information		
Gross domestic product (U.S dollar-billions)	2.057,30	2014*
Gross domestic product per capita (U.S dollar-units)	14.316,64	2014*
Total expenditure on health as % of GDP	6,3	2012
General government expenditure on health as % of total expenditure on health	59,8	2011
Private expenditure on health as % of total expenditure on health	40,2	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	55%	53%

3. Healthcare System

National Health System

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: all citizens.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2013	2014
Public insurance company	85%	85%
Private insurance company	10%	15%
Private co-payment	5%	not available

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	Yes
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input checked="" type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: NICE; Ministry of Health

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NSA
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NSA
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NSA



National Cardiac Society supporting EHRA certification system	
Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
	Specialist	
Catheter ablation	Yes	Cardiologist, surgeon
ICD or pacemaker implants	Yes	Cardiologist, surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
NSA	

Required period of training to perform implantations	Yes	3 years

Suggested period of training to perform implantations	Yes	3 years

Training centres availability	
Pacemaker	10
ICD implantation	7
CRT implantation	7
Electrophysiological studies and catheter ablation	11
Atrial fibrillation ablation	5

Number of universities (Schools of Medicine)	not available



Percentage of academic centres among all practicing EP centres	not available
----------------------------------------------------------------	---------------

Percentage of academic centres among all practicing implanting devices centres	not available
--------------------------------------------------------------------------------	---------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres

	2013	2014
Implanting centres	140	140
Total Pacemaker units implanted	34.758	37.832
Thereof, New implants	28.930	32.199
Thereof, Replacements	5.828	5.633

Specialist performing implants

Cardiologists	Yes	70%
Surgeons	Yes	30%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2013	2014
Implanting centres	42	42
Total CRT units implanted	1.012	863
Thereof, CRT pacemaker	382	45
Thereof, CRT ICD	630	818

Specialist performing implants

Cardiologists	Yes	60%
Surgeons	Yes	40%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	57	55
Total ICD units implanted	1.870	1.769
Thereof, Single chamber	457	645
Thereof, Dual chamber	1.413	1.124
First implants	1.644	1.516
Replacements	226	253

Specialist performing implants		
Cardiologists	Yes	70%
Surgeons	Yes	30%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	not available
Total loop recorders implanted	not available	not available

Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	Yes	not available

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	not available	not available
Total lead extraction procedures	not available	not available

Specialist performing lead extractions		
Cardiologists	Yes	not available
Surgeons	Yes	not available



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	NSA
Pacing	Yes	NSA
Electrophysiology	Yes	NSA

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
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Official name: Federal center for Interventional and Surgical Arrhythmology

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	81	81
Number of ablations performed	21.185	23.874
Mean number of ablations per centre	262	295
Number of AF ablations	5.858	6.462
Number of ablation centres (> 50 AF ablations)	53	58
Number of VT/VF ablations	not available	2.408
Number of ablation centres (> 10 VT ablations on structural heart diseases)	55	59
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	95



Availability of a national registry for interventional electrophysiology

Yes

Official name: NSA

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	No answer
European	Yes

Obstacles to guideline implementation	Ranking of importance*					Ranking of importance*
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

Name of National Cardiac Society, National Working Group or arrhythmia body

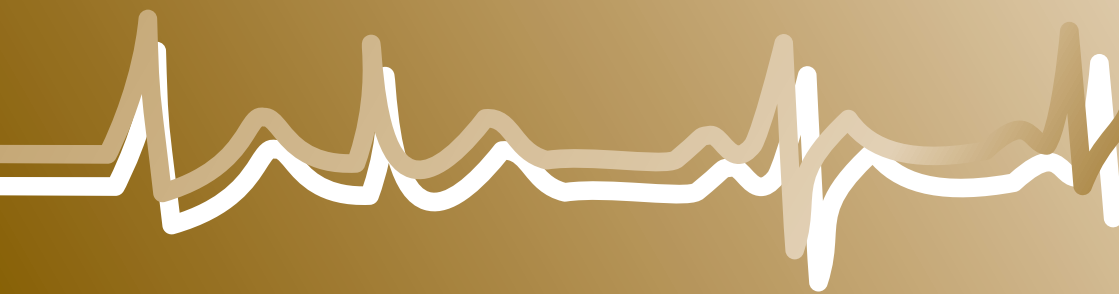
- National (Russian) Society of Arrhythmology (NSA)

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

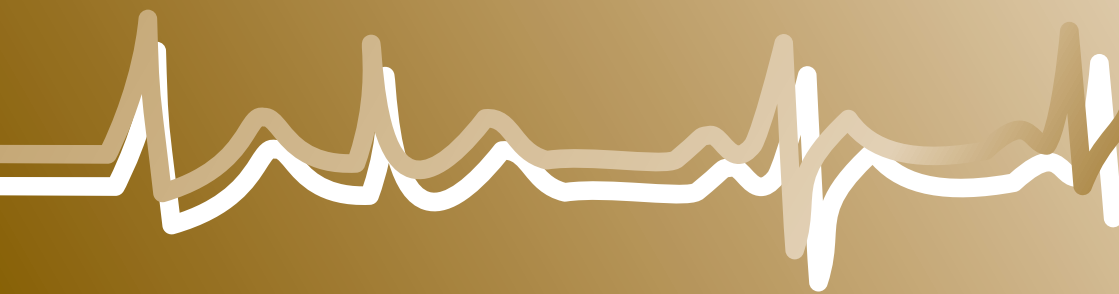
- EHRA White Book 2014
- Ministry of Health
- National (Russian) Society of Arrhythmology

SAN MARINO

Data not submitted.

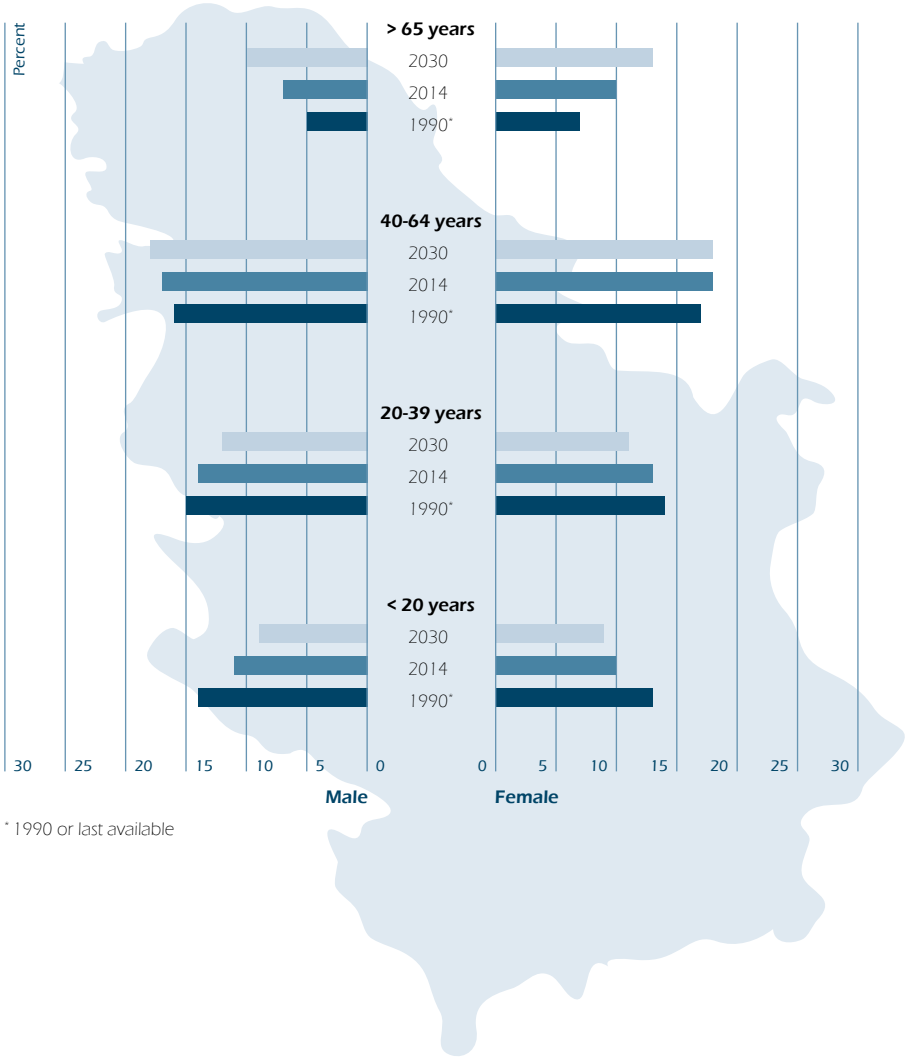


SERBIA



1. Statistics

Age pyramid for Serbia



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	not available	not available
Beds (per 100.000 population)	not available	not available
Density of physicians (per 1.000 population)	3,1	2012
Density of nurses (per 1.000 population)	6,3	2012

Demographic information

Population	7.209.764	2014
Population annual growth rate (%)	-0,5	2014
Life expectancy at birth	75	2014
Death rate (per 1.000 population)	14,2	2012
Live births (per 1.000 population)	9,3	2012

Economic information

Gross domestic product (U.S dollar-billions)	42,65	2014*
Gross domestic product per capita (U.S dollar-units)	5.924,04	2014*
Total expenditure on health as % of GDP	10,5	2012
General government expenditure on health as % of total expenditure on health	62,1	2011
Private expenditure on health as % of total expenditure on health	37,9	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	56%	56%

3. Healthcare System

National Health System.

Basic insurance availability	Yes
------------------------------	-----

Requirements for citizens to qualify for public insurance: no special restrictions in health care.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	95%	100%
Uninsured citizens	5%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	90%	100%
Private insurance company	5%	0%
Private co-payment	5%	0%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Under the existing law the patient covers 5% of the cost value of appliances that are permanently installed.

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	National referral pacemaker center
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	National referral pacemaker center



National Cardiac Society supporting EHRA certification system	
Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	No
------------------------------------------------------------------------------------------------------	-----------

Required period of training to perform implantations	Yes	1 year
-------------------------------------------------------------	------------	---------------

Suggested period of training to perform implantations	Yes	1 year
--------------------------------------------------------------	------------	---------------

Training centres availability	
Pacemaker	7
ICD implantation	5
CRT implantation	3
Electrophysiological studies and catheter ablation	2
Atrial fibrillation ablation	2

Number of universities (Schools of Medicine)	4
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	not available
----------------------------------------------------------------	---------------

Percentage of academic centres among all practicing implanting devices centres	50%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres

	2013	2014
Implanting centres	18	17
Total Pacemaker units implanted	3,958	3,657
Thereof, New implants	3,664	3,135
Thereof, Replacements	294	522

Specialist performing implants

Cardiologists	Yes	95%
Surgeons	Yes	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2013	2014
Implanting centres	6	6
Total CRT units implanted	329	321
Thereof, CRT pacemaker	282	243
Thereof, CRT ICD	47	78

Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	8	10
Total ICD units implanted	448	457
Thereof, Single chamber	381	360
Thereof, Dual chamber	67	97
First implants	not available	394
Replacements	not available	63

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	11	10
Total loop recorders implanted	19	34

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	3	5
Total lead extraction procedures	34	62

Specialist performing lead extractions		
Cardiologists	Yes	80%
Surgeons	Yes	20%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for

		Official name
ICD	Yes	National referral pacemaker center
Pacing	Yes	National referral pacemaker center
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
-------------------------------------------------------------------------------------------------------------------------------------	------------

Official name: National referral pacemaker center

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	3	2
Number of ablations performed	1.010	815
Mean number of ablations per centre	337	408
Number of AF ablations	120	236
Number of ablation centres (> 50 AF ablations)	2	2
Number of VT/VF ablations	not available	50
Number of ablation centres (> 10 VT ablations on structural heart diseases)	2	2
Number of LAA closures	not available	3
Number of centres (LAA closures)	not available	1
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	7
Number of physicians under training to become independent electrophysiologists	not available	5


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	Yes
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of referral	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

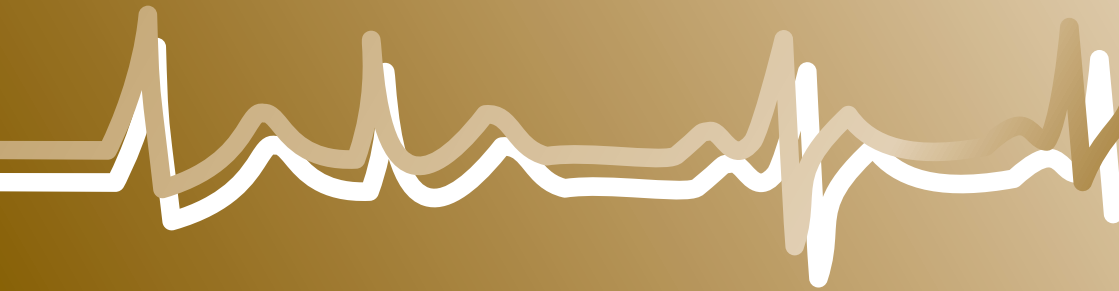
Name of National Cardiac Society, National Working Group or arrhythmia body

· Serbian Cardiology Society

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

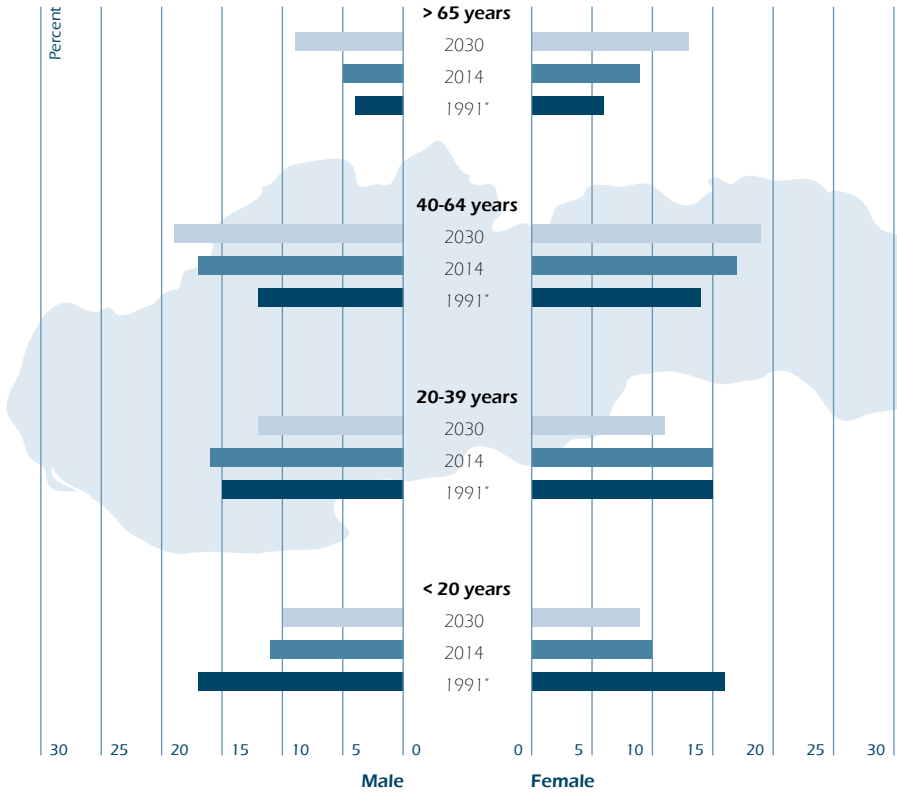
- EHRA White Book 2014
- Official statistics
- Survey from professional association

SLOVAKIA



1. Statistics

Age pyramid for Slovakia



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	2,6	2011
Beds (per 100.000 population)	605,5	2011
Density of physicians (per 1.000 population)	3,0	2007
Density of nurses (per 1.000 population)	6,3	2011

Demographic information

Population	5.492.677	2014
Population annual growth rate (%)	0,1	2014
Life expectancy at birth	76	2014
Death rate (per 1.000 population)	9,8	2010
Live births (per 1.000 population)	10,3	2012

Economic information

Gross domestic product (U.S dollar-billions)	100,11	2014*
Gross domestic product per capita (U.S dollar-units)	18.479,68	2014*
Total expenditure on health as % of GDP	7,8	2012
General government expenditure on health as % of total expenditure on health	70,9	2011
Private expenditure on health as % of total expenditure on health	29,1	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	47%	47%

3. Healthcare System

National health system with universal health insurance coverage, major hospitals (incl. university hospitals) owned and operated by government, regional hospitals mostly non-profit organizations or privately owned. General practitioners and most specialists work in private offices (on the basis of agreements with insurance companies, no (or very little) cash contribution from the patients. There is no patient financial contribution for arrhythmia devices or interventions, but co-payment is necessary for most drugs.

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: All permanent residents with citizenship are qualified.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	72%	72%
Private insurance company	28%	28%
Private co-payment	0 %	0 %

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:	Restricted by budget; Number of hospitals offering these therapies limited by insurance companies							

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Certified activity for implanting cardiac impulse generators (Ministry of Health)
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Certificate in „Intensive care of adults“ (Ministry of Health)
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist, surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation **No**

Required period of training to perform implantations **No**

Suggested period of training to perform implantations **No**

Training centres availability

Pacemaker	3
ICD implantation	3
CRT implantation	3
Electrophysiological studies and catheter ablation	4
Atrial fibrillation ablation	3

Number of universities (Schools of Medicine) **4**



Percentage of academic centres among all practicing EP centres	66%
----------------------------------------------------------------	-----

Percentage of academic centres among all practicing implanting devices centres	20%
--------------------------------------------------------------------------------	-----

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	14	13
Total Pacemaker units implanted	3,456	3,326
Thereof, New implants	2,837	2,634
Thereof, Replacements	619	692

Specialist performing implants		
Cardiologists	Yes	70%
Surgeons	Yes	30%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	5	6
Total CRT units implanted	452	529
Thereof, CRT pacemaker	110	136
Thereof, CRT ICD	342	393

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	4	4
Total ICD units implanted	591	658
Thereof, Single chamber	434	483
Thereof, Dual chamber	157	175
First implants	470	539
Replacements	121	119
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	5	6
Total loop recorders implanted	101	250
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	3	3
Total lead extraction procedures	108	136
Specialist performing lead extractions		
Cardiologists	Yes	100%
Surgeons	No	0%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	SLOVIMPULZ
Pacing	Yes	SLOVIMPULZ
Electrophysiology	Yes	SLOVABLO

Availability of a national quality insurance system or complication registry	No
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Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
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Official name: SUKL – State Institute for Drug Control

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	4	4
Number of ablations performed	1.071	1.111
Mean number of ablations per centre	268	278
Number of AF ablations	150	129
Number of ablation centres (> 50 AF ablations)	2	2
Number of VT/VF ablations	not available	37
Number of ablation centres (> 10 VT ablations on structural heart diseases)	2	3
Number of LAA closures	not available	0
Number of centres (LAA closures)	not available	0
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	19
Number of physicians under training to become independent electrophysiologists	not available	not available



Availability of a national registry for interventional electrophysiology	Yes
---------------------------------------------------------------------------------	------------

Official name: SLOVABLO registry of the Slovak Heart Rhythm Association (SHRA)

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	No answer
European	Yes

Obstacles to guideline implementation	Ranking of importance*				
----------------------------------------------	-------------------------------	--	--	--	--

	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

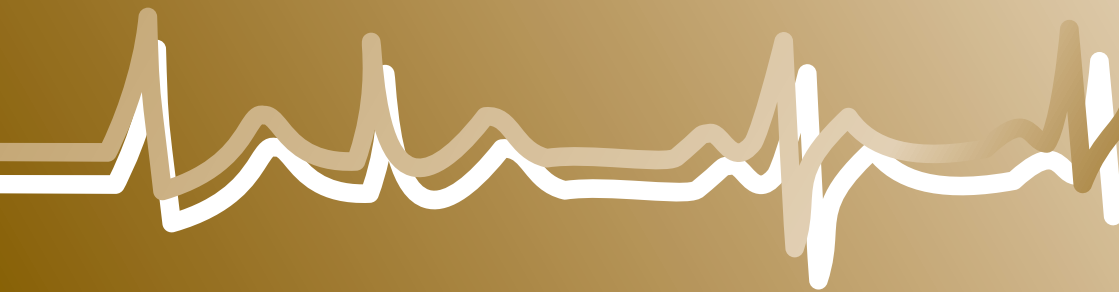
Name of National Cardiac Society, National Working Group or arrhythmia body

· Slovak Heart Rhythm Association

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

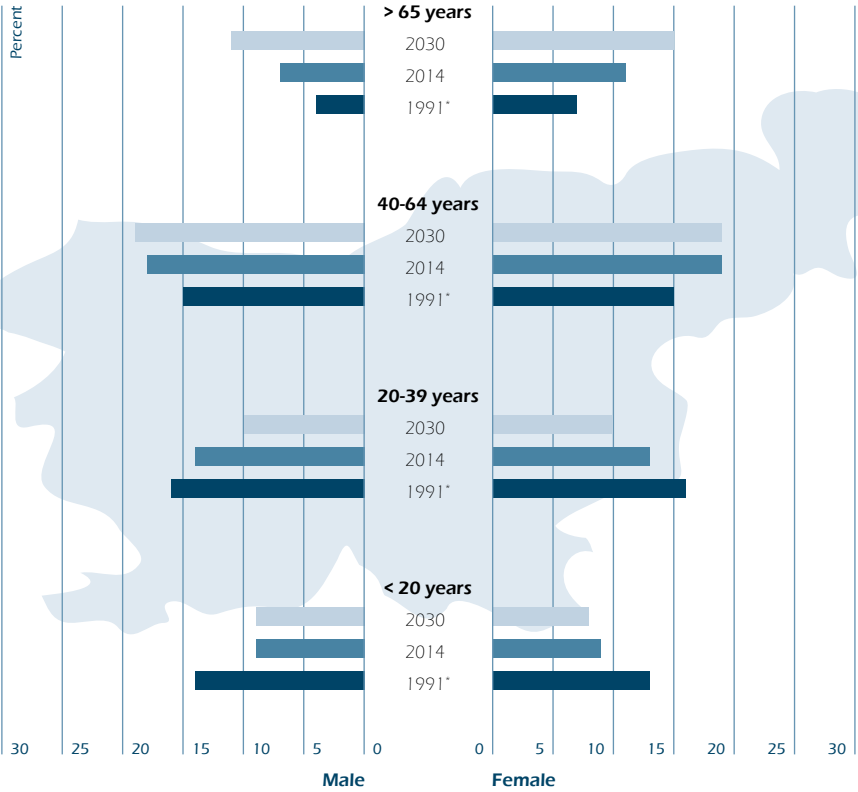
- EHRA White Book 2014
- Official statistics
- Survey from professional association
- Sales data
- Estimation

SLOVENIA



1. Statistics

Age pyramid for Slovenia



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	1,4	2012
Beds (per 100.000 population)	462,5	2011
Density of physicians (per 1.000 population)	2,5	2011
Density of nurses (per 1.000 population)	8,4	2011

Demographic information		
Population	1.988.292	2014
Population annual growth rate (%)	-0,2	2014
Life expectancy at birth	78	2014
Death rate (per 1.000 population)	9,1	2010
Live births (per 1.000 population)	10,6	2012

Economic information		
Gross domestic product (U.S dollar-billions)	49,93	2014*
Gross domestic product per capita (U.S dollar-units)	24.211,32	2014*
Total expenditure on health as % of GDP	8,8	2012
General government expenditure on health as % of total expenditure on health	73,7	2011
Private expenditure on health as % of total expenditure on health	26,3	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

NHS Fund.

