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# The EHRA White Book 2013

## The Current Status of Cardiac Electrophysiology in ESC Member Countries

A. Auricchio, K.-H. Kuck, R. Hatala, F. Arribas



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## **Preface – The EHRA White Book 2013: sixth edition**

The White Book of the European Heart Rhythm Association (EHRA) has become a reference for those seeking information about electrophysiological procedures and implantation of cardiac implantable electronic devices (CIEDs) in Europe. No other publication provides such a comprehensive collection of data from 46 of the 55 member countries of the European Society of Cardiology (ESC). Moreover, the EHRA White Book contains valuable updated information about country demographics, key national healthcare and educational information, and reports about possible obstacles to ESC Guidelines implementation in each country.

Since its founding, the spirit and methodology of the project remain unchanged, yet the data fields and questionnaire have been reviewed and refined every year. Thus, the current edition offers more details about reimbursement availability in each of the ESC countries and, for the first time, it provides additional unique information on lead extractions.

The EHRA White Book represents a successful and tangible attempt by the leading European scientific rhythmologic 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 a platform to monitor the yearly status of treatment of arrhythmia in ESC countries as well as to assess its dynamics and progressive harmonisation in access to healthcare for arrhythmia treatment over the years.

Data collection is mostly the result of voluntary participation of each national Working Group or National Cardiac Society. In the vast majority of ESC countries, well established centralised databases of both CIEDs and catheter ablation procedures exist. The databases are created and maintained in full autonomy by each national Working Group / National Cardiac Society on arrhythmias and electrophysiology. However, in some ESC countries the data is limited, thus an estimate is provided and clearly indicated in the book; in a few countries there are currently no registries. EHRA White Book could serve as motivation for these countries to adopt a systematic approach to key data on arrhythmia therapy. Despite the heterogeneous source of information, consistency over the years does exist. EHRA is very grateful to all national Working Groups for their continuous support to White Book.

As in the past, every new edition not only contains last year's data but also an update of last year's information following a process of continuous refinement and improvement. This year's the edition includes data from 46 countries.

The EHRA White Book has been made possible thanks to the efforts of several key contributors: Prof. Christian Wolpert and Prof. Panos Vardas as founding fathers of the EHRA White Book, all chairs and co-chairs of national Working Groups / National Cardiac Societies of the 55 ESC countries, all 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 Arnika Kiel. To all of them goes our deepest gratitude and appreciation.

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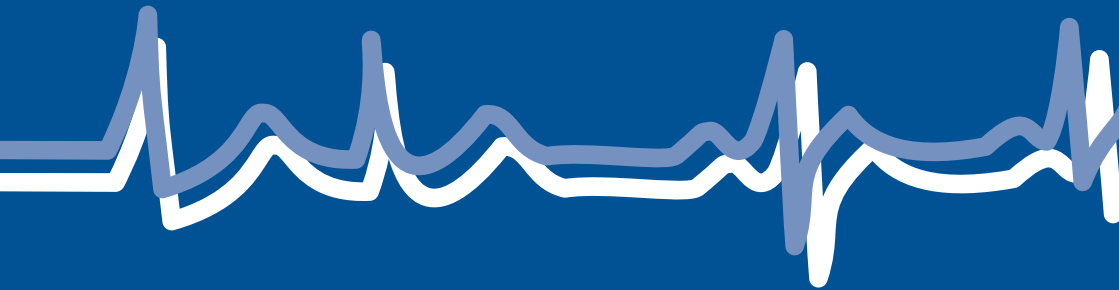
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EHRA would like to express a sincere thank you to those below who took their time collecting, researching and compiling valuable information about their current status of treatment of arrhythmias. They should be considered coauthors of this book:

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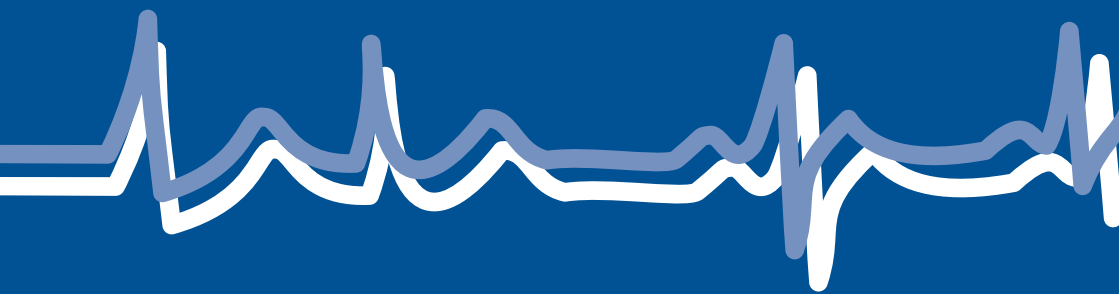
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with special thanks to: Dr. N. Linker, Mrs. Morag Cunningham



## **2. Scope and Methodology**







## 2. Scope and Methodology

The EHRA White Book 2013 is the sixth edition of a project that was launched in an attempt to understand the national realities related to treatment of arrhythmias.