Basic insurance availability	No
------------------------------	----

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	99%	99%
Uninsured citizens	1%	1%

Distribution of insurance modality		
	2013	2014
Public insurance company	4%	4%
Private insurance company	0%	0%
Private co-payment	96%	96%

Possibility to subscribing to private health insurance plans	No answer
--------------------------------------------------------------	-----------

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input checked="" type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

	Specialist	
Catheter ablation	Yes	Cardiologist, internist
ICD or pacemaker implants	Yes	Surgeon, internist, cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation **No**

Required period of training to perform implantations **No answer**

Suggested period of training to perform implantations **No answer**

Training centres availability

Pacemaker	2
ICD implantation	2
CRT implantation	2
Electrophysiological studies and catheter ablation	2
Atrial fibrillation ablation	2

Number of universities (Schools of Medicine) **2**



Percentage of academic centres among all practicing EP centres	100%
-----------------------------------------------------------------------	-------------

Percentage of academic centres among all practicing implanting devices centres	43%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	8	7
Total Pacemaker units implanted	1.287	1.464
Thereof, New implants	1.089	1.167
Thereof, Replacements	198	297

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	Yes	90%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	2	2
Total CRT units implanted	131	150
Thereof, CRT pacemaker	55	57
Thereof, CRT ICD	76	93

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	2	2
Total ICD units implanted	142	174
Thereof, Single chamber	113	148
Thereof, Dual chamber	29	26
First implants	135	156
Replacements	7	18
Specialist performing implants		
Cardiologists	Yes	35%
Surgeons	Yes	65%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	3
Total loop recorders implanted	not available	19
Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	Yes	not available

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	1	not available
Total lead extraction procedures	not available	not available
Specialist performing lead extractions		
Cardiologists	No	0%
Surgeons	Yes	100%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	WG on Arrhythmias, Slovenian Society of Cardiology
Pacing	Yes	WG on Arrhythmias, Slovenian Society of Cardiology
Electrophysiology	Yes	WG on Arrhythmias, Slovenian Society of Cardiology

Availability of a national quality insurance system or complication registry	Yes
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Official name: Agency of the Republic of Slovenia for Medicines and Medical Devices

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
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Official name: Agency of the Republic of Slovenia for Medicines and Medical Devices

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	2	3
Number of ablations performed	279	437
Mean number of ablations per centre	140	146
Number of AF ablations	165	149
Number of ablation centres (> 50 AF ablations)	1	1
Number of VT/VF ablations	not available	49
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	2
Number of LAA closures	not available	4
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	3


Availability of a national registry for interventional electrophysiology

Yes

Official name: WG on Arrhythmias, Slovenian Society of Cardiology

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	No
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

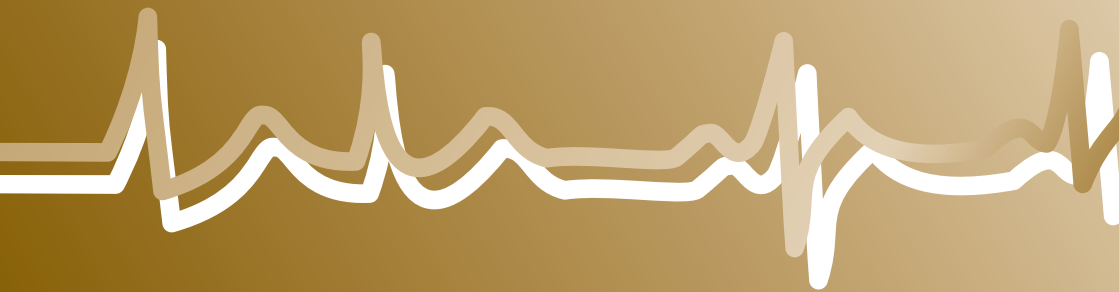
Name of National Cardiac Society, National Working Group or arrhythmia body

· Working Group on Arrhythmias, Slovenian Society of Cardiology

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

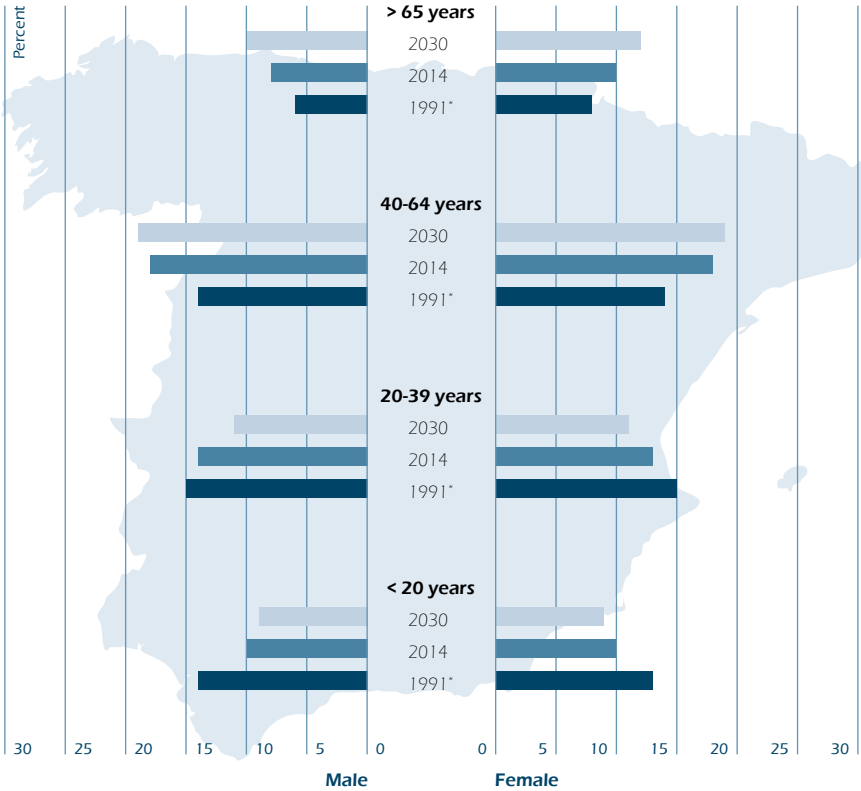
- EHRA White Book 2014
- Survey from professional association
- Estimation

SPAIN



1. Statistics

Age pyramid for Spain



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	1,7	2011
Beds (per 100.000 population)	309,2	2011
Density of physicians (per 1.000 population)	3,7	2012
Density of nurses (per 1.000 population)	5,5	2011

Demographic information

Population	47.737.941	2014
Population annual growth rate (%)	0,8	2014
Life expectancy at birth	82	2014
Death rate (per 1.000 population)	8,4	2011
Live births (per 1.000 population)	9,7	2012

Economic information

Gross domestic product (U.S dollar-billions)	1.400,48	2014*
Gross domestic product per capita (U.S dollar-units)	30.113,31	2014*
Total expenditure on health as % of GDP	9,6	2012
General government expenditure on health as % of total expenditure on health	73,0	2011
Private expenditure on health as % of total expenditure on health	27,0	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	32%	33%

3. Healthcare System

System Spanish healthcare is based on a national health system that covers almost all population. Regional autonomous communities have their own budget and decide how to organize and deliver resources. Private insurance companies offer complementary healthcare coverage.

Basic insurance availability	No	
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Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	95%	95%
Uninsured citizens	5%	5%

Distribution of insurance modality		
	2013	2014
Public insurance company	75%	83%
Private insurance company	10%	15%
Private co-payment	15%	2%

Possibility to subscribing to private health insurance plans	Yes	
--------------------------------------------------------------	-----	--

Co-payment necessary for the following therapy		
ICD devices		No
Pacemakers		No
Ablation		No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cardiac stimulation accreditation (Acreditación en estimulación cardiaca)
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Acreditación de formación específica de excelencia para la práctica en Electrofisiología Cardiaca Intervencionista
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Acreditación de centros para la formación en Electrofisiología


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist, cardiac surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation
Yes

Spanish Society of Cardiology

Required period of training to perform implantations
No
Suggested period of training to perform implantations
Yes
2 years
Training centres availability

Pacemaker	0
ICD implantation	0
CRT implantation	0
Electrophysiological studies and catheter ablation	23
Atrial fibrillation ablation	23

Number of universities (Schools of Medicine)
28



Percentage of academic centres among all practicing EP centres	70%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	35%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres

	2013	2014
Implanting centres	230	230
Total Pacemaker units implanted	35.500	36.322
Thereof, New implants	not available	27.242
Thereof, Replacements	not available	9.080

Specialist performing implants

Cardiologists	Yes	72%
Surgeons	Yes	24%
Others: Intensive Care specialists	Yes	4%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2013	2014
Implanting centres	130	130
Total CRT units implanted	2.545	2.974
Thereof, CRT pacemaker	857	949
Thereof, CRT ICD	1.688	2.025

Specialist performing implants

Cardiologists	Yes	98%
Surgeons	Yes	2%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	153	112
Total ICD units implanted	3,885	3,869
Thereof, Single chamber	2,920	2,903
Thereof, Dual chamber	965	966
First implants	2,673	2,813
Replacements	1,212	1,056

Specialist performing implants		
Cardiologists	Yes	92%
Surgeons	Yes	8%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	140	145
Total loop recorders implanted	2,063	2,500

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	16	16
Total lead extraction procedures	not available	not available

Specialist performing lead extractions		
Cardiologists	Yes	20%
Surgeons	Yes	80%

10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for

		Official name
ICD	Yes	Spanish Implantable Cardioverter-defibrillator Registry. Tenth Official Report of the Spanish Society of Cardiology Electrophysiology and Arrhythmias Section (2013). Esp Cardiol (Engl Ed). 2014 Nov;67(11):936-47. doi: 10.1016/j.rec.2014.08.001. Epub 2014 Oct 1. Alzueta J1, Pedrote A2, Fernández Lozano I
Pacing	Yes	Spanish Pacemaker Registry. Eleventh official report of the Spanish Society of Cardiology Working Group on Cardiac Pacing (2013) Esp Cardiol (Engl Ed). 2014 Dec;67(12):1024-38. doi: 10.1016/j.rec.2014.08.004. Epub 2014 Nov 11. Coma Samartín R1, Cano Pérez Ó2, Pombo Jiménez M3.
Electrophysiology	Yes	Spanish Catheter Ablation Registry. 13th Official Report of the Spanish Society of Cardiology Working Group on Electrophysiology and Arrhythmias (2013). Esp Cardiol (Engl Ed). 2014 Nov;67(11):925-35. doi: 10.1016/j.rec.2014.07.009. Epub 2014 Sep 30. Ferrero de Loma-Osorio A1, Gil-Ortega I2, Pedrote-Martínez A2; Spanish Catheter Ablation Registry collaborators.

Availability of a national quality insurance system or complication registry	No
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Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
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Official name: Ministry of Health in collaboration with Working Group of Arrhythmia and Pacing

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	80	85
Number of ablations performed	11.987	12.871
Mean number of ablations per centre	150	151
Number of AF ablations	2.201	2.498
Number of ablation centres (> 50 AF ablations)	16	17
Number of VT/VF ablations	not available	711
Number of ablation centres (> 10 VT ablations on structural heart diseases)	20	21
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	160
Number of physicians under training to become independent electrophysiologists	not available	not available

Availability of a national registry for interventional electrophysiology**No****12. Guidelines****Guidelines adhered to ICD implants and pacemaker implants**

National	Yes
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

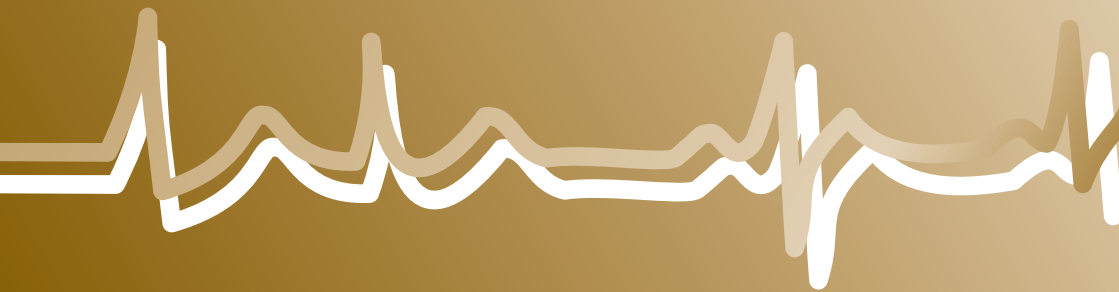
13. Sources**Name of National Cardiac Society, National Working Group or arrhythmia body**

- Sección de Electrofisiología y Arritmias de la Sociedad Española de Cardiología (Arrhythmia Working Group of the Spanish Society of Cardiology)
- Sección de Estimulación Cardíaca de la Sociedad Española de Cardiología (Working Group of Cardiac Pacing of the Spanish Society of Cardiology)

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

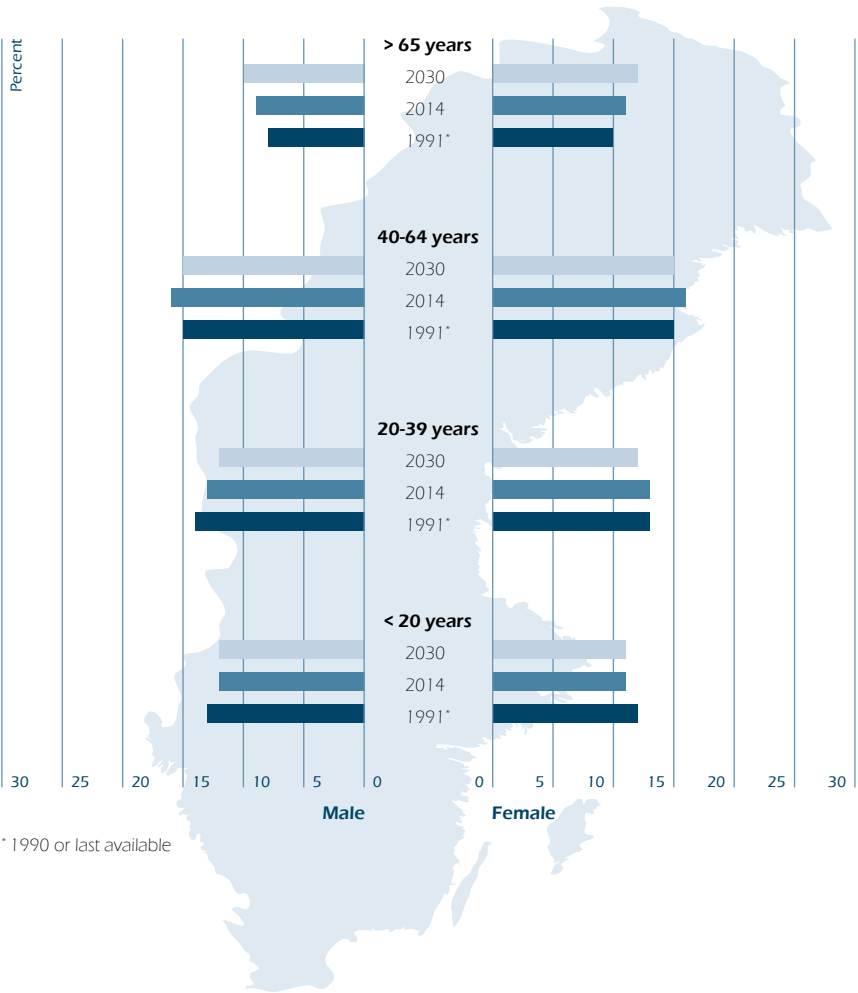
- EHRA White Book 2014
- Estimation

SWEDEN



1. Statistics

Age pyramid for Sweden



* 1990 or last available



Healthcare data

Hospitals (per 100.000 population)	0,9	2003
Beds (per 100.000 population)	270,6	2011
Density of physicians (per 1.000 population)	2,8	1994
Density of nurses (per 1.000 population)	not available	not available

Demographic information

Population	9.723.809	2014
Population annual growth rate (%)	0,8	2014
Life expectancy at birth	82	2014
Death rate (per 1.000 population)	9,7	2010
Live births (per 1.000 population)	11,9	2012

Economic information

Gross domestic product (U.S dollar-billions)	559,11	2014*
Gross domestic product per capita (U.S dollar-units)	57.556,64	2014*
Total expenditure on health as % of GDP	9,6	2012
General government expenditure on health as % of total expenditure on health	81,6	2011
Private expenditure on health as % of total expenditure on health	18,4	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

National Health System.

Basic insurance availability	Yes
------------------------------	-----

Requirements for citizens to qualify for public insurance: as a tax.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	not available	90%
Private insurance company	not available	0%
Private co-payment	not available	10%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:	Money spent on health care different for different regions.							

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input checked="" type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: The National Board of Health and Welfare.

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	


National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

	Specialist
Catheter ablation	No
ICD or pacemaker implants	No

Official national competency guidelines for electrophysiological studies or catheter ablation **No**

Required period of training to perform implantations **No**

Suggested period of training to perform implantations **No**

Training centres availability

Pacemaker	15
ICD implantation	15
CRT implantation	15
Electrophysiological studies and catheter ablation	7
Atrial fibrillation ablation	7

Number of universities (Schools of Medicine) **7**



Percentage of academic centres among all practicing EP centres	78%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	50%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	42	45
Total Pacemaker units implanted	9.602	9.421
Thereof, New implants	6.854	6.810
Thereof, Replacements	2.748	2.611

Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	Yes	not available
Others: Anesthetist	Yes	not available

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	15
Total CRT units implanted	967	854
Thereof, CRT pacemaker	431	308
Thereof, CRT ICD	536	546

Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	Yes	not available



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2013		2014
Implanting centres	29		35
Total ICD units implanted	1.911		2.097
Thereof, Single chamber	380		not available
Thereof, Dual chamber	1.531		not available
First implants	1.323		1.506
Replacements	588		591
Specialist performing implants			
Cardiologists		Yes	not available
Surgeons		Yes	not available

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2013		2014
Implanting centres	not available		45
Total loop recorders implanted	605		753
Specialist performing implants			
Cardiologists		Yes	not available
Surgeons		Yes	not available

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions			
	2013		2014
Hospitals performed lead extractions	4		5
Total lead extraction procedures	491		450
Specialist performing lead extractions			
Cardiologists		Yes	not available
Surgeons		Yes	not available



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	Swedish ICD and pacemaker registry
Pacing	Yes	Swedish ICD and pacemaker registry
Electrophysiology	Yes	Swedish catheter ablation registry

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
-------------------------------------------------------------------------------------------------------------------------------------	------------

Official name: The National Board of Health and Welfare, Medical Product Agency

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	10	10
Number of ablations performed	4.483	4.803
Mean number of ablations per centre	448	480
Number of AF ablations	1.727	1.791
Number of ablation centres (> 50 AF ablations)	9	9
Number of VT/VF ablations	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	5	not available
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	36
Number of physicians under training to become independent electrophysiologists	not available	13


Availability of a national registry for interventional electrophysiology
Yes

Official name: Swedish Catheter Ablation Registry

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	No
European	No

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

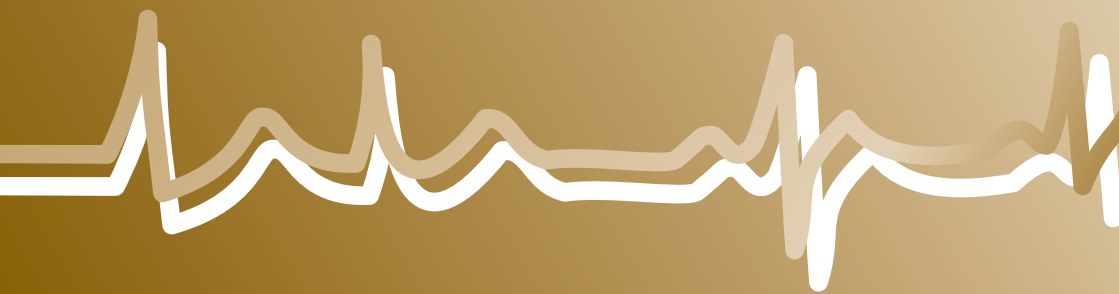
Name of National Cardiac Society, National Working Group or arrhythmia body

· Heart Rhythm Group (HRG) of the Swedish Society of Cardiology

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

- EHRA White Book 2014
- Swedish pacemaker and catheter ablation registry
- Swedish national Board of healthcare and well being
- Estimation
- Other

SWITZERLAND



1. Statistics

Age pyramid for Switzerland



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	3,9	2011
Beds (per 100.000 population)	500,8	2011
Density of physicians (per 1.000 population)	3,9	2011
Density of nurses (per 1.000 population)	17,4	2011

Demographic information		
Population	8.061.516	2014
Population annual growth rate (%)	0,8	2014
Life expectancy at birth	82	2014
Death rate (per 1.000 population)	8,0	2010
Live births (per 1.000 population)	10,6	2012

Economic information		
Gross domestic product (U.S dollar-billions)	679,03	2014*
Gross domestic product per capita (U.S dollar-units)	84.343,53	2014*
Total expenditure on health as % of GDP	11,3	2012
General government expenditure on health as % of total expenditure on health	64,9	2011
Private expenditure on health as % of total expenditure on health	35,1	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	35%	35%

3. Healthcare System

Compulsory general healthcare insurance for all citizens. Voluntary complementary private insurances (used by approx. 26-28%). The individual additional self contribution adds up to max. 3200 CHF annually.

Basic insurance availability	Yes
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Requirements for citizens to qualify for public insurance: Obligatory membership.

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	70%	71%
Private insurance company	0%	0%
Private co-payment	30%	29%

Possibility to subscribing to private health insurance plans	Yes
--------------------------------------------------------------	-----

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input checked="" type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Published Guidelines of the Working Group Pacing and Cardiac Electrophysiology. Self declaration by the members of the Working Group on the www.pacemaker.ch
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Published Guidelines of the Working Group Pacing and Cardiac Electrophysiology. Self declaration by the members of the Working Group on the www.pacemaker.ch
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Published Guidelines of the Working Group Pacing and Cardiac Electrophysiology. Self declaration by the members of the Working Group on the www.pacemaker.ch



National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input checked="" type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

	Specialist	
Catheter ablation	Yes	Cardiologist, specific training in EP
ICD or pacemaker implants	Yes	Cardiologist, Cardiac Surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation Yes

Published Guidelines of the Working Group Pacing and Cardiac Electrophysiology.
Self declaration by the members of the Working Group on the www.pacemaker.ch

Required period of training to perform implantations No

Suggested period of training to perform implantations Yes*

* 100 device implantations as a first operator within a period of 24 consecutive months.

Training centres availability

Pacemaker	76
ICD implantation	52
CRT implantation	30
Electrophysiological studies and catheter ablation	23
Atrial fibrillation ablation	17

Number of universities (Schools of Medicine) 5



Percentage of academic centres among all practicing EP centres	22%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	7%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	76	76
Total Pacemaker units implanted	6.097	6.543
Thereof, New implants	4.614	4.983
Thereof, Replacements	1.483	1.560

Specialist performing implants		
Cardiologists	Yes	98%
Surgeons	Yes	2%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	31	48
Total CRT units implanted	477	583
Thereof, CRT pacemaker	157	208
Thereof, CRT ICD	320	375

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2013		2014
Implanting centres	46		52
Total ICD units implanted	1.545		1.341
Thereof, Single chamber	395		not available
Thereof, Dual chamber	269		not available
First implants	986		742
Replacements	579		599
Specialist performing implants			
Cardiologists		Yes	99%
Surgeons		Yes	1%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2013		2014
Implanting centres	not available		not available
Total loop recorders implanted	not available		not available
Specialist performing implants			
Cardiologists			not available
Surgeons			not available

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions			
	2013		2014
Hospitals performed lead extractions	8		5
Total lead extraction procedures	90		87
Specialist performing lead extractions			
Cardiologists		Yes	50%
Surgeons		Yes	50%



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	CHPACE WEB www.pacemaker.ch
Pacing	Yes	CHPACE WEB www.pacemaker.ch
Electrophysiology	Yes	CHPACE WEB www.pacemaker.ch

Availability of a national quality insurance system or complication registry	No
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Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
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Official name: Working Group „Cardiac Pacing and Electrophysiology“

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	22	23
Number of ablations performed	4,527	5,135
Mean number of ablations per centre	206	223
Number of AF ablations	1,469	1,684
Number of ablation centres (> 50 AF ablations)	11	12
Number of VT/VF ablations	not available	169
Number of ablation centres (> 10 VT ablations on structural heart diseases)	3	6
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	40
Number of physicians under training to become independent electrophysiologists	not available	15



Availability of a national registry for interventional electrophysiology	Yes
---------------------------------------------------------------------------------	------------

Official name: CHPACE WEB www.pacemaker.ch

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
-----------------------------------------------------------	--

National	Yes
U.S.	No
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Lack of reimbursement, limited financial resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of referral	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5

1 = no obstacle 5 = great obstacle * (1 = top; 6 = lowest)

13. Sources

Name of National Cardiac Society, National Working Group or arrhythmia body

- "Arbeitsgruppe Herzschrittmacher und Elektrophysiologie"
- Working Group on Cardiac Pacing and Electrophysiology

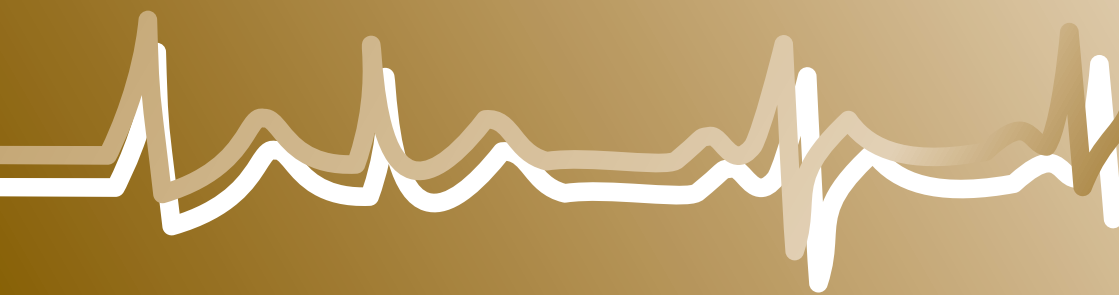
All sources that were used to fill out the questionnaire for the EHRA White Book 2015

- EHRA White Book 2014
- Official statistics
- Estimation
- www.pacemaker.ch

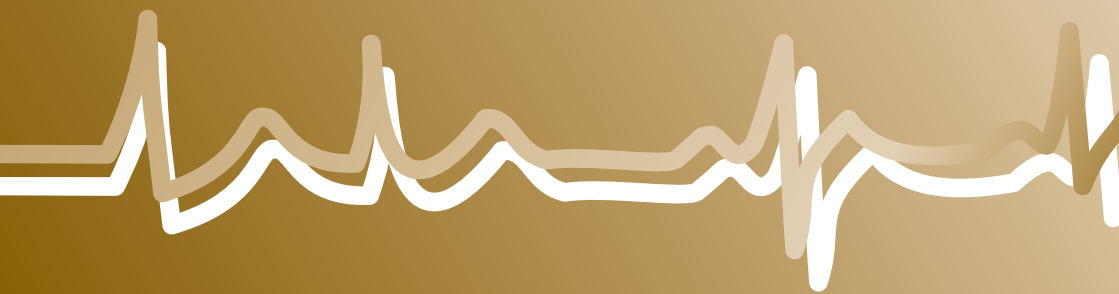


SYRIA

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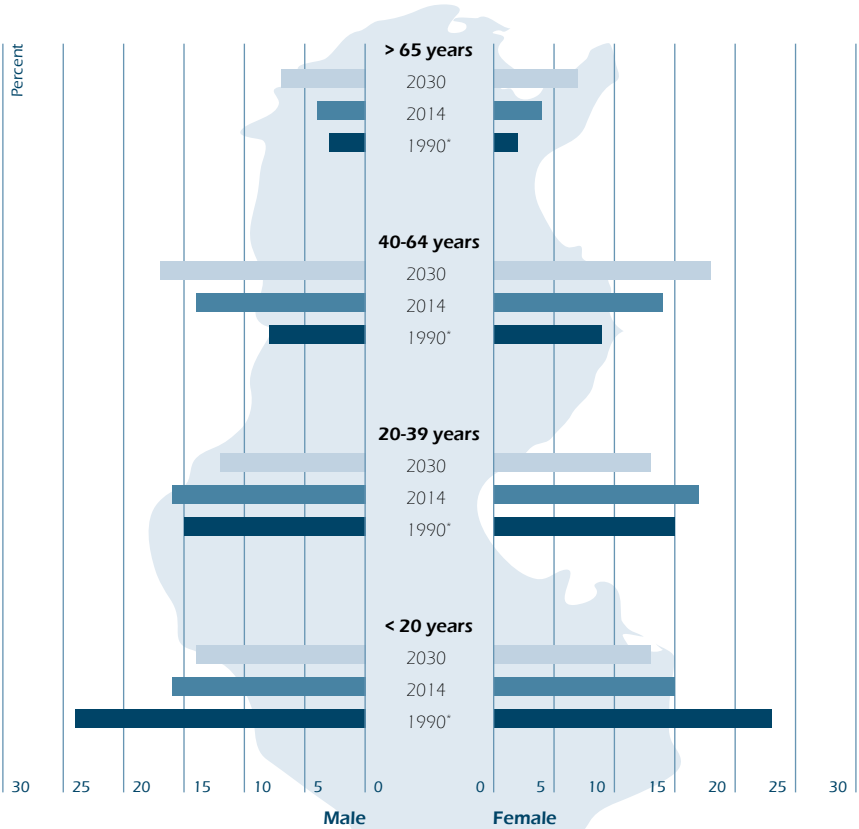


TUNISIA



1. Statistics

Age pyramid for Tunisia



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	not available	not available
Beds (per 100.000 population)	not available	not available
Density of physicians (per 1.000 population)	not available	not available
Density of nurses (per 1.000 population)	not available	not available

Demographic information		
Population	10.937.521	2014
Population annual growth rate (%)	0,9	2014
Life expectancy at birth	76	2014
Death rate (per 1.000 population)	not available	not available
Live births (per 1.000 population)	not available	not available

Economic information		
Gross domestic product (U.S dollar-billions)	49,12	2014*
Gross domestic product per capita (U.S dollar-units)	4.466,55	2014*
Total expenditure on health as % of GDP	not available	not available
General government expenditure on health as % of total expenditure on health	59,4	2011
Private expenditure on health as % of total expenditure on health	40,6	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

National health system for the majority of citizens.

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: Citizens have to subscribe to the national health system (CNAM).	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	not available	90%
Uninsured citizens	not available	10%

Distribution of insurance modality		
	2013	2014
Public insurance company	not available	90%
Private insurance company	not available	5%
Private co-payment	not available	5%

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:	There is a package for each procedure paid by CNAM.							

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input checked="" type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DIU de rythmologie et de stimulation cardiaque
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DIU de rythmologie et de stimulation cardiaque
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system	
Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	No
------------------------------------------------------------------------------------------------------	-----------

Required period of training to perform implantations	No
-------------------------------------------------------------	-----------

Suggested period of training to perform implantations	No
--------------------------------------------------------------	-----------

Training centres availability	
Pacemaker	10
ICD implantation	8
CRT implantation	8
Electrophysiological studies and catheter ablation	6
Atrial fibrillation ablation	1

Number of universities (Schools of Medicine)	4
-----------------------------------------------------	----------



Percentage of academic centres among all practicing EP centres	50%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	50%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	20
Total Pacemaker units implanted	not available	2,200
Thereof, New implants	not available	2,000
Thereof, Replacements	not available	200

Specialist performing implants		
Cardiologists	Yes	95%
Surgeons	Yes	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	8
Total CRT units implanted	not available	180
Thereof, CRT pacemaker	not available	120
Thereof, CRT ICD	not available	60

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	8
Total ICD units implanted	not available	140
Thereof, Single chamber	not available	40
Thereof, Dual chamber	not available	100
First implants	not available	120
Replacements	not available	20
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	not available	1
Total loop recorders implanted	not available	1
Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	not available	3
Total lead extraction procedures	not available	20
Specialist performing lead extractions		
Cardiologists	Yes	40%
Surgeons	Yes	60%



10. Device specific

Availability of remote monitoring of devices No

Reasons why remote monitoring is not available: The number of patients implanted is not high to require monitoring system and each patient is followed by the center where he was implanted.

National registry for

		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry No

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions No

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	not available	9
Number of ablations performed	not available	850
Mean number of ablations per centre	not available	94
Number of AF ablations	not available	40
Number of ablation centres (> 50 AF ablations)	not available	0
Number of VT/VF ablations	not available	5
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	0
Number of LAA closures	not available	20
Number of centres (LAA closures)	not available	2
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	10
Number of physicians under training to become independent electrophysiologists	not available	2



Availability of a national registry for interventional electrophysiology	No
---------------------------------------------------------------------------------	-----------

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	Yes
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3

1 = no obstacle

5 = great obstacle

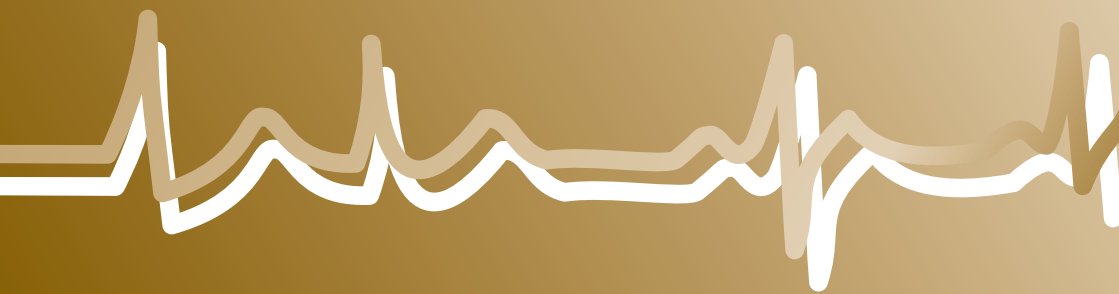
* (1 = top; 6 = lowest)

13. Sources

Name of National Cardiac Society, National Working Group or arrhythmia body
· Tunisian Society of Cardiology and Cardiolvascular Surgery

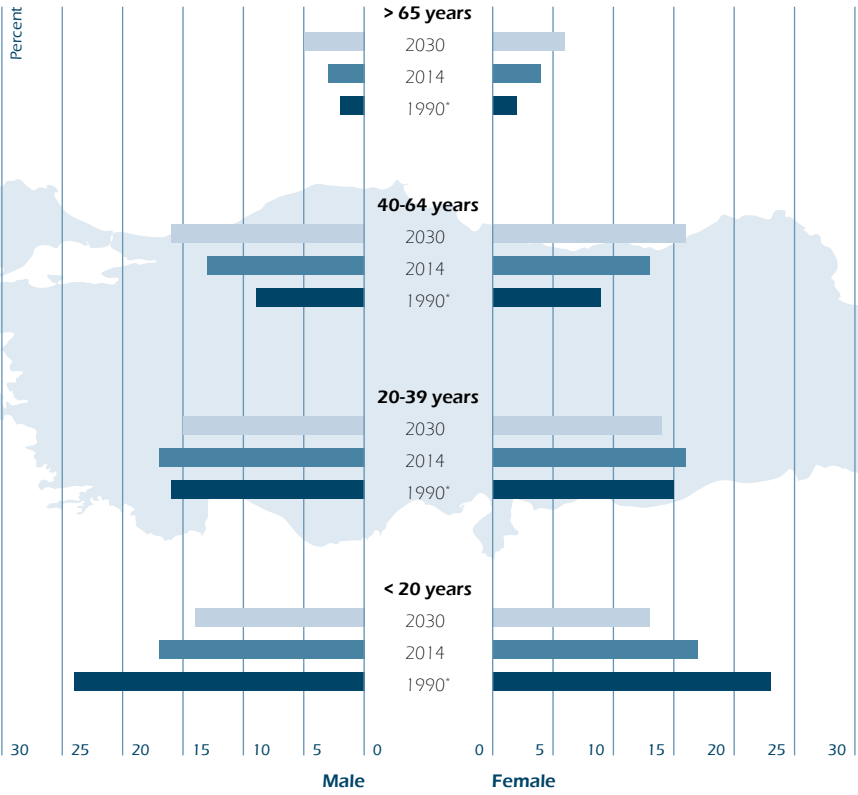
All sources that were used to fill out the questionnaire for the EHRA White Book 2015
· Official statistics
· Survey from professional association
· Sample short survey
· Sales data

TURKEY



1. Statistics

Age pyramid for Turkey



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	1,9	2011
Beds (per 100.000 population)	253,4	2011
Density of physicians (per 1.000 population)	1,7	2011
Density of nurses (per 1.000 population)	2,4	2011

Demographic information		
Population	81.619.392	2014
Population annual growth rate (%)	1,1	2014
Life expectancy at birth	73	2014
Death rate (per 1.000 population)	5,1	2011
Live births (per 1.000 population)	16,9	2012

Economic information		
Gross domestic product (U.S dollar-billions)	813,32	2014*
Gross domestic product per capita (U.S dollar-units)	10.518,29	2014*
Total expenditure on health as % of GDP	6,3	2012
General government expenditure on health as % of total expenditure on health	72,7	2011
Private expenditure on health as % of total expenditure on health	27,3	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	not available	not available

3. Healthcare System

National Health Care System (Social Security Institution -SSI) covers almost all population. Private insurance companies offer complementary health care.

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: working population that has acquired policy and their family, retired population.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	not available	99%
Uninsured citizens	not available	1%

Distribution of insurance modality		
	2013	2014
Public insurance company	not available	99%
Private insurance company	not available	1%
Private co-payment	not available	not available

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	No
Pacemakers	No
Ablation	No

Comments: Yes, only in private sector.



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input checked="" type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: Health Application Instructions; Social Security Institution publish a guideline called 'Health Application Instructions' which reports the indications and the amount of reimbursement for each procedure. Indications follow ESC guidelines.