EHRA invites all the countries member of the European Society of Cardiology, however not all of them participate in the project.

In this edition, the following sections are available in every country:

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

The 2013 EHRA White Book edition follows similar methodology of the 2008, 2009, 2010, 2011 and 2012 editions:

A primary research was conducted within national cardiology societies and working groups of cardiac pacing and electrophysiology of each country.

Each chairman of the societies and/or working groups was asked to compile information about their country based on a questionnaire. The repeating data from the year 2011 were prefilled in the questionnaire and were taken from the EHRA White Book 2012 edition. The data gathered by the societies and working groups were from a number of national sources, but mainly national registries and national health institutions.

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

Some countries, however, did not have available data for all of the sections of the book.

The primary and secondary research was undertaken from February 2013 until April 2013.

All data is for the latest available year, at the time of the publication.



## **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>

March 06, 2013

#### Healthcare data

---

- Hospitals (per 100 000 population)  
European health for all database (HFA-DB)  
URL: <http://data.euro.who.int/hfad/>  
March 07, 2013
- Beds (per 100 000 population)  
European health for all database (HFA-DB)  
URL: <http://data.euro.who.int/hfad/>  
March 07, 2013
- Density of physicians (per 1000 population)  
European health for all database (HFA-DB)  
URL: <http://data.euro.who.int/hfad/>  
March 07, 2013
- Density of nurses (per 1000 population)  
European health for all database (HFA-DB)  
URL: <http://data.euro.who.int/hfad/>  
March 07, 2013

#### Demographic information

---

- Population  
United States Census Bureau (Homepage)  
URL: <http://www.census.gov/ipc/www/idb/informationGateway.php>  
March 06, 2013
- Population annual growth rate [%]  
United States Census Bureau (Homepage)  
URL: <http://www.census.gov/ipc/www/idb/informationGateway.php>  
March 06, 2013
- Life expectancy at birth (in years)  
United States Census Bureau (Homepage)  
URL: <http://www.census.gov/ipc/www/idb/informationGateway.php>  
March 06, 2013

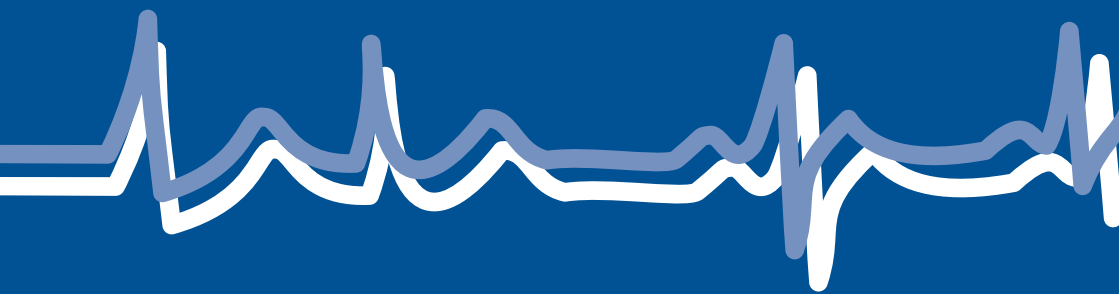
## Economic information

---

- Gross domestic product (U.S dollar-billions)  
International Monetary Fund (IMF)  
URL: <http://www.imf.org/external/ns/cs.aspx?id=28>  
March 06, 2013
- Gross domestic product per capita (U.S dollar-units)  
International Monetary Fund (IMF)  
URL: <http://www.imf.org/external/ns/cs.aspx?id=28>  
March 06, 2013
- Total expenditure on health as % of GDP  
European health for all database (HFA-DB)  
URL: <http://data.euro.who.int/hfad/>  
March 06, 2013
- General government expenditure on health as % of total expenditure on health  
WHO -World Health Statistics Report 2012; Section 7;  
March 06, 2013
- Private expenditure on health as % of total expenditure on health  
WHO -World Health Statistics Report 2012; Section 7;  
March 06, 2013



## 4. ESC Countries Overview









# ALBANIA

Pending data submission.