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	



National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for

	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist, cardiovascular surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation **No**

Required period of training to perform implantations **No**

Suggested period of training to perform implantations **No**

Training centres availability

Pacemaker	not available
ICD implantation	not available
CRT implantation	not available
Electrophysiological studies and catheter ablation	not available
Atrial fibrillation ablation	not available

Number of universities (Schools of Medicine) **74**



Percentage of academic centres among all practicing EP centres	10%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	5%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2013		2014
Implanting centres	not available		not available
Total Pacemaker units implanted	not available		7,300
Thereof, New implants	not available		6,200
Thereof, Replacements	not available		1,100

Specialist performing implants			
Cardiologists		Yes	97%
Surgeons		Yes	3%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2013		2014
Implanting centres	not available		not available
Total CRT units implanted	not available		2,460
Thereof, CRT pacemaker	not available		310
Thereof, CRT ICD	not available		2,150

Specialist performing implants			
Cardiologists		Yes	99%
Surgeons		Yes	1%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2013		2014
Implanting centres	not available		not available
Total ICD units implanted	not available		6,300
Thereof, Single chamber	not available		2,600
Thereof, Dual chamber	not available		3,700
First implants	not available		5,400
Replacements	not available		900
Specialist performing implants			
Cardiologists		Yes	99%
Surgeons		Yes	1%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2013		2014
Implanting centres	not available		not available
Total loop recorders implanted	not available		15
Specialist performing implants			
Cardiologists		Yes	100%
Surgeons		No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions			
	2013		2014
Hospitals performed lead extractions	not available		not available
Total lead extraction procedures	not available		311
Specialist performing lead extractions			
Cardiologists		Yes	75%
Surgeons		Yes	25%



10. Device specific

Availability of remote monitoring of devices	No
-----------------------------------------------------	-----------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
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11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	not available	not available
Number of ablations performed	not available	11.218
Mean number of ablations per centre	not available	not available
Number of AF ablations	not available	1.208
Number of ablation centres (> 50 AF ablations)	not available	not available
Number of VT/VF ablations	not available	100
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available
Number of LAA closures	not available	12
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	not available


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	Yes
European	Yes

Obstacles to guideline implementation	Ranking of importance*					Ranking of importance*
	1	2	3	4	5	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of reimbursement, limited financial resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

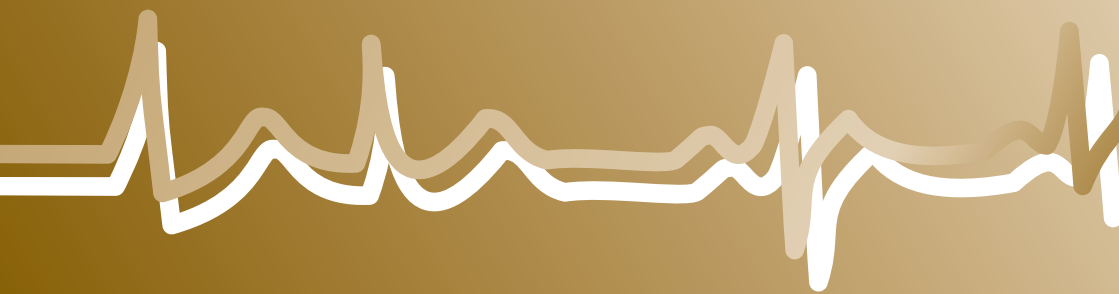
Name of National Cardiac Society, National Working Group or arrhythmia body

· Turkish Society of Cardiology, Working Group on Arrhythmias

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

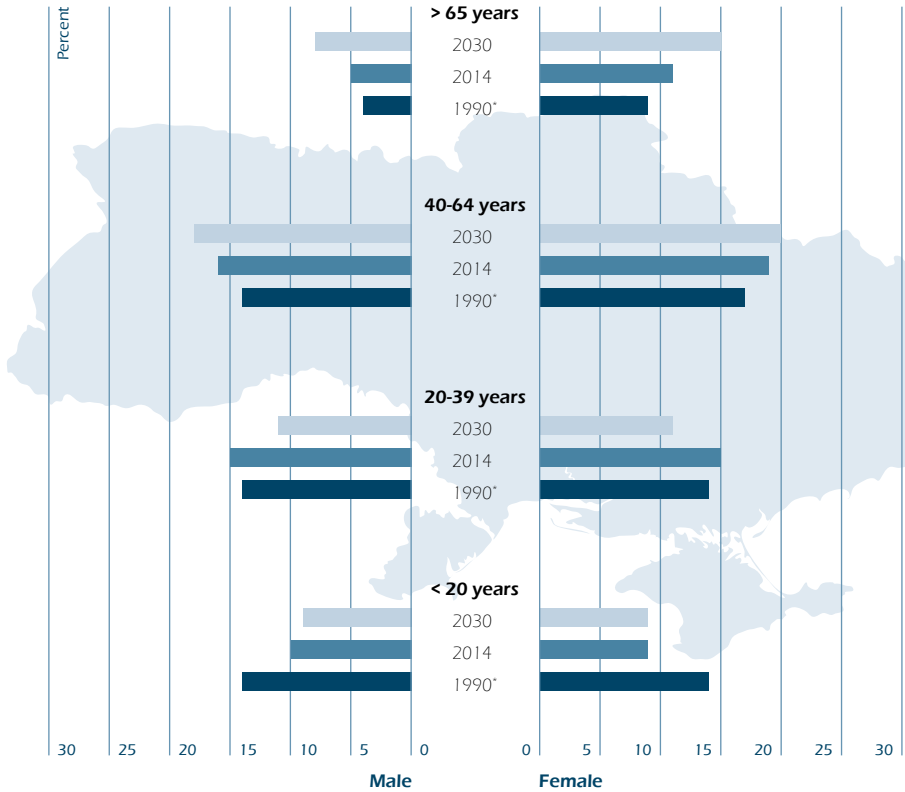
- Official statistics
- Survey from professional association
- Sales data
- Estimation

UKRAINE



1. Statistics

Age pyramid for Ukraine



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	5,3	2012
Beds (per 100.000 population)	890,7	2012
Density of physicians (per 1.000 population)	3,5	2012
Density of nurses (per 1.000 population)	7,5	2012

Demographic information		
Population	44.291.413	2014
Population annual growth rate (%)	-0,6	2014
Life expectancy at birth	69	2014
Death rate (per 1.000 population)	14,6	2012
Live births (per 1.000 population)	11,5	2012

Economic information		
Gross domestic product (U.S dollar-billions)	134,89	2014*
Gross domestic product per capita (U.S dollar-units)	2.978,78	2014*
Total expenditure on health as % of GDP	7,6	2012
General government expenditure on health as % of total expenditure on health	55,7	2011
Private expenditure on health as % of total expenditure on health	44,3	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	66,5%	not available

3. Healthcare System

Ministry of Public Health of Ukraine, National Academy of Medical Sciences of Ukraine (National Scientific Centres – 36 in total), profile institutional hospitals (hospital of the Ministry of Internal Affairs, hospital of the Ministry of Defence so on), State sanitary and epidemiological service, State Administration of Ukraine on medical products, State service of Ukraine on HIV/AIDS and other socially dangerous diseases. National health system provides all citizens of Ukraine with the free medical and preventive help in accordance to acting legislation by: emergency, outpatient (ambulatory-policlinic) help, stationary (general profile and specialized) help.

Basic insurance availability	No	
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Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2013	2014
Public insurance company	not available	not available
Private insurance company	not available	not available
Private co-payment	not available	not available

Possibility to subscribing to private health insurance plans	Yes	
--------------------------------------------------------------	-----	--



Co-payment necessary for the following therapy

ICD devices	No
Pacemakers	No
Ablation	No

Comments: Co-payment is not necessary when NHS funds are available in a hospital. In any other case, patient must cover all expenses from own budget.

Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input type="checkbox"/>
Restricted to certain number of treatments/budget	<input checked="" type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>



4. Education

National certification availability					
	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Invasive and non invasive arrhythmology
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Invasive and non invasive arrhythmology
Allied professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Training centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

National Cardiac Society supporting EHRA certification system	
Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input checked="" type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Specialist required for		
	Specialist	
Catheter ablation	Yes	Cardiovascular surgeon or cardiologist
ICD or pacemaker implants	Yes	Cardiovascular surgeon or cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
Рекомендації Асоціації Кардіологів України/Recommendations of Association of Cardiologists of Ukraine/ Рекомендації Асоціації Аритмологів України/Recommendations of Association of Arrhythmologists of Ukraine	

Required period of training to perform implantations	No answer
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Suggested period of training to perform implantations	No answer
-------------------------------------------------------	-----------

Training centres availability	
Pacemaker	4
ICD implantation	2
CRT implantation	2
Electrophysiological studies and catheter ablation	3
Atrial fibrillation ablation	3



Number of universities (Schools of Medicine)	19
-----------------------------------------------------	-----------

Percentage of academic centres among all practicing EP centres	33,3%
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Percentage of academic centres among all practicing implanting devices centres	11,4%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	36	36
Total Pacemaker units implanted	6.579	5.258
Thereof, New implants	5.523	4.299
Thereof, Replacements	1.056	959

Specialist performing implants		
Cardiologists	Yes	10,3%
Surgeons	Yes	89,7%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	13	9
Total CRT units implanted	89	85
Thereof, CRT pacemaker	67	72
Thereof, CRT ICD	22	13

Specialist performing implants		
Cardiologists	No	0%
Surgeons	Yes	100%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	17	8
Total ICD units implanted	85	57
Thereof, Single chamber	not available	33
Thereof, Dual chamber	not available	24
First implants	71	47
Replacements	14	10

Specialist performing implants		
Cardiologists	No	0%
Surgeons	Yes	100%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	2	3
Total loop recorders implanted	11	6

Specialist performing implants		
Cardiologists	No	0%
Surgeons	Yes	100%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	7	7
Total lead extraction procedures	55	38

Specialist performing lead extractions		
Cardiologists	No	0%
Surgeons	Yes	100%



10. Device specific

Availability of remote monitoring of devices	No
-----------------------------------------------------	-----------

National registry for		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

Availability of a national quality insurance system or complication registry	No
-------------------------------------------------------------------------------------	-----------

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	No
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11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	13	8
Number of ablations performed	2,672	2,371
Mean number of ablations per centre	206	296
Number of AF ablations	680	622
Number of ablation centres (> 50 AF ablations)	6	4
Number of VT/VF ablations	not available	74
Number of ablation centres (> 10 VT ablations on structural heart diseases)	2	2
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	not available


Availability of a national registry for interventional electrophysiology
No

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	Yes
European	Yes

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

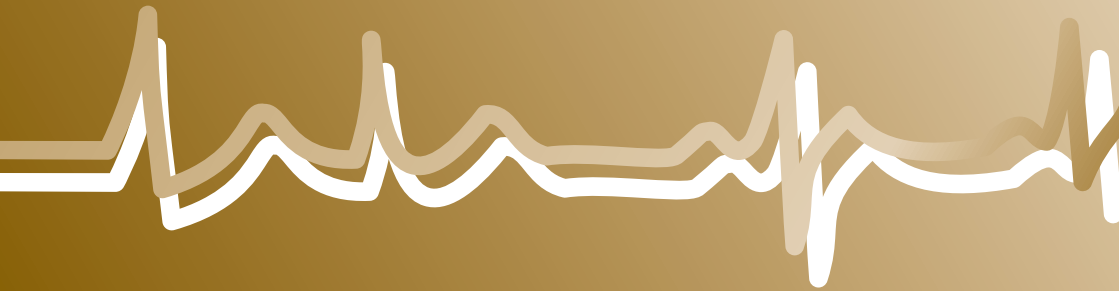
Name of National Cardiac Society, National Working Group or arrhythmia body

· Association of Arrhythmologists of Ukraine

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

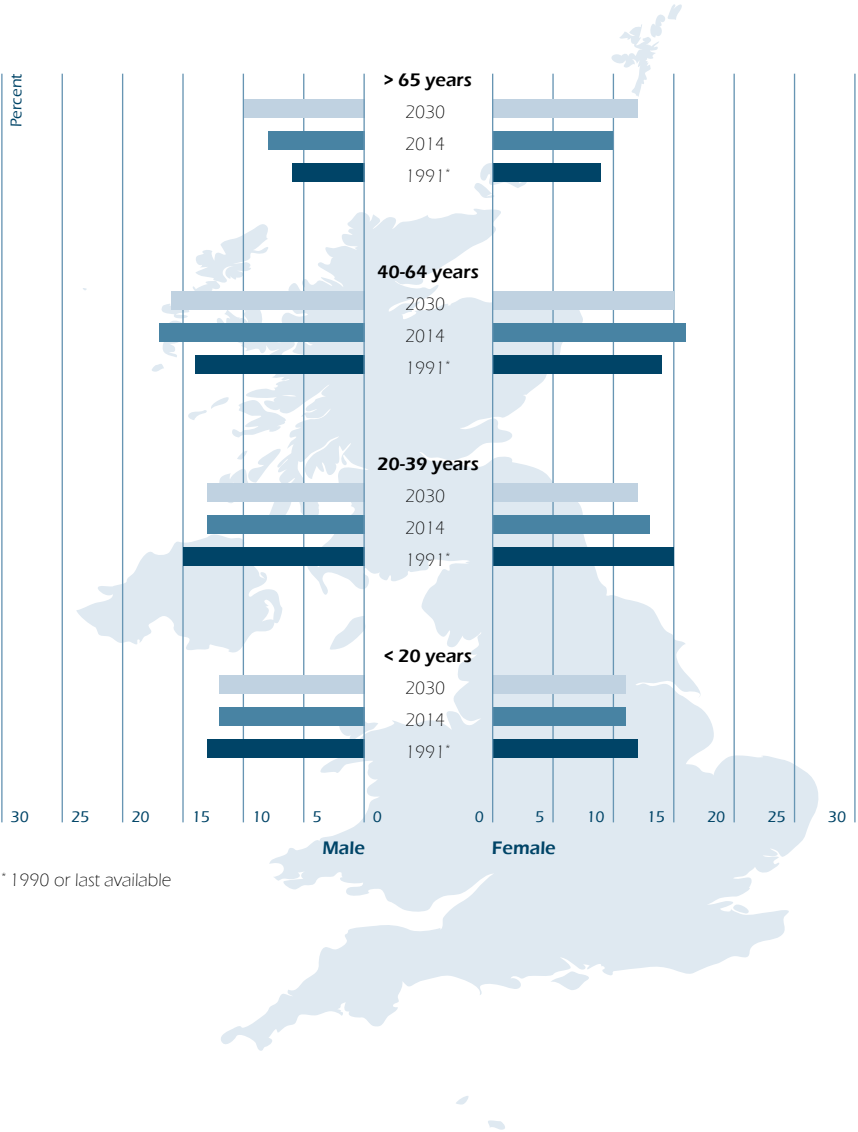
- EHRA White Book 2014
- State Statistics Service of Ukraine: <http://www.ukrstat.gov.ua>, Ministry of Health of Ukraine: <http://www.moz.gov.ua/>
- Survey from Association of Arrhythmologists of Ukraine

UNITED KINGDOM



1. Statistics

Age pyramid for United Kingdom



* 1990 or last available



Healthcare data		
Hospitals (per 100.000 population)	not available	not available
Beds (per 100.000 population)	291,7	2011
Density of physicians (per 1.000 population)	2,8	2012
Density of nurses (per 1.000 population)	8,8	2012

Demographic information		
Population	63.742.977	2014
Population annual growth rate (%)	0,6	2014
Life expectancy at birth	80	2014
Death rate (per 1.000 population)	9,0	2010
Live births (per 1.000 population)	12,9	2012

Economic information		
Gross domestic product (U.S dollar-billions)	2.847,60	2014*
Gross domestic product per capita (U.S dollar-units)	44.141,40	2014*
Total expenditure on health as % of GDP	9,4	2012
General government expenditure on health as % of total expenditure on health	82,8	2011
Private expenditure on health as % of total expenditure on health	17,2	2011

* IMF estimative



2. Country

Proportion of deaths resulting from cardiovascular disease		
	2013	2014
	28,4%	22%

3. Healthcare System

National Health service free at point of care. Optional private health care.

Basic insurance availability	Yes
Requirements for citizens to qualify for public insurance: All UK citizens included automatically.	

Percentage of insured and uninsured citizens		
	2013	2014
Insured citizens	90%	100%
Uninsured citizens	10%	0%

Distribution of insurance modality		
	2013	2014
Public insurance company	90%	89%
Private insurance company	10%	11%
Private co-payment	0%	0%

Possibility to subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
	No
ICD devices	No
Pacemakers	No
Ablation	No



Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (e.g. more salary on the following year)	Physician does not receive reimbursement neither incentive	No answer	Hospital receives per process reimbursement	Hospital does not receive reimbursement, but incentives (e.g. more budget on the following year)	Hospital does not receive reimbursement neither incentive	No answer
Internal loop recorders	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD primary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICD secondary prevention	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRT devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ablation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Treatment availability

No restrictions	<input type="checkbox"/>
No restrictions, but the indications have to follow the ESC guidelines	<input type="checkbox"/>
No restrictions, but the indications have to follow the National guidelines	<input checked="" type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: NICE, BHRS, ESC

4. Education

National certification availability

	Yes, it's required for practice	Yes, but it's not required for practice	No	No answer	Official name
Device therapy	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Certificate of Completion of Specialist Training (with subspecialty Training in Device/EP) issued by Joint Royal Colleges of Physicians Training Board is mandatory; Accreditation by British Heart Rhythm Society/HRS/EHRA is encouraged but not mandatory
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Certificate of Completion of Specialist Training (with subspecialty Training in Device/EP) issued by Joint Royal Colleges of Physicians Training Board is mandatory; Accreditation by British Heart Rhythm Society/HRS/EHRA is encouraged but not mandatory
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Society for Cardiological Science and Technology
Training centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	British Heart Rhythm Society has Guidelines for Training centres for device Management (Basic, advanced) and EP (Basic, advanced) but these are not mandatory



National Cardiac Society supporting EHRA certification system

Yes, the Society demands EHRA certification for practice	<input type="checkbox"/>
Yes, the Society advises EHRA certification and homologates national certification	<input checked="" type="checkbox"/>
Yes, the Society advises EHRA certification, but it does not homologate national certification	<input type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Comments: Whilst BHRS supports EHRA certification, our national certification predates EHRA certification and has a more extensive requirement, in terms of a detailed logbook. We also have a specific section targeting arrhythmia nurses in addition to physiologists and doctors.

Specialist required for

	Specialist	
Catheter ablation	Yes	Cardiac electrophysiologist
ICD or pacemaker implants	Yes	Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation

Yes

Comments: BHRS has produced a Standards document that covers training, number of procedures (for doctors, allied professionals and for centres) and mandates data submission to the national CRM database.

Required period of training to perform implantations

Yes

4 years

Comments: Minimum of 4 years.

Suggested period of training to perform implantations

Yes

4 years

Comments: 4 years as this is detailed in the training curriculum for cardiology.

Training centres availability

Pacemaker	0
ICD implantation	0
CRT implantation	0
Electrophysiological studies and catheter ablation	0
Atrial fibrillation ablation	0



Number of universities (Schools of Medicine)	33
-----------------------------------------------------	-----------

Percentage of academic centres among all practicing EP centres	50%
-----------------------------------------------------------------------	------------

Percentage of academic centres among all practicing implanting devices centres	14%
---------------------------------------------------------------------------------------	------------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2013	2014
Implanting centres	227	207
Total Pacemaker units implanted	44,503	45,131
Thereof, New implants	32,567	33,893
Thereof, Replacements	11,936	11,238

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2013	2014
Implanting centres	109	129
Total CRT units implanted	7,762	9,516
Thereof, CRT pacemaker	3,792	4,144
Thereof, CRT ICD	3,970	5,372

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%



7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2013	2014
Implanting centres	106	126
Total ICD units implanted	5,809	6,474
Thereof, Single chamber	1,806	2,395
Thereof, Dual chamber	4,003	4,079
First implants	3,988	4,695
Replacements	1,821	1,779

Specialist performing implants		
Cardiologists	Yes	98%
Surgeons	Yes	2%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2013	2014
Implanting centres	120	145
Total loop recorders implanted	4,104	5,792

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2013	2014
Hospitals performed lead extractions	not available	not available
Total lead extraction procedures	not available	not available

Specialist performing lead extractions		
Cardiologists	Yes	not available
Surgeons	Yes	not available



10. Device specific

Availability of remote monitoring of devices	Yes
-----------------------------------------------------	------------

National registry for		
		Official name
ICD	Yes	NICOR CRM National Audit
Pacing	Yes	NICOR CRM National Audit
Electrophysiology	Yes	NICOR CRM National Audit

Availability of a national quality insurance system or complication registry	Yes
-------------------------------------------------------------------------------------	------------

Official name: NICOR CRM National Audit

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
-------------------------------------------------------------------------------------------------------------------------------------	------------

Official name: Medicine and Healthcare Regulatory Authority (MHRA)

11. Interventional electrophysiology

	2013	2014
Number of ablations performed and number of centres		
Number of ablation centres	54	61
Number of ablations performed	15,903	17,578
Mean number of ablations per centre	295	288
Number of AF ablations	5,408	6,505
Number of ablation centres (> 50 AF ablations)	30	36
Number of VT/VF ablations	not available	599
Number of ablation centres (> 10 VT ablations on structural heart diseases)	22	23
Number of LAA closures	not available	not available
Number of centres (LAA closures)	not available	not available
Number of electrophysiologists		
Number of electrophysiologists performed catheter ablation independently	not available	not available
Number of physicians under training to become independent electrophysiologists	not available	not available



Availability of a national registry for interventional electrophysiology	Yes
---------------------------------------------------------------------------------	------------

Official name: NICOR CRM National Audit

12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
------------------------------------------------------------------	--

National	Yes
U.S.	No
European	Yes

Obstacles to guideline implementation						Ranking of importance*
----------------------------------------------	--	--	--	--	--	-------------------------------

	1	2	3	4	5	
Lack of centres	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of reimbursement, limited financial resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2

1 = no obstacle

5 = great obstacle

* (1 = top; 6 = lowest)

13. Sources

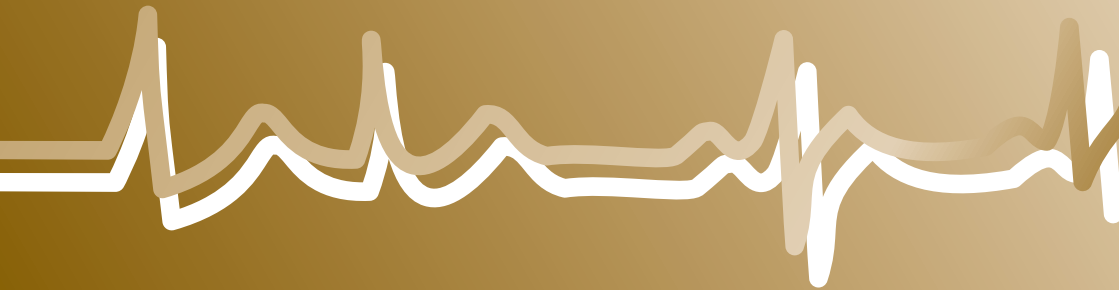
Name of National Cardiac Society, National Working Group or arrhythmia body

· British Heart Rhythm Society

All sources that were used to fill out the questionnaire for the EHRA White Book 2015

- EHRA White Book 2014
- NICOR CRM National Audit
- British Heart Rhythm Society

5. Appendix



5. Appendix



EHRA Certification

The EHRA offers the first European certification of professional excellence, in three areas:

- Electrophysiology
- Cardiac Pacing & Device Therapy
- Allied Professionals

The EHRA is pleased to publish the list, starting from 2005, of professionals who are officially fully certified, as well as that of the candidates who have passed the written part of the certification process. «Join us in congratulating them!»

Candidates successful to the exam need to have their logbook assessed by an EHRA grader to be fully certified. EHRA Certification is valid for 10 years.

Electrophysiology

EHRA EP Certified professionals

ACENA RAMOS	Marta	Spain	2014
ADİYAMAN	Ahmet	Netherlands	2014
ALCALDE RODRIGUEZ	Oscar	Spain	2012
ALI	Hussam	Italy	2015
ALZAND	B.	Netherlands	2012
ANDERSON	Mark H.	United Kingdom	2010
ANGUERA CAMOS	Ignacio	Spain	2009
ANNE	Wim	Belgium	2013
ARBELO	Elena	Spain	2009
ARCOCHA TORRES	Maria Fe	Spain	2012
ARIAS PALOMARES	Miguel Angel	Spain	2013
ARMENTA PASTOR	Juan Fernandez	Spain	2012
AVELLA	Andrea	Italy	2009
ÁVILA ALONSO	Pablo	Spain	2013
AYALA PAREDES	Felix	Canada	2009
BALTA	Osman	Germany	2013
BARRERA CORDERO	Alberto	Spain	2005
BAYRAK	Duhan Fatih	Belgium	2012
BEAUPORT	Joelle	Germany	2013
BELOTTI	Giuseppina	Italy	2008
BENCSIK	Gabor	Hungary	2009

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EHRA Certification

Electrophysiology

EHRA EP Certified professionals

BERRUEZO SANCHEZ	Antonio	Spain	2010
BERTOMEU-GONZALEZ	Vicente	Spain	2012
BONANNO	Carlo	Italy	2014
BRUGADA	Josep	Spain	2009
BUERKLE	Gerd	Austria	2011
BUN	Sok-Sithikun	France	2012
BURRI	Haran	Switzerland	2008
CALVO CUERVO	David	Spain	2013
CALVO GALIANO	Naiara	Spain	2012
CANO PEREZ	Oscar	Spain	2011
CASTRO URDA	Victor	Spain	2012
CATANCHIN	Andrei	Australia	2012
CHATTERJEE	Debjit	United Kingdom	2013
CHONG	Daniel	Singapore	2013
COZAR LEON	Rocio	Spain	2012
DATINO	Tomas	Spain	2012
DAVOODI	Gholamreza	Ireland	2008
DE FILIPPO	Paolo	Italy	2012
DE GROOT	Joris R.	Netherlands	2012
DE JONG	Jonas	Netherlands	2013
DE MEYER	Grim	Belgium	2014
DE RIVA SILVA	Marta	Spain	2013
DELGADO	Hugo Emilio	Argentina	2014
DEUTSCH	Alexandru	Romania	2012
DJAJADISASTRA	Achmad Iskandar	Germany	2012
DOMINGUEZ MAFE	Eloy	Spain	2014
DURAY	Gabor Zoltan	Germany	2008
DYRDA	Katia	Canada	2012
EISENBERGER	Martin	Czech Republic	2012
EL KADRI	Moutaz	United Kingdom	2013
ELDER	Douglas	United Kingdom	2013
EWERTSEN	Niels Christian	Germany	2014
FERNANDEZ LOZANO	Ignacio	Spain	2005
FONTENLA	Adolfo	Spain	2012
FORCLAZ	Andrei	Switzerland	2012

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EHRA Certification

Electrophysiology

EHRA EP Certified professionals

FOSCH	Javier	Spain	2015
FRANCK	Harald	Germany	2011
GALLARDO LOBO	Rodrigo	Spain	2012
GARCIA MORAN	Emilio	Spain	2005
GAROFALO FORTE	Daniel	Spain	2015
GAWRYSIAK	Marcin	Poland	2013
GLOWNIAK	Andrzej	Poland	2012
GONZALEZ VASSEROT	Maria del Mar	Spain	2009
GONZALEZ-ENRIQUEZ	Susana	Spain	2012
GOPALAMURUGAN	A. B.	United Kingdom	2014
GRECU	Mihaela	Romania	2007
GRUBB	Neil	United Kingdom	2014
GUGUCHEV	Pavel	United States of America	2010
HEMELS	Martin	Netherlands	2012
HERCZKU	Csaba	Hungary	2012
HERREROS GUILARTE	Benito	Spain	2005
HLIVAK	Peter	Slovakia	2012
HUYBRECHTS	Wim	Belgium	2009
INFUSINO	Tommaso	Italy	2013
JANDA	Igor	Germany	2012
JANSEN	Ward	Netherlands	2010
JASTRZEBSKI	Marek	Poland	2008
JILEK	Clemens	Germany	2012
JOHAR	Sofian	United Kingdom	2012
JONES	David Gareth	United Kingdom	2012
KACZMAREK	Krzysztof	Poland	2013
KARDOS	Attila	Hungary	2012
KEMME	Michiel	Netherlands	2009
KILISZEK	Marek	Poland	2010
KONSTANTINIDOU	Melanie	Germany	2013
KOOPMAN	Pieter	Belgium	2014
KOSTOPOULOU	Anna	Greece	2014
KRISTENSEN	Jens	Denmark	2014
KUHNE	Michael	Switzerland	2012
LANG	Christopher	United Kingdom	2014

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EHRA Certification

Electrophysiology

EHRA EP Certified professionals

LAURENZI	Francesco	Italy	2009
LE POLAIN DE WAROUX	Jean-Benoit	Belgium	2015
LERCHER	Peter	Austria	2012
LETSAS	Konstantinos	Greece	2009
LOUW	Ruan	South Africa	2014
LUBINSKI	Andrzej	Poland	2005
LUEDORFF	Guido	Germany	2012
LUERMANS	Justin	Netherlands	2014
MADRID	Antonio	Spain	2008
MARINI	Massimiliano	Italy	2011
MARTINEK	Martin	Austria	2010
MARTINEZ ALDAY	Jesus Daniel	Spain	2005
MARTINEZ SANDE	Jose Luis	Spain	2012
MATIA FRANCES	Roberto	Spain	2011
MATIELLO	Maria	Spain	2011
MAZUR	Alexander	Israel	2005
MORENO REVIRIEGO	Sara	Spain	2014
MOYA I MITJANS	Angel	Spain	2005
MUELLER	Stephan Andreas	Switzerland	2012
MUNDEL	Markus	Germany	2013
NAGEH-ARMANIOS	Maged	United States of America	2012
NAVARRETE CASAS	Antonio Javier	United States of America	2008
NENTWICH	Karin	Germany	2013
NOVAK	Jan	United Kingdom	2013
ORMAETXE MERODIO	Jose Miguel	Spain	2005
OSCA ASENSI	Joaquin	Spain	2010
ÖZCAN	Emin Evren	Turkey	2014
PACHON	Marta	Spain	2014
PADFIELD	Gareth	United Kingdom	2015
PAPIASHVILI	Giorgi	Georgia	2009
PASTOR FUENTES	Agustin	Spain	2005
PAVLOVIC	Nikola	Croatia	2014
PEINADO	Rafael	Spain	2005
PEREZ ALVAREZ	Luisa	Spain	2014
PEREZ CASTELLANO	Nicasio	Spain	2005

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EHRA Certification

Electrophysiology

EHRA EP Certified professionals

PEREZ DIEZ	Diego	Spain	2012
PEREZ-VILLACASTIN	Julian	Spain	2005
PISON	Laurent	Netherlands	2013
POELSLEER	Robert	Germany	2014
POZZETTI	Daniela	Italy	2007
PUCHOL	Alberto	Hungary	2012
REBELLATO	Luca	Italy	2012
RICCIARDI	Danilo	Belgium	2013
RIVAS GANDARA	Nuria	Spain	2013
RIVERA	Santiago	Canada	2013
ROCA LUQUE	Ivo	Spain	2014
RODRIGUEZ MANERO	Moises	Belgium	2013
RORDORF	Roberto	Italy	2012
ROSSI	Andrea	Italy	2014
ROSSI	Luca	Italy	2014
ROTEN	Laurent	Switzerland	2009
ROUX	Antoine	France	2013
SABATE DE LA CRUZ	Xavier	Spain	2005
SALGADO ARANDA	Ricardo	Spain	2014
SALGUERO BODES	Rafael	Spain	2009
SAMO AYOU	Romeo	Sweden	2011
SAUSE	Armin	Germany	2009
SCHIMPF	Rainer	Germany	2012
SCHOONDERWOERD	Bas	Netherlands	2012
SEBAG	Frederic	France	2014
SEGRETI	Luca	Italy	2013
SEGURA VILLALOBOS	Federico	Spain	2012
SEILER	Jens	Switzerland	2013
SEOW	Swee-Chong	Singapore	2007
SERVATIUS	Helge	Switzerland	2014
SGARITO	Giuseppe	Italy	2014
SILISTE	Calin	Italy	2013
SKENE	Christopher	United Kingdom	2014
SMIT	Jaap Jan	Netherlands	2009
STANLEY	Anthony	South Africa	2014

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EHRA Certification

Electrophysiology

EHRA EP Certified professionals

STEFFEL	Jan	Switzerland	2012
STUEHLINGER	Markus	Austria	2010
SZABO	Albin Arpad	Hungary	2012
SZEPLAKI	Gabor	Hungary	2012
TEJEIRA FERNANDEZ	Elvis	United Kingdom	2012
TOMAN	Ondrej	Czech Republic	2013
TOQUERO RAMOS	Jorge	Spain	2005
TRINES	Serge Alexander Ivo Petrus	Netherlands	2008
TUTDIBI	Osman	Germany	2013
TZEIS	Stylios	Greece	2010
UCER	Ekrem	Germany	2012
VACCARI	Diego	Italy	2013
VALVERDE ANDRE	Irene	Spain	2013
VAN CASTEREN	Lieve	Belgium	2012
VAN OPSTAL	Jurren	Netherlands	2014
VATASESCU	Radu-Gabriel	Romania	2009
VENABLES	Paul	United Kingdom	2013
VILLUENDAS SABATE	Roger	Spain	2013
VITALE	Raffaele	Italy	2012
VOCKE	Wolfgang	Germany	2013
VOSS	Frederik	Germany	2009
VUKAJLOVIC	Dejan	Germany	2010
WETZEL	Renate Ulrike	Germany	2015
WINTER	Siegmund	Austria	2012
YEO	Wee Tiong	Singapore	2013
ZELJKO	Hrvjka Marija	Croatia	2013
ZELLERHOFF	Stephan	Germany	2015
ZOPPO	Franco	Italy	2008
ZUCHELLI	Giulio	Italy	2012

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EHRA Certification

Electrophysiology

EP Certification candidates who have successfully completed the exam

ABALEA	Jerome	France	2014
ABEDIN	Zainul	United States of America	2007
ÁBRAHAM	Pál	Hungary	2013
ACENA RAMOS	Marta	Spain	2011
ACOSTA MARTINEZ	Juan	Spain	2014
ACOU	Willem-Jan	Belgium	2013
ADİYAMAN	Ahmet	Netherlands	2014
AHMED TAHER MAHMOUD	Ahmed	Egypt	2013
AHUMADA	MIGUEL	Spain	2013
AL BUNNI	Muhamad	Italy	2007
ALCALDE RODRIGUEZ	Oscar	Spain	2010
ALGARRA CULLELL	Maria	Spain	2013
ALI	Hussam	Italy	2014
ALIYEV	Farid	Turkey	2010
ALZAND	B.	Netherlands	2012
AMET	Denis	France	2011
ANDERSON	Mark H.	United Kingdom	2010
ANGUERA CAMOS	Ignacio	Spain	2008
ANIC	Ante	Croatia	2013
ANNE	Wim	Belgium	2010
ARBELO	Elena	Spain	2007
ARCOCHA TORRES	Maria Fe	Spain	2009
ARGUEDAS-JIMENEZ	Hugo	Spain	2014
ARIAS PALOMARES	Miguel Angel	Spain	2010
ARMENTA PASTOR	Juan Fernandez	Spain	2011
ARND	Christoph	Germany	2014
ATTA	Salah Eldin Sayed	Saudi Arabia	2010
AVELLA	Andrea	Italy	2007
ÁVILA ALONSO	Pablo	Spain	2013
AYALA PAREDES	Felix	Canada	2007
AZEM	Tareq	Germany	2014
BALT	Jippe	Netherlands	2013
BALTA	Osman	Germany	2010
BARDYSZEWSKI	Aleksander	Poland	2014
BARRERA CORDERO	Alberto	Spain	2005

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EHRA Certification

Electrophysiology

EP Certification candidates who have successfully completed the exam

BARRY	James	United Kingdom	2012
BASTIAN	Dirk	Germany	2014
BAUERNFEIND	Tamas	Hungary	2013
BAYRAK	Duhan Fatih	Belgium	2011
BEAUPORT	Joelle	Germany	2012
BEDNAREK	Jacek	Poland	2011
BEHAR	Nathalie	France	2014
BELOTTI	Giuseppina	Italy	2006
BENCSIK	Gabor	Hungary	2009
BENEZET MAZUECOS	Juan	Spain	2014
BERRUJEZO SANCHEZ	Antonio	Spain	2006
BERTAGNOLLI	Livio	Italy	2013
BERTERO	Giovanni	Italy	2012
BERTOMEU-GONZALEZ	Vicente	Spain	2010
BIANCHI	Francesca	Italy	2014
BISBAL	Felipe	Belgium	2014
BLAAUW	Yuri	Netherlands	2011
BLANDINO	Alessandro	Italy	2013
BOGDAN	Stefan Nicolae	Romania	2014
BOHORA	Shomu	India	2012
BONANNO	Carlo	Italy	2011
BORDIGNON	Stefano	Italy	2013
BORREGO BERNABE	Luis	Spain	2013
BOTOS	Maichel Sobhy Naguib	Egypt	2014
BOULLIN	Julian Paul	United Kingdom	2010
BROCKMEIER	Johannes Paul	Germany	2013
BROUZET	thomas	Spain	2012
BRUGADA	Josep	Spain	2007
BUCHHOLZ	Jochen	Germany	2013
BUERKLE	Gerd	Austria	2008
BUN	Sok-Sithikun	France	2012
BURKHARDT	Dietmar	Germany	2014
BURRI	Haran	Switzerland	2007
CABANAS GRANDIO	Pilar	Spain	2014
CABRERA GOMEZ	Sandra	Spain	2014

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EHRA Certification

Electrophysiology

EP Certification candidates who have successfully completed the exam

CALVANESE	Raimondo	Italy	2014
CALVO CUERVO	David	Spain	2010
CALVO GALIANO	Naiara	Spain	2011
CAMPOS GARCIA	Bieito	Spain	2010
CAÑADAS GODOY	Maria Victoria	Spain	2013
CANO PEREZ	Oscar	Spain	2009
CASTILLO	Jesús	Spain	2013
CASTREJON CASTREJON	Sergio	Spain	2012
CASTRO URDA	Victor	Spain	2009
CATANCHIN	Andrei	Australia	2008
CHATTERJEE	Debjit	United Kingdom	2010
CHONG	Daniel	Singapore	2011
CLEMENS	Marcell	Hungary	2012
CLEMENTY	Nicolas	France	2010
CORTEZ-DIAS	Nuno	Portugal	2013
COZAR LEON	Rocio	Spain	2011
DAR	Mehboob	Saudi Arabia	2013
DATINO	Tomas	Spain	2011
DAVOODI	Gholamreza	Ireland	2007
DE DIEGO	Carlos	Spain	2012
DE FILIPPO	Paolo	Italy	2011
DE GROOT	Joris R.	Netherlands	2009
DE JONG	Jonas	Netherlands	2011
DE MEYER	Grim	Belgium	2011
DE RIVA SILVA	Marta	Spain	2011
DEL CASTILLO ARROJO	Silvia	Spain	2006
DELGADO	Hugo Emilio	Argentina	2013
DEUTSCH	Alexandru	Romania	2009
DI CORI	Andrea	Italy	2012
DICHTL	Wolfgang	Austria	2011
DINOV	Borislav	Germany	2012
DJAJADISASTRA	Achmad Iskandar	Germany	2011
DOMINGUEZ MAFE	Eloy	Spain	2012
DURAY	Gabor Zoltan	Germany	2008
DUTHOIT	Guillaume	France	2010

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EHRA Certification

Electrophysiology

EP Certification candidates who have successfully completed the exam

DYRDA	Katia	Canada	2010
EJSBOUITS	Sabine	Netherlands	2014
EISENBERGER	Martin	Czech Republic	2008
EL KADRI	Moutaz	United Kingdom	2012
ELDER	Douglas	United Kingdom	2010
ESTRADA	Alejandro	Spain	2013
EVERTZ	Reinder	Netherlands	2014
EWERTSEN	Niels Christian	Germany	2013
FERNANDEZ LOZANO	Ignacio	Spain	2005
FERNANDEZ PASTOR	Julia	Spain	2012
FICHTNER	Stephanie	Germany	2014
FIGUEROA	Jorge Alejandro	Argentina	2014
FILGUEIRAS RAMA	David	Spain	2012
FONTENLA	Adolfo	Spain	2010
FORCLAZ	Andrei	Switzerland	2009
FOSCH	Javier	Spain	2013
FRANCK	Harald	Germany	2010
FRANZINI	Christine	Switzerland	2014
GALLARDO LOBO	Rodrigo	Spain	2009
GANDJBAKHCH	Estelle	France	2013
GARCIA MORAN	Emilio	Spain	2005
GAROFALO FORTE	Daniel	Spain	2013
GAWRYSIK	Marcin	Poland	2009
GLOWNIAK	Andrzej	Poland	2009
GODA	Sherif	Egypt	2014
GOMEZ	Federico	Spain	2014
GONZALEZ FERRER	Juan Jose	Spain	2012
GONZALEZ VASSEROT	Maria del Mar	Spain	2007
GONZALEZ-ENRIQUEZ	Susana	Spain	2008
GOPALAMURUGAN	A. B.	United Kingdom	2011
GOURRAUD	Jean Baptiste	France	2014
GRANIER	Mathieu	France	2011
GRECU	Mihaela	Romania	2006
GRIECO	Domenico	Italy	2014
GRUBB	Neil	United Kingdom	2014

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EHRA Certification

Electrophysiology

EP Certification candidates who have successfully completed the exam

GUGUCHEV	Pavel	United States of America	2010
GUY-MOYAT	Benoit	France	2010
HEMELS	Martin	Netherlands	2011
HENDRICKS	Neil	South Africa	2012
HERCZKU	Csaba	Hungary	2009
HERREROS GUILARTE	Benito	Spain	2005
HLIVAK	Peter	Slovakia	2010
HOBBS	William Julian	United Kingdom	2007
HOFFMANN	Andrzej	Poland	2012
HOGLUND	Niklas	Sweden	2008
HOOFT VAN HUYSDUYNEN	Bart	Netherlands	2011
HORDYNSKI	Grzegorz	Poland	2012
HUEMER	Martin	Germany	2013
HUYBRECHTS	Wim	Belgium	2008
INFUSINO	Tommaso	Italy	2011
IORGULESCU	Corneliu-Nicolae	Romania	2012
JAN	Matevz	Slovenia	2014
JANDA	Igor	Germany	2009
JANSEN	Ward	Netherlands	2009
JARMAN	Julian	United Kingdom	2012
JASTRZEBSKI	Marek	Poland	2007
JAUREGUI ABULARACH	Miguel Eduardo	Spain	2010
JILEK	Clemens	Germany	2011
JIMENEZ JAIMEZ	Juan	Spain	2013
JIMENEZ-DIAZ	Javier	Spain	2013
JOHAR	Sofian	United Kingdom	2009
JONES	David Gareth	United Kingdom	2009
JOST	Colin	Germany	2012
KACZMAREK	Krzysztof	Poland	2010
KANDIL	Mehmet	Germany	2011
KARDOS	Attila	Hungary	2010
KEMME	Michiel	Netherlands	2008
KILISZEK	Marek	Poland	2009
KIRUBAKARAN	Senthil	United Kingdom	2012
KOCH	Lydia	Germany	2012

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EHRA Certification

Electrophysiology

EP Certification candidates who have successfully completed the exam

KONRAD	Torsten	Germany	2014
KONSTANTINIDOU	Melanie	Germany	2011
KOOPMAN	Pieter	Belgium	2011
KOSTOPOULOU	Anna	Greece	2012
KRISTENSEN	Jens	Denmark	2013
KRIVOLAPOV	Sergey	Russia	2013
KUHNE	Michael	Switzerland	2011
LALLEMAND	Benedicte	France	2012
LANG	Christopher	United Kingdom	2012
LANGBEIN	Anke	Germany	2014
LAURENZI	Francesco	Italy	2008
LE POLAIN DE WAROUX	Jean-Benoit	Belgium	2012
LERCHER	Peter	Austria	2010
LETSAS	Konstantinos	Greece	2008
LEVENTOPOULOS	Georgios	Greece	2014
LINDE	Antonio	Spain	2013
LOUW	Ruan	South Africa	2014
LUBINSKI	Andrzej	Poland	2005
LUEDORFF	Guido	Germany	2012
LUERMANS	Justin	Netherlands	2013
LUQUE	Antonio	Spain	2014
MADRAZO DELGADO	Ines	Spain	2012
MADRID	Antonio	Spain	2008
MAKOWSKI	Karol	Portugal	2010
MANTZIARI	Aglaia-Angeliki (Iilian)	United Kingdom	2013
MARINI	Massimiliano	Italy	2010
MARTINEK	Martin	Austria	2008
MARTINEZ ALDAY	Jesus Daniel	Spain	2005
MARTINEZ SANDE	Jose Luis	Spain	2009
MASSIN	Francois	France	2009
MATIA FRANCES	Roberto	Spain	2009
MATIELLO	Maria	Spain	2007
MAZUR	Alexander	Israel	2005
MCCREADY	James	United Kingdom	2010
MEJIA	Elena	Spain	2014