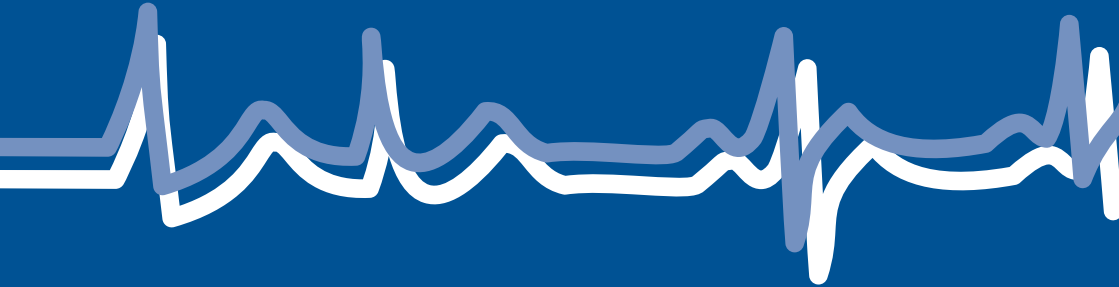






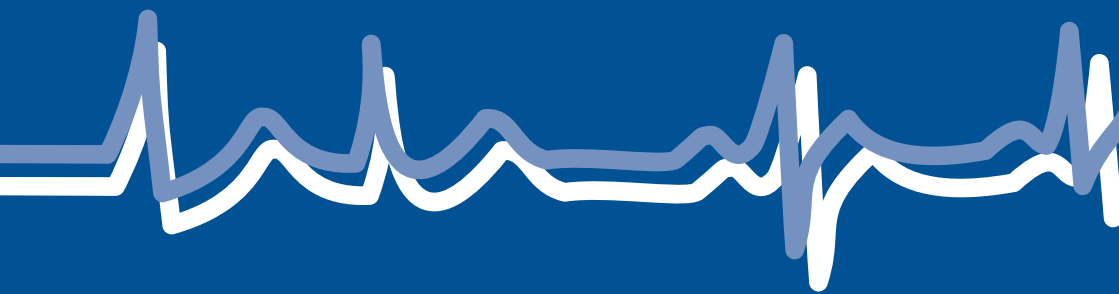
# ALGERIA

Pending data submission.