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EHRA Certification

Electrophysiology

EP Certification candidates who have successfully completed the exam

MELLOR	Greg	United Kingdom	2013
MEYER	Christian	Germany	2011
MORENO	Jose	Spain	2013
MORENO REVIRIEGO	Sara	Spain	2011
MOYA I MITJANS	Angel	Spain	2005
MUELLER	Dirk	Germany	2008
MUELLER	Stephan Andreas	Switzerland	2011
MUNDEL	Markus	Germany	2011
MUNTEAN	Bogdan	Germany	2013
NAGEH-ARMANIOS	Maged	United States of America	2010
NAVARRETE CASAS	Antonio Javier	United States of America	2007
NAVARRO	Javier	Spain	2012
NENTWICH	Karin	Germany	2012
NG	Fu Siong	United Kingdom	2014
NOTI	Fabian	Switzerland	2013
NOVAK	Jan	United Kingdom	2013
OLORIZ SANJUAN	Teresa	Spain	2013
ORMAETXE MERODIO	Jose Miguel	Spain	2005
OSCA ASENSI	Joaquin	Spain	2006
ÖZCAN	Emin Evren	Turkey	2013
PACHON	Marta	Spain	2011
PADFIELD	Gareth	United Kingdom	2013
PAISEY	John	United Kingdom	2008
PANCHETTI	Luca	Italy	2014
PAPIASHVILI	Giorgi	Georgia	2007
PARK	Chan-Il	Switzerland	2014
PASTOR FUENTES	Agustin	Spain	2005
PAURIAH	Maheshwar	United Kingdom	2012
PAVLOVIC	Nikola	Croatia	2014
PAWLIK	Tomasz	Poland	2013
PEINADO	Rafael	Spain	2005
PELAEZ GONZALEZ	Antonio	Spain	2012
PENELA	Diego	Spain	2014
PEREZ	Armando	Spain	2010
PEREZ ALVAREZ	Luisa	Spain	2011

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Electrophysiology

EP Certification candidates who have successfully completed the exam

PEREZ CASTELLANO	Nicasio	Spain	2005
PEREZ DIEZ	Diego	Spain	2010
PEREZ-VILLACASTIN	Julian	Spain	2005
PERROTTA	Laura	Italy	2014
PISON	Laurent	Netherlands	2010
POELSLEER	Robert	Germany	2014
POOSAPADDI RAJA	Bhima Shankar	India	2012
POZZETTI	Daniela	Italy	2007
PUCHOL	Alberto	Hungary	2009
OURESHI	Norman	United Kingdom	2013
RAMANNA	Hemanth	Netherlands	2008
REBELLATO	Luca	Italy	2009
RIAHI	Leila	Tunisia	2013
RICCIARDI	Danilo	Belgium	2012
RIVAS GANDARA	Nuria	Spain	2010
RIVERA	Santiago	Canada	2013
ROCA LUQUE	Ivo	Spain	2011
RODRIGUEZ MANERO	Moises	Belgium	2012
RORDORF	Roberto	Italy	2009
ROSER	Mattias	Germany	2012
ROSSI	Andrea	Italy	2011
ROSSI	Luca	Italy	2012
ROTEN	Laurent	Switzerland	2008
ROUX	Antoine	France	2010
SABATE DE LA CRUZ	Xavier	Spain	2005
SALGADO ARANDA	Ricardo	Spain	2013
SALGUERO BODES	Rafael	Spain	2007
SAMMUT	Mark Adrian	Malta	2012
SAMO AYOU	Romeo	Sweden	2010
SANCHEZ GOMEZ	Juan Miguel	Spain	2013
SANDILANDS	A.	United Kingdom	2010
SANZO	Antonio	Italy	2014
SARRIAS	Axel	Spain	2013
SAUSE	Armin	Germany	2008
SCHERR	Daniel	Austria	2013

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Electrophysiology

EP Certification candidates who have successfully completed the exam

SCHIMPF	Rainer	Germany	2012
SCHOENBAUER	Robert	Austria	2011
SCHOONDERWOERD	Bas	Netherlands	2008
SEBAG	Frederic	France	2014
SEGRETI	Luca	Italy	2010
SEGURA VILLALOBOS	Federico	Spain	2011
SEILER	Jens	Switzerland	2010
SEOW	Swee-Chong	Singapore	2007
SERVATIUS	Helge	Switzerland	2014
SGARITO	Giuseppe	Italy	2012
SIEIRA RODRIGUEZ-MORET	Juan Antonio	Spain	2014
SIELSKI	Slawomir	Poland	2007
SILBERBAUER	John	United Kingdom	2013
SILISTE	Calin	Italy	2011
SKENE	Christopher	United Kingdom	2013
SKODA	Jan	Czech Republic	2008
SMIT	Jaap Jan	Netherlands	2008
SPADACINI	Gianmario	Italy	2006
STANLEY	Anthony	South Africa	2012
STEC	Sebastian	Poland	2014
STEFFEL	Jan	Switzerland	2012
STOECKEL	Holger	Switzerland	2012
STUEHLINGER	Markus	Austria	2010
SUMAN HORDUNA	Irina	United Kingdom	2008
SZABO	Albin Arpad	Hungary	2010
SZEPLAKI	Gabor	Hungary	2011
TAHAPARY	Giovanni	Netherlands	2013
TEJEIRA FERNANDEZ	Elvis	United Kingdom	2012
TEMPLE	Ian	United Kingdom	2013
TER BEKKE	Rachel M. A.	Netherlands	2013
TOMAN	Ondrej	Czech Republic	2012
TOMLINSON	D.	United Kingdom	2008
TONIOLO	Mauro	Italy	2014
TOQUERO RAMOS	Jorge	Spain	2005
TORCIVIA	Riccardo	Italy	2012

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EP Certification candidates who have successfully completed the exam

TRAN	Van Nam	Switzerland	2014
TRAYKOV	Vassil B	Hungary	2010
TREGUER	Frederic	France	2009
TRINES	Serge Alexander Ivo Petrus	Netherlands	2006
TRUCCO DE RINAUDO	María Emilce	Spain	2013
TURRENI	Federico	Italy	2014
TUTDIBI	Osman	Germany	2012
TUTUIANU	Cristina	Romania	2014
TZEIS	Stylios	Greece	2009
UCER	Ekrem	Germany	2011
URBAN	Lubos	Slovakia	2009
VACCARI	Diego	Italy	2012
VALVERDE ANDRE	Irene	Spain	2010
VAN ALEM	Anouk	Netherlands	2012
VAN CASTEREN	Lieve	Belgium	2010
VAN DER HEUDEN	Jeroen	Netherlands	2013
VAN HEUVERS WYN	Frederic	Belgium	2012
VAN OOSTROM	Antonie	Netherlands	2012
VAN OPSTAL	Jurren	Netherlands	2013
VATASESCU	Radu-Gabriel	Romania	2007
VEASEY	Rick	United Kingdom	2014
VEGA OLVERA	Mercedes	Spain	2012
VENABLES	Paul	United Kingdom	2010
VERNOOY	Kevin	Netherlands	2014
VILLANUEVA SANCHEZ	José Ginés	Spain	2013
VILLUENDAS SABATE	Roger	Spain	2010
VITALE	Raffaele	Italy	2009
VITALI SERDOZ	Laura	Italy	2013
VOCKE	Wolfgang	Germany	2010
VOSS	Frederik	Germany	2008
VUKAJLOVIC	Dejan	Germany	2009
WATANABE	Masaya	Netherlands	2014
WESTRA	Sjoerd	Netherlands	2012
WETZEL	Renate Ulrike	Germany	2013
WIJCHERS	Sip	Belgium	2012

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WINTER	Siegmund	Austria	2010
WYNN	Gareth	United Kingdom	2014
YEO	Wee Tiong	Singapore	2013
ZELJKO	Hrvjka Marija	Croatia	2012
ZELLERHOFF	Stephan	Germany	2011
ZHELYAKOV	Eugeny	Russian Federation	2012
ZOPPO	Franco	Italy	2006
ZUBERI	Zia	United Kingdom	2013
ZUCHELLI	Giulio	Italy	2008

Cardiac Pacing & Device Therapy

EHRA CP Certified professionals

AARDEMA	Margriet W.	Netherlands	2014
ACENA RAMOS	Marta	Spain	2012
ACOU	Willem-Jan	Belgium	2014
ADİYAMAN	Ahmet	Netherlands	2014
AL BUNNI	Muhamad	Italy	2007
ALCALDE RODRIGUEZ	Oscar	Spain	2012
AL-HASHIMI	Hisham	Netherlands	2015
ALZAND	Bakr	Netherlands	2012
ANNE	Wim	Belgium	2011
APOSTOLOPOULOS	Theodoros	Greece	2007
ARBELO	Elena	Spain	2013
ARIAS PALOMARES	Miguel Angel	Spain	2013
AVELLA	Andrea	Italy	2005
AYALA PAREDES	Felix Alejandro	Canada	2009
BACCHIONI	Giuseppe	Italy	2012
BAHGAT	Amr Kamal	Egypt	2012
BALT	Jippe	Netherlands	2014
BALTA	Osman	Germany	2013
BAYRAK	Duhan Fatih	Belgium	2012
BELOTTI	Giuseppina	Italy	2005
BENCSIK	Gabor	Hungary	2009

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EHRA CP Certified professionals

BERTOMEU-GONZALEZ	Vicente	Spain	2012
BIJSTERVELD	Nick	Netherlands	2012
BISSINGER	Andrzej	Poland	2007
BLAAUW	Yuri	Netherlands	2012
BOHM	Adam	Hungary	2009
BONANNO	Carlo	Italy	2014
BOOS	Christopher	United Kingdom	2009
BORGER VAN DER BURG	Alida Elisabeth	Netherlands	2009
BORRELLI	Alessio	Italy	2012
BORRELLO	Francesco	Italy	2013
BOUWELS	Leon H. R.	Netherlands	2009
BREULS	Nico	Netherlands	2010
BROERS	Bernard	Netherlands	2010
BUERKLE	Gerd	Austria	2012
BUN	Sok-Sithikun	France	2013
BURRI	Haran	Switzerland	2005
CALVO CUERVO	David	Spain	2013
CALZOLARI	Vittorio	Italy	2007
CANADAS	Victoria	Spain	2013
CARAVATI	Fabrizio	Italy	2012
CHATTERJEE	Debjit	United Kingdom	2013
CHONG	Daniel	Singapore	2013
CHONG YU	Eric	Singapore	2013
CHRISTOPHE	Arnd	Germany	2014
CIPOLLETTA	Laura	Italy	2014
CROSATO	Martino	Italy	2009
CURNIS	Antonio	Italy	2007
DAVOODI	Gholamreza	Iran (Islamic Republic of)	2005
DE DOELDER	Marieke	Netherlands	2012
DE GROOT	Joris R.	Netherlands	2011
DE JONG	Jonas	Netherlands	2012
DE LA FUENTE	Sam	Netherlands	2010
DE MEYER	Grim	Belgium	2013
DICHTL	Wolfgang	Austria	2012

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EHRA CP Certified professionals

DILAVERIS	Polychronis	Greece	2007
DINH	Trang	Netherlands	2013
DOMENICHINI	Giulia	Spain	2014
DORMAN	Reinhart	Netherlands	2013
DULBECCO	Massimo	Italy	2013
DURAY	Gabor Zoltan	Germany	2008
DYRDA	Katia	Canada	2012
EHRlich	Joachim	Germany	2012
EJJSBOUITS	Sabine	Netherlands	2015
EISENBERGER	Martin	Czech republic	2011
EIVINDSON	Gunvald	Norway	2009
EL KADRI	Moutaz	United Kingdom	2013
ENGBERS	Jos G.	Netherlands	2011
ESCHEN	Ole	Denmark	2012
EVERTZ	Reinder	Spain	2012
FACCHIN	Domenico	Italy	2013
FERNANDEZ PASTOR	Julia	Spain	2012
FOLDESI	Csaba Laszlo	Hungary	2012
FOLEY	Paul	United Kingdom	2012
FOLKERINGA	Richard	Netherlands	2009
FONTENLA	Adolfo	Spain	2012
FRANCK	Harald	Germany	2011
FRANCOIS	Bart	Belgium	2012
GALLARDO LOBO	Rodrigo	Spain	2012
GARCIA BOLAO	Jose Ignacio	Spain	2005
GARWEG	Christophe	Belgium	2014
GERRITSEN	Jean Georges	Netherlands	2013
GHANI	Abdul	Netherlands	2012
GIANNOLA	Gabriele	Italy	2012
GIL	Ricardo	Portugal	2013
GIL ORTEGA	Ignacio	Spain	2013
GJESTVANG	Finn Tore	Norway	2009
GONZALEZ-ENRIQUEZ	Susana	Spain	2013
GRADAUS	Rainer	Germany	2007
GRECU	Mihaela	Romania	2009

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GRIECO	Domenico	Italy	2014
HAMEL	John John	Switzerland	2011
HAUER	Arnaud	Netherlands	2015
HAUER	Herbert	Netherlands	2012
HAYES	Chris	United Kingdom	2012
HAZELEGER	Ronald	Netherlands	2012
HEIB	KlausDieter	Germany	2010
HEMELS	Martin	Netherlands	2012
HERCZKU	Csaba	Hungary	2012
HERREROS GUILARTE	Benito	Spain	2005
HJORTSHOJ	Soren	Denmark	2010
HOBBS	William Julian	United Kingdom	2013
HORDYNSKI	Grzegorz	Poland	2011
HORNSTEN	Jonas	Sweden	2007
HURLIMANN	David	Switzerland	2012
HUYBRECHTS	Wim	Belgium	2010
IONNIDIS	Panagiotis	Greece	2007
IORGULESCU	Corneliu	Romania	2012
JACON	Peggy	France	2012
JAMALYAN	Smbat	Armenia	2011
JANSEN	Ward	Netherlands	2010
JANSEN	Annemieke	Netherlands	2011
JASTRZEBSKI	Marek	Poland	2007
JILEK	Clemens	Germany	2012
JOHAR	Sofian	United Kingdom	2015
JONES	David Gareth	United Kingdom	2012
KACZMAREK	Krzysztof	Poland	2013
KARABINOS	Ilias K.	Greece	2009
KEMME	Michiel	Netherlands	2009
KETELS	Stefan	Belgium	2009
KLEIN	Gunnar	Germany	2007
KLEIN	Norbert	Germany	2013
KOEPFLI	Pascal	Switzerland	2010
KOEPP	Ulf	Norway	2009
KOOPMAN	Pieter	Belgium	2014

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KORANTZOPOULOS	Panagiotis	Greece	2011
KOSTOPOULOU	Anna	Greece	2012
KOULOURIS	Spyridon	Greece	2010
KOUROUKLIS	Spyridon	Greece	2012
KRAVCHUK	Borys	Ukraine	2012
KRISTENSEN	Jens	Denmark	2013
KRUPA	Wojciech	Poland	2010
LANGERAK	Susan	Netherlands	2013
LERCHER	Peter	Austria	2013
LEWANDOWSKI	Michael	Poland	2015
LIPCHENCA	Igor Ariel	Israel	2009
LITTERFELDT	Ingrid	Sweden	2011
LOUW	Ruan	Belgium	2014
LUBBERTVERBERKMOES	Addy	Netherlands	2013
LUEDORFF	Guido	Germany	2009
LUJERMANS	Justin	Netherlands	2014
LUTHJE	Lars	Germany	2013
MAC GILLAVRY	Melvin	Netherlands	2011
MACIAG	Aleksander	Poland	2009
MADEIRA	Joao	Portugal	2012
MARGULESCU	Andrei Dumitru	Romania	2014
MARINI	Massimiliano	Italy	2008
MARTINEK	Martin	Austria	2010
MARTINEZ SANDE	Jose Luis	Spain	2012
MASCIOLI	Giosue	Italy	2007
MASSA	Thomas	Germany	2011
MEINE	Mathias	Netherlands	2010
MERKELY	Bela	Hungary	2007
MICHAELSEN	Jochen	Germany	2011
MITKOWSKI	Przemyslaw	Poland	2005
MOLLNAU	Hanke	Germany	2014
MONNINK	Stefan	Netherlands	2012
MORENO PLANAS	Javier	Spain	2005
MORTSELL	David	Sweden	2013
MUELLER	Stephan Andreas	Switzerland	2014

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MUNDEL	Markus	Germany	2011
MUNTINGA	Harm-Jans	Netherlands	2012
NENTWICH	Karin	Germany	2013
NEVEN	Kars	Netherlands	2008
NOVAK	Jan	Switzerland	2013
NOVIKOV	Dmitry	Russian Federation	2013
OMAR	Salama	Egypt	2012
OOMEN	Ad	Netherlands	2015
OREZIAK	Artur	Poland	2015
ORSIDA	Daniela	Italy	2014
OSMAN	Faizel	United Kingdom	2007
OUSS	Alexandre	Netherlands	2014
PADFIELD	Gareth	United Kingdom	2015
PATWALA	Ashish	United Kingdom	2012
PAULUSSEN	Guido	Netherlands	2007
PENA HERNANDEZ	Jose Luis	Spain	2011
PEREZ ALVAREZ	Luisa	Spain	2013
PEREZ CASTELLANO	Nicasio	Spain	2005
PEREZ DIEZ	Diego	Spain	2012
PETRACCI	Barbara	Italy	2012
PETTIT	Stephen	United Kingdom	2013
PINDADO RODRIGUEZ	Javier	Spain	2010
PLUTA	Slawomir	Poland	2012
POELSNER	Robert	Germany	2013
PORRO	Rosa	Spain	2010
POZZETTI	Daniela	Italy	2007
PREDOVSKI	Milen	Bulgaria	2013
PROIETTI	Riccardo	Italy	2014
PRUSKI	Maciej	Poland	2013
PRZYBYLSKI	Andrzej	Poland	2008
PUCHOL	Alberto	Spain	2012
PUGH	Peter	United Kingdom	2009
PYATT	Jason	United Kingdom	2012
RAO	Archana	United Kingdom	2009
RASSIAS	Ioannis	Greece	2014

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REBELLATO	Luca	Italy	2012
RESTLE	Christian	Germany	2013
RICCIARDI	Danilo	Belgium	2013
RIENSTRA	Michiel	Netherlands	2014
RIVAS GANDARA	Nuria	Spain	2013
ROBERT	Jens	Switzerland	2014
RODRIGUEZ MANERO	Moises	Belgium	2013
RORDORF	Roberto	Italy	2014
ROSA	Antonio	Switzerland	2013
ROSSI	Andrea	Italy	2014
ROTEN	Laurent	Switzerland	2009
ROUKAS	Kriton-Ioannis	Greece	2012
ROUX	Antoine	France	2013
RUZICKA	Petr	United Kingdom	2013
SAFAK	Erdal	Germany	2014
SALGADO ARANDA	Ricardo	Spain	2014
SCHÄR	Beat Andreas	Switzerland	2013
SCHAUMANN	Anselm	Germany	2012
SCHEFFER	Michael G.	Netherlands	2011
SCHOONDERWOERD	Bas	Netherlands	2012
SCHREVE-STEENSMA	Ariadne Midori	Netherlands	2014
SEDLACEK	Kamil	Czech Republic	2013
SEGRETI	Luca	Italy	2013
SEGURA VILLALOBOS	Federico	Spain	2012
SEILER	Jens	Switzerland	2013
SEMICHON	Marc	France	2014
SEOW	Swee-Chong	Singapore	2008
SEPSI	Milan	Czech Republic	2014
SGARITO	Giuseppe	Italy	2007
SIMEONIDOU	Eftihia	Greece	2007
SJOBLOM	Johanna	Sweden	2009
SKENE	Chris	United Kingdom	2014
SKIADAS	Ioannis	Greece	2012
SMILDE	Tom	Netherlands	2012
SONESSON	Linus	Sweden	2014

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EHRA CP Certified professionals

SPIERENBURG	Han	Netherlands	2009
STATESCU	Cristian	Romania	2012
STEEN	Torkel	Norway	2013
STEFAN	Liliana	Czech Republic	2012
STEFAN NICOLEA	Bogdan	Romania	2012
STEFFEL	Jan	Switzerland	2012
STERLINSKI	Marciej	Poland	2009
STOCKBURGER	Martin	Germany	2012
STUEHLINGER	Markus	Austria	2012
SZAMLEWSKI	Piotr	Sweden	2011
TAHAPARY	Giovanni	Netherlands	2013
TEJEIRA FERNANDEZ	Elvis	Spain	2014
TER BEKKE	Rachel	Netherlands	2013
TIELEMAN	Robert	Netherlands	2012
TIMMERS	Liesbeth	Belgium	2015
TORCIVA	Riccardo	Italy	2012
TORN	Marieke	Netherlands	2012
TRAYKOV	Vassil B.	Bulgaria	2011
TUINENBURG	Anton	Netherlands	2013
TUININGA	Ype	Netherlands	2011
TUREL	Baybars	Turkey	2012
UCER	Ekrem	Germany	2012
VACCARI	Diego	Italy	2007
VALK	Suzanne	Netherlands	2011
VALZANIA	Cinzia	Italy	2010
VAMOS	Mate	Hungary	2014
VAN ALEM	Anouk	Netherlands	2013
VAN CASTEREN	Lieve	Belgium	2011
VAN DEN BOS	EwoutJan	Netherlands	2011
VAN DEN BRINK	Olivier WV	Netherlands	2014
VAN DER HEUDEN	Dirk	Netherlands	2011
VAN DER HEUDEN	Jeroen	Netherlands	2013
VAN DER HEUDEN	Robert	Netherlands	2011
VAN KRAAIJ	Dave	Netherlands	2010
VAN OOSTROM	Antonie	Netherlands	2012

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EHRA CP Certified professionals

VAN OPSTAL	Jurren	Netherlands	2009
VAN REIJ	Frank	Netherlands	2012
VAN SCHAARDENBURGH	Pepijn	Netherlands	2012
VAN VLIES	Bob	Netherlands	2013
VAN WOERKENS	Leon	Netherlands	2012
VASILOPOULOS	Charalambos	Greece	2007
VATASESCU	Radu- Gabriel	Romania	2007
VENABLES	Paul	United Kingdom	2013
VERGARA	Pasquale	Italy	2010
VERNOOY	Kevin	Netherlands	2013
VET	Thijs	Netherlands	2011
VIERGEVER	Eric Paul	Netherlands	2012
VILLUENDAS SABATE	Roger	Spain	2013
VOSS	Frederik	Germany	2009
VRAZIC	Hrvoje	Croatia	2014
WESTENDORP	Iris	Netherlands	2009
WESTRA	Sjoerd	Netherlands	2012
WETZEL	Ulrike Renate	Germany	2015
WIJCHERS	Sip	Belgium	2012
WILLEMS	Albert Richard	Netherlands	2012
WOLLMANN	Christian	Austria	2012
YAP	Sing-Chien	Netherlands	2014
YEO	Wee Tiong	Singapore	2014
ZAKY	Hosam	United Arab Emirates	2007
ZALEVSKY	Valery P.	Ukraine	2011
ZERVOPOULOS	George	Greece	2007
ZIMA	Endre	Hungary	2012
ZOPPO	Franco	Italy	2007
ZUCHELLI	Giulio	Italy	2012

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Cardiac Pacing & Device Therapy

CP Certification candidates who have successfully completed the exam

AARDEMA	Margriet W.	Netherlands	2006
ABRAHAM	Pal	Hungary	2011
ACENA RAMOS	Marta	Spain	2010
ACOU	Willem-Jan	Belgium	2011
ADDONISIO	Luigi	Italy	2012
ADİYAMAN	Ahmet	Netherlands	2014
AERTS	Arnaud	Netherlands	2009
AL ANANY	Alaa Allah Mohamed	Egypt	2013
AL BUNNI	Muhamad	Italy	2006
ALBERTSEN	Andi Eie	Denmark	2010
ALCALDE RODRIGUEZ	Oscar	Spain	2010
ALDERGARD	Niklas	Sweden	2007
ALDHOON	Bashar	Czech Republic	2011
ALGALARRONDO	Vincent	France	2009
AL-HASHIMI	Hisham	Netherlands	2011
ALIYEV	Farid	Turkey	2010
ALIZADEH DEHNAVI	Reza	Netherlands	2013
ALMEIDA	Sofia	Portugal	2014
ALZAND	Bakr	Netherlands	2011
AMET	Denis	France	2011
AMMON	Michael	Switzerland	2014
ANDERSON	Mark H.	United Kingdom	2012
ANNE	Wim	Belgium	2008
APOSTOLOPOULOS	Theodoros	Greece	2006
ARBELO	Elena	Spain	2012
ARIAS PALOMARES	Miguel Angel	Spain	2010
ARNOLD	Alfred E. R.	Netherlands	2012
ARO	Aapo	Finland	2013
ASSELMAN	Maarten	Netherlands	2012
AVELLA	Andrea	Italy	2005
AYALA PAREDES	Felix Alejandro	Canada	2006
AYDIN	Alper	Turkey	2014
AZEM	Tareq	Germany	2013
BACCHIONI	Giuseppe	Italy	2008
BADRAN	Haitham	Egypt	2013

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BAHGAT	Amr Kamal	Egypt	2009
BALMER	Christian	Switzerland	2013
BALT	Jippe	Netherlands	2011
BALTA	Osman	Germany	2010
BARKER	Diane	United Kingdom	2011
BAROUDI	Rabah	France	2014
BARSAMIAN	Sergei	Armenia	2013
BARTHEZ	Olivier	France	2009
BAYRAK	Duhan Fatih	Belgium	2011
BEAUPORT	Joelle	Germany	2012
BEDNAREK	Jacek	Poland	2013
BELOTTI	Giuseppina	Italy	2005
BELVITO	chiara	Italy	2013
BENCSEK	Gabor	Hungary	2008
BENEZET MAZUECOS	Juan	Spain	2014
BERTE	Benjamin	Belgium	2012
BERTOMEU-GONZALEZ	Vicente	Spain	2010
BHELEEL	Osama	Libya	2013
BIJSTERVELD	Nick	Netherlands	2009
BISSINGER	Andrzej	Poland	2006
BLAAUW	Yuri	Netherlands	2009
BLICHARZ	Jaroslav	Poland	2011
BLOMGREN	Jan	Sweden	2012
BOHM	Adam	Hungary	2008
BONANNO	Carlo	Italy	2012
BONCOMPAGNI	Andrea	Italy	2014
BOOS	Christopher	United Kingdom	2008
BORGER VAN DER BURG	Alida Elisabeth	Netherlands	2007
BORGHOUTS	Virginie	Netherlands	2014
BORGQUIST	Rasmus	Sweden	2013
BORREGO BERNABE	Luis	Spain	2013
BORRELLI	Alessio	Italy	2009
BORRELLO	Francesco	Italy	2013
BOS	Hans	Netherlands	2012
BOSKER	Hans	Netherlands	2012

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Cardiac Pacing & Device Therapy

CP Certification candidates who have successfully completed the exam

BOUWELS	Leon H. R.	Netherlands	2007
BRAAM	Richard	Netherlands	2010
BREULS	Nico	Netherlands	2009
BROERS	Bernard	Netherlands	2009
BUERKLE	Gerd	Austria	2008
BUGA	Laszlo	United Kingdom	2012
BULUT	Suat	Netherlands	2010
BUN	Sok-Sithikun	France	2012
BURRI	Haran	Switzerland	2005
CABANAS GRANDIO	Pilar	Spain	2014
CALVO CUERVO	David	Spain	2010
CALZOLARI	Vittorio	Italy	2006
CAMPOS GARCIA	Bieito	Spain	2010
CANADAS	Victoria	Spain	2010
CANDEIAS	Rui	Portugal	2008
CARAVATI	Fabrizio	Italy	2010
CASSIDY	Christopher John	United Kingdom	2014
CASTREJON CASTREJON	Sergio	Spain	2013
CHAMBERS	John	United Kingdom	2013
CHATTERJEE	Debjit	United Kingdom	2010
CHENEVARD	Remy	Switzerland	2012
CHONG	Daniel	Singapore	2011
CHONG YU	Eric	Singapore	2013
CHRISTOPHE	Arnd	Germany	2011
CHRISTOU	Apostolos	Greece	2014
CIPOLLETTA	Laura	Italy	2014
CLAPPERS	Nick	Netherlands	2014
CLEMENS	Marcell	Hungary	2012
COSER	Alessio	Italy	2011
CROSATO	Martino	Italy	2008
CSONTOS	Pal	Hungary	2009
CURNIS	Antonio	Italy	2006
DAVID	Laura-Alice	Romania	2012
DAVOODI	Gholamreza	Iran (Islamic Republic of)	2005

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DE CLERCO	An	Netherlands	2013
DE DIEGO RUS	Carlos	Spain	2013
DE DOELDER	Marieke	Netherlands	2010
DE GROOT	Cornelis Andreas	Netherlands	2012
DE GROOT	Joris R.	Netherlands	2009
DE JONG	Jeroen	Netherlands	2006
DE JONG	Jonas	Netherlands	2009
DE JONG	Richard M.	Netherlands	2007
DE LA FUENTE	Sam	Netherlands	2009
DE LEEUW	Martin	Netherlands	2008
DE LUCIA	Raffaele	Italy	2014
DE MARIA	Elia	Italy	2012
DE MEYER	Grim	Belgium	2010
DE POTTER	Tom	Belgium	2008
DE RIVA SILVA	Marta	Spain	2011
DE SENSI	Francesco	Italy	2013
DE WAARD	Daan	Netherlands	2007
DE WEERD	Gerjan	Netherlands	2009
DEMONIERE	Fabrice	Martinique	2011
DERNDORFER	Michael	Austria	2013
DI CORI	Andrea	Italy	2012
DIAB	Ihab Gomaa	United Kingdom	2009
DIAZ BUSCHMANN	Isabel	Spain	2011
DICHTL	Wolfgang	Austria	2010
DIDENKO	Maxim	Roumania	2010
DJKMAN	Barbara	Netherlands	2012
DILAVERIS	Polychronis	Greece	2006
DINH	Trang	Netherlands	2012
DOMENICHINI	Giulia	Spain	2011
DORMAN	Reinhart	Netherlands	2012
DULBECCO	Massimo	Italy	2010
DUNCKER	David	Germany	2013
DURAY	Gabor Zoltan	Germany	2008
DUSCEAC	Dinu	Sweden	2014
DUTHOIT	Guillaume	France	2010

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DYRDA	Katia	Canada	2010
EHL	Niklas Florestan	Switzerland	2014
EHRUCH	Joachim	Germany	2011
EJSSBOUITS	Sabine	Netherlands	2011
EISENBERGER	Martin	Czech republic	2008
EIVINDSON	Gunvald	Norway	2008
EL KADIKI	AbdelHadi	Lebanon	2014
EL KADRI	Moutaz	United Kingdom	2012
ELDER	Douglas	United Kingdom	2010
ELICES TEJA	Juliana	Spain	2013
ENGBERS	Jos G.	Netherlands	2009
ERCKERT	Martin	Italy	2006
ERIKSEN	Ulrik Hedegaard	Denmark	2011
ERNTELL	Hans	Sweden	2011
ESCHEN	Ole	Denmark	2009
ESMAIL	Shani	United Kingdom	2011
EURLINGS	Luc	Netherlands	2014
EVERTZ	Reinder	Spain	2012
EXPOSITO	Victor	Spain	2013
FACCHIN	Domenico	Italy	2010
FEDORCO	Marian	Czech Republic	2011
FERNANDEZ-ARMENTA PASTOR	Juan	Spain	2014
FERNANDEZ LOZANO	Juan Antonio	Spain	2013
FERNANDEZ PASTOR	Julia	Spain	2011
FIROUZI	Mehran	Netherlands	2011
FLEVARI	Panayota	Greece	2008
FOLDESI	Csaba Laszlo	Hungary	2009
FOLEY	Paul	United Kingdom	2009
FOLKERINGA	Richard	Netherlands	2007
FONTENLA	Adolfo	Spain	2010
FRANCA PEREIRA	Roberto	United States of America	2007
FRANCK	Harald	Germany	2010
FRANCOIS	Bart	Belgium	2011
FRANZINI	Christine	Switzerland	2014
FREUND	Niclas	Germany	2013

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FROMMEYER	Gerrit	Germany	2014
FRYKMANN	Viveka	Sweden	2007
FUNK	Sabine	Switzerland	2010
FURNISS	Guy	United Kingdom	2014
GABRIEL	Mario	Netherlands	2011
GALLARDO LOBO	Rodrigo	Spain	2009
GANDJBAKHCH	Estelle	France	2013
GANIERE	Vincent	Switzerland	2010
GARCIA	Rodrigue	France	2014
GARCIA ALMAGRO	Francisco Jose	Spain	2013
GARCIA BOLAO	Jose Ignacio	Spain	2005
GARNIER	Fabien	France	2013
GARWEG	Christophe	Belgium	2011
GEBETSBERGER	Franz	Austria	2008
GERMANS	Tjeerd	Morocco	2013
GERRITSEN	Jean Georges	Netherlands	2011
GHANI	Abdul	Netherlands	2012
GIANNOLA	Gabriele	Italy	2008
GIL	Ricardo	Portugal	2010
GIL ORTEGA	Ignacio	Spain	2011
GIORGI	Davide	Italy	2014
GJESTVANG	Finn Tore	Norway	2008
GONZALEZ FERRER	Juan Jose	Spain	2012
GONZALEZ-ENRIQUEZ	Susana	Spain	2008
GORLO	Adam	Poland	2012
GRABOWSKI	Marcin	Poland	2014
GRADAUS	Rainer	Germany	2006
GRAUSS	Robert Willem	Netherlands	2012
GRECU	Mihaela	Romania	2006
GRIECO	Domenico	Italy	2012
GROSFELD	Marcel	Netherlands	2013
GRUBER	Norbert	Germany	2013
GUGUCHEV	Pavel	United States of America	2010
GUTLEBEN	Klaus Juergen	Germany	2011
HAEMERS	Peter	Belgium	2013

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HAGGUI	Abdeddayem	Tunisia	2014
HAJKO	Erik	Hungary	2013
HAMEL	John John	Switzerland	2010
HAMRAOUI	Karim	Netherlands	2010
HARTOG	Jasper	Netherlands	2014
HARTOG	Johannes	Netherlands	2011
HASSAN	Ahmed Abdulwadoud	Netherlands	2012
HASSINK	Rutger	Netherlands	2014
HAUER	Arnaud	Netherlands	2013
HAUER	Herbert	Netherlands	2009
HAUGAN	Ketil	Denmark	2014
HAWKINS	Nathaniel Mark	United Kingdom	2012
HAYAT	Sajad	United Kingdom	2012
HAYES	Chris	United Kingdom	2009
HAZELEGER	Ronald	Netherlands	2010
HEGGELUND	Geir	Norway	2013
HEIB	KlausDieter	Germany	2009
HELLIGE	Gerrit	Switzerland	2014
HEMELS	Martin	Netherlands	2009
HENKENS	Ivo	Netherlands	2013
HERCZKU	Csaba	Hungary	2009
HERREROS GUILARTE	Benito	Spain	2005
HERRING	Neil	United Kingdom	2013
HERSBACH	Ferry	Netherlands	2014
HJORTSHOJ	Soren	Denmark	2008
HLIVAK	Peter	Slovakia	2013
HOBBS	William Julian	United Kingdom	2010
HOEKSTRA	Eduard Henk	Netherlands	2011
HOFFMANN	Mario	Switzerland	2014
HOLM	Katja Fiedler	Denmark	2014
HOOFT VAN HUYSDUYNEN	Bart	Netherlands	2010
HORDYNSKI	Grzegorz	Poland	2011
HORNSTEN	Jonas	Sweden	2007
HUANG	Sung-Hao	China	2014
HUIJSKES	Raymond	Netherlands	2012

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HURLIMANN	David	Switzerland	2009
HUYBRECHTS	Wim	Belgium	2008
IONNIDIS	Panagiotis	Greece	2006
IORGULESCU	Corneliu	Romania	2008
ISAKSEN	Tor Olav	Norway	2014
JACON	Peggy	France	2010
JAMALYAN	Smbat	Armenia	2010
JANSEN	Annemieke	Netherlands	2008
JANSEN	Ward	Netherlands	2010
JANSSSENS	Cornelis	Netherlands	2006
JARMAN	Julian	United Kingdom	2012
JASTRZEBSKI	Marek	Poland	2006
JAUREGUI ABULARACH	Miguel Eduardo	Spain	2010
JELANI	Anwar D.	Canada	2010
JILEK	Clemens	Germany	2012
JOHANSEN	Mette	Norway	2014
JOHANSSON	Peter	Sweden	2008
JOHAR	Sofian	United Kingdom	2011
JONES	David Gareth	United Kingdom	2009
JONSSON	Jon Erik	Sweden	2010
KACZMAREK	Krzysztof	Poland	2010
KALLIANOS	Christos	Greece	2011
KARABINOS	Ilias K.	Greece	2007
KATARIA	Vikas	India	2014
KATSIKAS	Christos	Greece	2012
KEMME	Michiel	Netherlands	2007
KETELS	Stefan	Belgium	2007
KJELLMAN	Bjorn	Sweden	2007
KLAUSZ	Gergely	Hungary	2013
KLEIN	Gunnar	Germany	2007
KLEIN	Lucas	Netherlands	2013
KLEIN	Norbert	Germany	2011
KNOPS	Reinoud	Netherlands	2008
KOEPFLI	Pascal	Switzerland	2007
KOEPP	Ulf	Norway	2008

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KOL	Amir	Italy	2013
KOLB	Christophe	Germany	2010
KOLLIAS	Georgios	Greece	2013
KOMANOVA	Erika	Slovakia	2011
KOOMEN	Egbert M.	Netherlands	2010
KOOPMAN	Pieter	Belgium	2011
KORANTZOPOULOS	Panagiotis	Greece	2009
KORTZ	Mikael	Netherlands	2010
KOSTOPOULOU	Anna	Greece	2011
KOULOURIS	Spyridon	Greece	2007
KOURGIANNIDIS	Georgios	Greece	2007
KOUROUKLIS	Spyridon	Greece	2011
KOUTSOGEORGIS	Ilias	Greece	2014
KOVACS	Andras	Hungary	2012
KRAVCHUK	Borys	Ukraine	2007
KRIJNE	Rudolf	Netherlands	2012
KRISTENSEN	Jens	Denmark	2012
KRONBORG	Mads Brix	Denmark	2011
KRUPA	Wojciech	Poland	2006
KRYZE	Lukas	Czech Republic	2013
KRZYZANOWSKI	Krystian	Poland	2014
KUJPER	Aaf	Netherlands	2011
KUJAWSKI	Tomasz	Switzerland	2013
KWASNIEWSKI	Wojciech	Poland	2013
LAN	Rongfang	China	2014
LANGERAK	Susan	Netherlands	2012
LEBEDEVA	Viktoriiia	Russia	2013
LERCHER	Peter	Austria	2010
LERNER	Martin Robert	Sweden	2010
LEVENTOPOULOS	Georgios	Greece	2014
LEWANDOWSKI	Michael	Poland	2012
LIEUW-A-FA	Mariska	Netherlands	2009
LINDE	Antonio	Spain	2012
LINDELL	Peter	Sweden	2007
LINDGREEN	Ulf	Denmark	2008

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LIPCHENCA	Igor Ariel	Israel	2008
LIPOLDOVA	Jolana	Czech Republic	2009
LIPTON	Jonathan	Netherlands	2012
LITTERFELDT	Ingrid	Sweden	2008
LOUW	Ruan	Belgium	2013
LUBBERTVERBERKMOES	Addy	Netherlands	2010
LUEDORFF	Guido	Germany	2008
LUERMANS	Justin	Netherlands	2012
LUQUE	Antonio	Spain	2014
LUTHJE	Lars	Germany	2011
LUZI	Mario	Italy	2008
MAASS	Alexander	Netherlands	2007
MAC GILLAVRY	Melvin	Netherlands	2008
MACIAG	Aleksander	Poland	2007
MADEIRA	Joao	Portugal	2011
MAGNUSSON	Peter	Sweden	2007
MAHFOUD	Mohanad	France	2010
MANUSAMA	Randy	Netherlands	2011
MARGATO	Renato	Portugal	2013
MARGULESCU	Andrei Dumitru	Romania	2013
MARICONTI	Barbara	Italy	2008
MARINI	Massimiliano	Italy	2007
MARTENS	Eimo	Germany	2013
MARTIN	Alix	France	2013
MARTINEK	Martin	Austria	2008
MARTINEZ SANDE	Jose Luis	Spain	2009
MASCIOLI	Giosue	Italy	2006
MASSA	Thomas	Germany	2008
MAXIM	George Razvan	Romania	2014
MAZZUCCO	Raffaele	Italy	2009
MEDINA PALOMO	Maria Del Carmen	Spain	2013
MEILTZ	Alexandre	Switzerland	2009
MEINDERSMA	Esther	Netherlands	2013
MEINE	Mathias	Netherlands	2007
MELANDER	Kjell	Sweden	2008

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MELMAN	Paul G.	Netherlands	2011
MENNE	Jochen	Germany	2014
MERKELY	Bela	Hungary	2007
MICHAELSEN	Jochen	Germany	2010
MIHALCZ	Attila	Austria	2011
MIRANDA	Rita	Portugal	2014
MITKOWSKI	Przemyslaw	Poland	2005
MLCOCHOVA	Hanka	Czech Republic	2009
MOLHOEK	Sander G.	Netherlands	2008
MOLLNAU	Hanke	Germany	2013
MONDESERT	Blandine	Canada	2014
MONNARD	Simon	Switzerland	2011
MONNINK	Stefan	Netherlands	2011
MOORE	Philip R.	United Kingdom	2014
MORENO	Jose	Spain	2012
MORENO PLANAS	Javier	Spain	2005
MORTSELL	David	Sweden	2012
MORTTADA	Ayman	Egypt	2012
MUELLER	Dirk	Germany	2008
MUELLER	Iris Irmgard	Germany	2014
MUELLER	Stephan Andreas	Switzerland	2011
MUNDEL	Markus	Germany	2008
MUNTEAN	Bogdan	Germany	2011
MUNTINGA	Harm-Jans	Netherlands	2009
MUTSCHELKNAUSS	Marcus	Switzerland	2013
MUTTER	Michael	Switzerland	2013
NAGARAJAN	Darbhamura	United Kingdom	2007
NAGEH-ARMANIOS	Maged	United States of America	2011
NENTWICH	Karin	Germany	2012
NERI	Gianfilippo	Italy	2007
NEVEN	Kars	Netherlands	2007
NG	Sunanto	Netherlands	2011
NG KAM CHUEN	Marie Jennyfer	United Kingdom	2013
NICASTIA	Deborah	Netherlands	2009
NICOLAIDES	Eleftherios	United Kingdom	2007

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NOTI	Fabian	Switzerland	2012
NOVAK	Jan	Switzerland	2011
NOVIKOV	Dmitry	Russian Federation	2012
NÜSSLI	Dominique	Switzerland	2013
ODLAND	Hans Henrik	Norway	2009
OIKARINEN	Lasse	Finland	2008
OMAR	Salama	Egypt	2010
OOMEN	Ad	Netherlands	2011
OREZIAK	Artur	Poland	2011
ORSIDA	Daniela	Italy	2013
OSMAN	Faizel	United Kingdom	2006
OSTROWSKA	Bozena	Sweden	2007
OSZTHEIMER	István	Hungary	2013
OUSS	Alexandre	Netherlands	2012
PACHON IGLESIAS	Marta	Spain	2012
PADFIELD	Gareth	United Kingdom	2013
PAISEY	John	United Kingdom	2008
PAPACHRISTIDIS	Alexandros	United Kingdom	2014
PARAVOLIDAKIS	Konstantinos	Greece	2008
PASCALE	Patrizio	Switzerland	2009
PATWALA	Ashish	United Kingdom	2010
PAULLUSSEN	Guido	Netherlands	2006
PAVACI	Herribert	Albania	2014
PAWLIK	Tomasz	Poland	2012
PENA HERNANDEZ	Jose Luis	Spain	2008
PENTEADO	Jose Otavio P.	Brazil	2012
PEREZ ALVAREZ	Luisa	Spain	2010
PEREZ CASTELLANO	Nicasio	Spain	2005
PEREZ DIEZ	Diego	Spain	2009
PERIK	Patrick	Netherlands	2010
PERNA	Francesco	Italy	2014
PERROTTA	Laura	Italy	2012
PETKAR	Sanjiv	United Kingdom	2008
PETRACCI	Barbara	Italy	2009
PETRU	Jan	Czech Republic	2009

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PETTIT	Stephen	United Kingdom	2011
PHILBERT / JENSEN	Berit Thornvig	Denmark	2010
PHILIPS	Thomas	Belgium	2014
PINDADO RODRIGUEZ	Javier	Spain	2009
PLASEK	Jiri	Czech Republic	2014
PLUTA	Slawomir	Poland	2010
POELSLEER	Robert	Germany	2013
POGGI	Alessio	Italy	2014
PORRO	Rosa	Spain	2009
POS	Lambertus	Netherlands	2013
POZZETTI	Daniela	Italy	2006
PRASAD	Rachana	United Kingdom	2013
PREDOVSKI	Milen	Bulgaria	2011
PRISECARU	Raluca	Belgium	2014
PROIETTI	Riccardo	Italy	2013
PRONK	Arjen	Netherlands	2010
PRUSKI	Maciej	Poland	2010
PRZYBYLSKI	Andrzej	Poland	2007
PSYCHARI	Stavroula	Greece	2011
PUCHOL	Alberto	Spain	2009
PUDULIS	Janis	Latvia	2014
PUETZ	Vanessa	Germany	2013
PUGH	Peter	United Kingdom	2008
PYATT	Jason	United Kingdom	2011
RAHEL	Braim M.	Netherlands	2011
RAMANNA	Hemanth	Netherlands	2008
RAMCHURN	Hemant	Belgium	2011
RAO	Archana	United Kingdom	2007
RASSIAS	Ioannis	Greece	2013
REBELLATO	Luca	Italy	2009
RESTLE	Christian	Germany	2009
REVERDIN	Stephane	Switzerland	2013
RIAHI	Leila	Tunisia	2014
RICCIARDI	Danilo	Belgium	2012
RICCIARDI	Giuseppe Gilberto	Italy	2013

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RIENSTRA	Michiel	Netherlands	2013
RIVAS GANDARA	Nuria	Spain	2010
ROBERT	Jens	Switzerland	2012
ROBERTSON	Alan James	United Kingdom	2014
ROBLES DE MEDINA	Ramon Mariano	Netherlands	2011
ROCA LUQUE	Ivo	Spain	2011
ROCHA	Sérgia	Portugal	2013
RODE	Susanne	Germany	2013
RODRIGUEZ MANERO	Moises	Belgium	2012
ROHNER	Andreas	Switzerland	2014
RORDORF	Roberto	Italy	2013
ROSA	Antonio	Switzerland	2011
ROSSI	Andrea	Italy	2011
ROSSI	Luca	Italy	2012
ROTEN	Laurent	Switzerland	2008
ROUKAS	Kriton-Ioannis	Greece	2011
ROUX	Antoine	France	2010
RUSSO	Giovanni	Italy	2009
RUZICKA	Petr	United Kingdom	2011
SAFAK	Erdal	Germany	2011
SALAHSHOURI	Pegah	United Kingdom	2011
SALGADO ARANDA	Ricardo	Spain	2013
SALIM	Belgin	Romania	2014
SANDIN-FUENTES	Maria de Gracia	Spain	2013
SANTOS	Nuno	Portugal	2013
SANTOS CALLE	Francisco José	Spain	2013
SARRIAS	Axel	Spain	2013
SAURER	Georg	Austria	2013
SCHÄR	Beat Andreas	Switzerland	2013
SCHAUMANN	Anselm	Germany	2009
SCHEFFER	Michael G.	Netherlands	2008
SCHMUTZ	Mathieu Thomas André Hermann Ghislain	Switzerland	2013
SCHOLZ	Brit	Germany	2011
SCHOONDERWOERD	Bas	Netherlands	2008

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SCHRAGO	Gregoire	Switzerland	2010
SCHREVE-STEENSMA	Ariadne Midori	Netherlands	2012
SCHUKRO	Christoph	Austria	2011
SCHURMANS	Joris	Belgium	2013
SCHWAGTEN	Bruno	Belgium	2008
SCHWERG	Marius	Germany	2014
SCIARAFFIA	Elena	Sweden	2011
SEDLACEK	Kamil	Czech Republic	2010
SEGRETI	Luca	Italy	2010
SEGURA VILLALOBOS	Federico	Spain	2011
SEIFERT	Martin	Germany	2013
SEILER	Jens	Switzerland	2011
SEMICHON	Marc	France	2013
SENOUF	David	Switzerland	2009
SEOW	Swee-Chong	Singapore	2007
SEPSI	Milan	Czech Republic	2011
SERVATIUS	Helge	Switzerland	2014
SGARITO	Giuseppe	Italy	2006
SIELSKI	Slawomir	Poland	2005
SILBERBAUER	John	United Kingdom	2013
SIMEONIDOU	Eftihia	Greece	2006
SJOBLOM	Johanna	Sweden	2008
SKENE	Chris	United Kingdom	2013
SKIADAS	Ioannis	Greece	2011
SKRETTEBERG	Per Torger Skretteberg	Norway	2013
SLOOTWEG	Andries	Netherlands	2014
SLOTTE	Fredrik	Finland	2014
SMEELE	Frank	Netherlands	2011
SMEETS	Frans	Netherlands	2011
SMILDE	Tom	Netherlands	2011
SMITS	Jeroen	Netherlands	2012
SOM	Zoltan	Hungary	2014
SONESSON	Linus	Sweden	2013
SPIERENBURG	Han	Netherlands	2008
STARTARI	Umberto	Italy	2014

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STATESCU	Cristian	Romania	2009
STEEN	Torkel	Norway	2007
STEFAN	Liliana	Czech Republic	2010
STEFAN NICOLEA	Bogdan	Romania	2009
STEFFEL	Jan	Switzerland	2012
STERLINSKI	Marciej	Poland	2006
STEVENHAGEN	Jeroen	Netherlands	2008
STOCKBURGER	Martin	Germany	2011
STOECKEL	Holger	Switzerland	2012
STRANDERS	Ischa	Netherlands	2011
STRIKWERDA	Sipke	Netherlands	2009
STUEHLINGER	Markus	Austria	2011
SUN	Qi	China	2014
SUPRYN	Rafal	Poland	2014
SUTER	Yves Martin	Switzerland	2013
SWART	Hp	Netherlands	2009
SZAMLEWSKI	Piotr	Sweden	2010
SZILAGYI	Szabolcs	Hungary	2013
SZTANISZLAV	Áron	Hungary	2013
TAHAPARY	Giovanni	Netherlands	2009
TAKENS	Lambertus H.	Netherlands	2014
TEJEIRA FERNANDEZ	Elvis	Spain	2013
TER BEKKE	Rachel	Netherlands	2010
TEUBL	Alexander	Austria	2009
THEIß	Söhnke	Germany	2013
TIELEMAN	Robert	Netherlands	2009
TIMMERS	Liesbeth	Belgium	2011
TOMASI	Luca	Italy	2012
TOMLINSON	D.	United Kingdom	2009
TORCIVIA	Riccardo	Italy	2010
TORN	Marieke	Netherlands	2009
TOSSEBRO	Morten Shoren	Norway	2009
TRAYKOV	Vassil B.	Bulgaria	2010
TREGUER	Frederic	France	2009
TRINES	Serge	Netherlands	2008

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TRUCCO	Maria Emilce	Spain	2012
TUINENBURG	Anton	Netherlands	2011
TUININGA	Ype	Netherlands	2009
TUREL	Baybars	Turkey	2009
TURK	Ugur Onsel	Turkey	2011
TUTUJANU	Cristina Ioana	Romania	2013
UCER	Ekrem	Germany	2011
URBAN	Lubos	Slovakia	2009
VACCARI	Diego	Italy	2006
VALK	Suzanne	Netherlands	2010
VALZANIA	Cinzia	Italy	2007
VAMOS	Mate	Hungary	2014
VAN ALEM	Anouk	Netherlands	2010
VAN BEMMEL	Marnix	Netherlands	2014
VAN CASTEREN	Lieve	Belgium	2010
VAN DE POLL	Sweder	Netherlands	2013
VAN DEN AKKER-BERMAN	Lily	Netherlands	2011
VAN DEN BERGH	Paulus	Netherlands	2013
VAN DEN BOS	EwoutJan	Netherlands	2009
VAN DEN BRINK	Olivier W. V.	Netherlands	2013
VAN DER GALIEN	Albert	Netherlands	2012
VAN DER HEUDEN	Dirk	Netherlands	2010
VAN DER HEUDEN	Jeroen	Netherlands	2011
VAN DER HEUDEN	Robert	Netherlands	2010
VAN DER KLEY	Tim	Netherlands	2011
VAN DER MEER	Peter	Netherlands	2013
VAN DER VEEN	Maurits	Netherlands	2012
VAN DER WAL	Henriette	Netherlands	2010
VAN DER WEERDT	Arno Peter	Netherlands	2007
VAN DEURSEN	Caroline	Netherlands	2012
VAN DIJK	Vincent	Netherlands	2013
VAN DOORN	Dirk Jan	Netherlands	2011
VAN EMPEL	Vanessa	Netherlands	2010
VAN ES	Robert	Netherlands	2011
VAN GASTEL	Henk Christiaan	Netherlands	2010

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CP Certification candidates who have successfully completed the exam

VAN GENT	Marco	Netherlands	2012
VAN HAELEST	Paul	Netherlands	2012
VAN HERENDAEL	Hugo	Belgium	2009
VAN HEUVERSWIJN	Frederic	Belgium	2011
VAN HORSSSEN	Elisabeth Veronica	Netherlands	2013
VAN KRAAIJ	Dave	Netherlands	2009
VAN MALDEREN	Sophie C. H.	Belgium	2013
VAN NOORD	Trudeke	Netherlands	2007
VAN OFWEGEN-HANEKAMP	Clara Emilia Emese	Netherlands	2013
VAN OOSTROM	Antonie	Netherlands	2009
VAN OPSTAL	Jurren	Netherlands	2007
VAN PETEGHEM	Sylvie	Belgium	2014
VAN POPELE	Nicole	Netherlands	2013
VAN REIJ	Frank	Netherlands	2010
VAN ROOSMALEN	Radboud	Netherlands	2011
VAN SCHAARDENBURGH	Pepijn	Netherlands	2009
VAN SCHAIVAN DER WIELEN	MarieLouise	Netherlands	2009
VAN VLIJES	Bob	Netherlands	2010
VAN WIJK	Leendert M.	Netherlands	2013
VAN WOERKENS	Leon	Netherlands	2011
VANDUYNHOVEN	Philippe	Belgium	2014
VASILOPOULOS	Charalambos	Greece	2006
VATASESCU	Radu- Gabriel	Romania	2006
VELTMANN	Christian	Germany	2014
VENABLES	Paul	United Kingdom	2010
VERBUNT	Robert	Netherlands	2011
VERGARA	Pasquale	Italy	2009
VERNOOY	Kevin	Netherlands	2010
VET	Thijs	Netherlands	2008
VICENTINI	Alessandro	Italy	2009
VIERGEVER	Eric Paul	Netherlands	2010
VIJN	Arie Gerhard	Netherlands	2010
VILLUENDAS SABATE	Roger	Spain	2010
VITALE	Raffaele	Italy	2013
VOLKOV	Dmytro	Ukraine	2013

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EHRA Certification

Cardiac Pacing & Device Therapy

CP Certification candidates who have successfully completed the exam

VON BARY	Christian	Germany	2011
VOSS	Frederik	Germany	2008
VRAZIC	Hrvoje	Croatia	2011
VRIEND	Joris	Netherlands	2011
WALHOUT	Ronald	Netherlands	2011
WALKER	Alexander Josef	Switzerland	2014
WEBERNDÖRFER	Christina Vanessa	Switzerland	2013
WERETKA	Slawomir	Germany	2011
WESTENDORP	Iris	Netherlands	2006
WESTRA	Sjoerd	Netherlands	2009
WETZEL	Ulrike Renate	Germany	2013
WHINNETT	Zachary	United Kingdom	2011
WIDDERSHOVEN	Josef Jos	Netherlands	2009
WIJCHERS	Sip	Belgium	2009
WILLEMS	Albert Richard	Netherlands	2009
WINTER	Siegmund	Austria	2010
WOLF	Michael	Belgium	2014
WOLLMANN	Christian	Austria	2011
WONG	Ka Lam	China	2013
YAP	Sing-Chien	Netherlands	2012
YEO	Wee Tiong	Singapore	2013
ZAGKLI	FANI	Greece	2013
ZAJAC	Dariusz	Poland	2012
ZAKY	Hosam	United Arab Emirates	2007
ZALEVSKY	Valery P.	Ukraine	2007
ZELJKO	Hrvojka Marija	Croatia	2013
ZEMAN	Kamil	Czech Republic	2013
ZERVOPOULOS	George	Greece	2006
ZIMA	Endre	Hungary	2009
ZOPPO	Franco	Italy	2006
ZUCHELLI	Giulio	Italy	2008
ZYCINSKI	Pawel	Poland	2014

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EHRA Certification

Allied Professionals

Certified Allied Professionals

ANTENBRINK	Johannes Fredericus	Netherlands	2011
ARTS	Germaine	Netherlands	2011
ARUMUGAM	Paul Ayyappan	United Kingdom	2014
BATSIKAS	Kimón	Greece	2013
BERTOLI	Fabrizio	Switzerland	2013
BESTEN DEN	Truus	Netherlands	2013
BIJVOET	Eleonora	Netherlands	2011
BRAAM	Nort	Netherlands	2014
BRANTS	Ruud	Netherlands	2014
BROENINK	Ingrid	Netherlands	2014
BRUEGGEMANN	Thomas	Germany	2013
BURGOS	Jesús	Spain	2013
BUSKES	marjo	Netherlands	2014
CARRERO	David	Spain	2014
DE BLAAUW	Mariska	Netherlands	2014
DE CLERCO	Katrien	Belgium	2014
DE GRAAF	Hendrik	Netherlands	2014
DE KEYZER-VAN MUJLWIJK	Klara	Netherlands	2012
DE MELKER	Robert	Netherlands	2012
DE ROVER	Vincent	Netherlands	2013
DE VRIES - VAN DER MOLEN	Carla	Netherlands	2014
DE WINTER	Peter	Netherlands	2014
DEBIE	Luuk	Netherlands	2013
EDENS	Joran	Netherlands	2011
ENGLAER	Paulus Johannes Maria	Germany	2013
FOGH JONNASSON	Pernille	Denmark	2014
GERCAMA	Ale	Netherlands	2012
GOPINATH	Binoob	United Kingdom	2013
GOUGH	Jacqueline	Netherlands	2012
GRASDIJK	Michel	Netherlands	2013
GRAUENKAMP	Caspar	Netherlands	2012
GRIFFITHS	Jon	United Kingdom	2014
GRIMBERG	Arenda	Netherlands	2013
GROEN	Henk	Netherlands	2014
GROVE	Ulrik	Denmark	2014

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EHRA Certification

Allied Professionals

Certified Allied Professionals

HAAS DE	Oudshoorn	Netherlands	2013
HAMOEN	Marinus	Netherlands	2014
HAUGDAL	Martin Aar	Denmark	2013
HENDRIKS	Thijs	Netherlands	2013
HOFSTEDE	Jan	Netherlands	2013
HOJGAARD	Susanne	Denmark	2014
HOP	Henri Marco	Netherlands	2011
HUSKENS	Paul	Netherlands	2013
IGLESIAS BRAVO	Jose Antonio	Spain	2014
JANSSSEN	Michel	Netherlands	2013
JOSEPH	Marielle	Netherlands	2014
KAMMEIJER	Willem	Netherlands	2013
KEIJZER	Rens	Netherlands	2012
KEUKEN	Johannes	Netherlands	2014
KINCH WESTERDAHL	Annika	Sweden	2013
KNOPS	Paul	Netherlands	2013
KOFLER	Ruth	Austria	2012
KUUR VAN DER	Erwin Ronald	Netherlands	2014
LA GRAND	Reinalda	Netherlands	2011
LAST	Tim	Netherlands	2012
LAU	Tsan Fung	China	2014
LINSSSEN-ABEN	Maria Helena Hendrica	Netherlands	2011
LUJTEN	Kees	Netherlands	2014
MAARSE	Albert	Netherlands	2013
MAAT-POOT	Barbara Maria	Netherlands	2014
MARCHANT	Isabelle	Netherlands	2014
MAWHOOD	Sue	United Kingdom	2014
MEIJER	Karin Maria	Netherlands	2013
MEIJER	Kim	Netherlands	2014
MIEDEMA	Pieter	Netherlands	2014
MOL	Daniel	Netherlands	2013
MUNOZ	Julio	Spain	2011
NATHOE	Mohamed Djabbaar	Netherlands	2014
NEVE	Eric	Netherlands	2014
OLIVEIRA	Joao Rodrigo	Portugal	2014

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EHRA Certification

Allied Professionals

Certified Allied Professionals

OOSTERWEGHEL	Jeannette	Netherlands	2012
OSKAM	Aart	Netherlands	2013
OVEREEM	Bartjan	Netherlands	2012
PASMAN	Harrold	Netherlands	2014
PASTORE	Cosimo	Netherlands	2013
PATTERSON-ROTTGERING	Wendy	Netherlands	2012
PEREIRA	Helder	United Kingdom	2012
PILAGE	Robert	Netherlands	2014
PIMENTA	Ricardo	Portugal	2012
PISCEDDA	Valerio	Belgium	2011
PRATAS DA SILVA	Francisco Emanuel	United Kingdom	2014
PURCHASE	Nicole	United Kingdom	2014
QVARNSTRÖM	Eva	Sweden	2013
RAVERS	Henry	Netherlands	2013
REK	Anita	Netherlands	2014
REKKER	Kees	Netherlands	2013
RICH	Caroline	United Kingdom	2014
RJUSWIJK	Nathalia Hillegonda	Netherlands	2014
RITZEN	John	Netherlands	2014
RODRIGUES DA SILVA ANDRADE	Jose Tomas	United Kingdom	2014
SANTOS CALLE	Francisco José	Spain	2013
SCHERER	Brenda	Netherlands	2014
SCHROEMGES	Johannes	Netherlands	2014
SCHUMM	Steven	Netherlands	2012
SCHUURMAN	Bert	Netherlands	2013
SCHUURMAN-VAN DER ZWAAN	Marielle	Netherlands	2014
SEFFINGA	Kees	Netherlands	2012
SLIJKERMAN	Myrna	Netherlands	2012
SOARES	Filipe	Germany	2011
SOESBERGEN	Joop	Netherlands	2013
SOUGIANNIS	Dimitrios	Greece	2012
SPRINGORUM	Bob	Netherlands	2014
STEIJJAERT	Patrick	Netherlands	2014
STEL	Erik	Netherlands	2013
STOLL	Eric	Netherlands	2012

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EHRA Certification

Allied Professionals

Certified Allied Professionals

STORM	Margaretha	Netherlands	2013
STUART	Jonas	Denmark	2014
SVENSSON	Emma	Sweden	2011
TER AVEST- ROELINK	Leonie	Netherlands	2013
TERBURG	Bonnie	Netherlands	2014
THIJSSSEN	Robert Vincent Matthias	Netherlands	2014
TRİYASUT	Grisana	Netherlands	2013
UGEN	Ad	Netherlands	2011
UIJTERWAAL	Hans	Netherlands	2011
VAN CRUIJSEN	Marc	Netherlands	2013
VAN DER DRIFT	Mireille	Netherlands	2011
VAN DER KEMP	Peter	Netherlands	2011
VAN DER SALM	K.	Netherlands	2014
VAN DER SMAN	Yoeri Walter	Netherlands	2011
VAN DIJK	Frederik	Netherlands	2013
VAN DOORN	Arjan	Netherlands	2011
VAN ELS - RUTTEN	Anna	Netherlands	2012
VAN KOOTEN	Andre	Netherlands	2014
VAN OORT	Geeske	Netherlands	2013
VAN VELDHUIZEN	Erny	Netherlands	2013
VASCONCELOS	Hugo Morujo	Portugal	2013
VENANCIO GALVAO	Julia Maria	Netherlands	2012
VERSTEEG	Astrid	Netherlands	2014
VILLADEAMIGO	Juan Manuel	Spain	2012
WASSEN	Jeroen	Netherlands	2014
WHITAKER	Lynne	United Kingdom	2014
WILS	Alexandra	Netherlands	2013
WOLTING	Roelof John	Netherlands	2012
XAVIER	Ana	Portugal	2012
ZERIKIOTIS	Evangelos	Greece	2013
ZUMBRINK	Jacobus Johannes Maria	Netherlands	2013

+ 24 SUCCESSFUL CANDIDATES WHO DID NOT AGREE TO DISCLOSE THEIR NAMES.



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