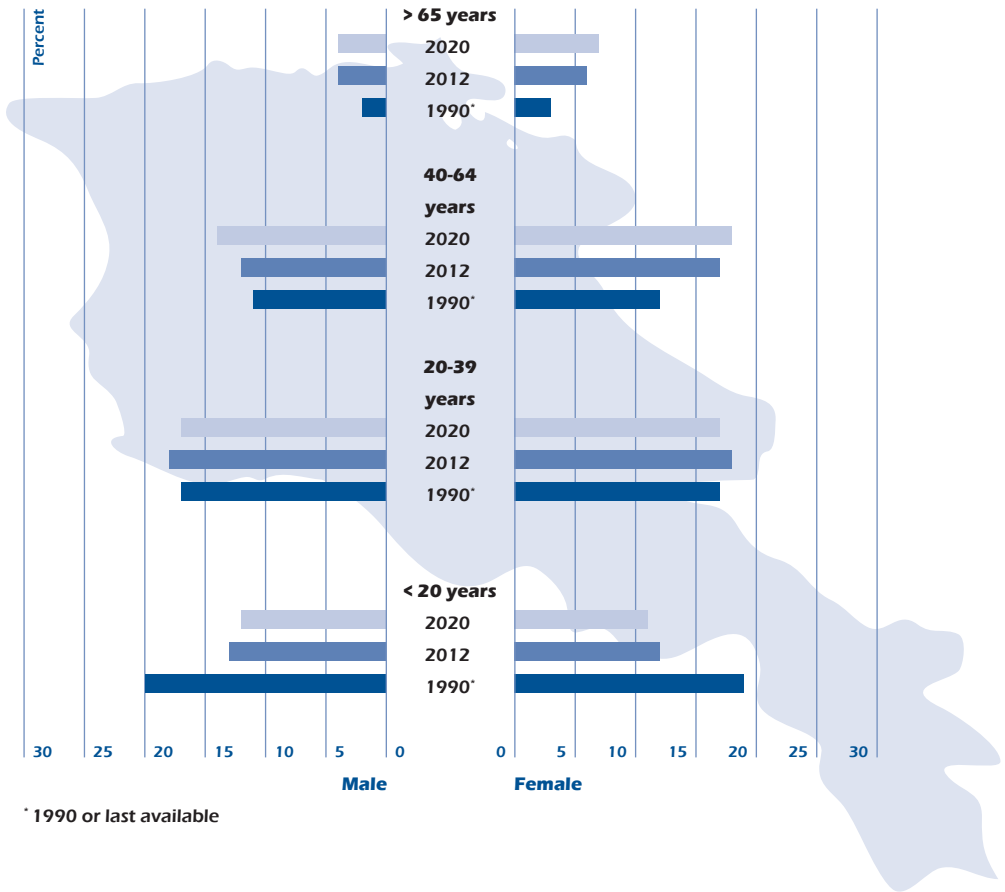


# ARMENIA



# 1. Statistics

## Age pyramid for Armenia





<b>Healthcare data</b>		
Hospitals (per 100.000 population)	4,0	2011
Beds (per 100.000 population)	374,4	2011
Density of physicians (per 1.000 population)	2,7	2011
Density of nurses (per 1.000 population)	4,7	2011

<b>Demographic information</b>		
Population	2.970.495	2012
Population annual growth rate (%)	0,1	2012
Life expectancy at birth	74	2012
Death rate (per 1.000 population)	8,6	2011
Live births (per 1.000 population)	13,3	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	10,55	2012*
Gross domestic product per capita (U.S dollar-units)	3.134,99	2012*
Total expenditure on health as % of GDP	4,4	2010
General government expenditure on health as % of total expenditure on health	43,5	2009
Private expenditure on health as % of total expenditure on health	56,5	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	49%

## 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		
	2011	2012
Insured citizens	7%	25%
Uninsured citizens	93%	75%

Distribution of insurance modality		
	2011	2012
Public insurance company	0%	0%
Private insurance company	15%	100%
Private co-payment	40%	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 (eg. 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 (eg. 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 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 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"/>	Cardiology
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yerevan State Medical University

### 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"/>

<b>Specialist required for</b>		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** **0 years**

**Suggested period of training to perform implantations** **No** **0 years**

<b>Training centres availability</b>	
Pacemaker	3
ICD implantation	2
CRT implantation	2
Electrophysiological studies and catheter ablation	2
Atrial fibrillation ablation	2

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

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

**Percentage of academic centres among all practicing implanting devices centres** **100%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	2	3
Total Pacemaker units implanted	396	321
Thereof, New implants	317	192
Thereof, Replacements	79	29

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	2	3
Total CRT units implanted	8	18
Thereof, CRT pacemaker	0	16
Thereof, CRT ICD	8	2

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	2	3
Total ICD units implanted	36	not available
Thereof, Single chamber	5	33
Thereof, Dual chamber	31	0
First implants	22	30
Replacements	14	2

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	2	not available
Total loop recorders implanted	0	not available

Specialist performing implants		
Cardiologists	No	0%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	0	0
Total lead extraction procedures	not available	0



<b>Specialist performing lead extractions</b>		
Cardiologists	No	0%
Surgeons	No	0%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>No</b>
-----------------------------------------------------	-----------

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No answer	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	2	3
Number of ablations performed	98	67
Mean number of ablations per centre	49	11
Number of AF ablations	2	8
Number of ablation centres (> 50 AF ablations)	0	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	2	0

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>
---------------------------------------------------------------------------------	-----------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No
European	Yes

Necessity of guideline translation to national language	Yes

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<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 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"/>	<input type="checkbox"/>	4
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

## 13. Sources

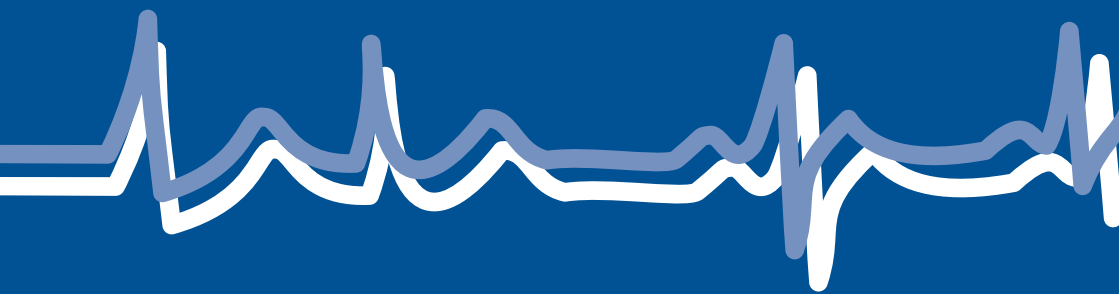
### Name of National Cardiac Society, National Working Group or arrhythmia body

- Armenian Association of Cardiology, Arrhythmological WG of Armenia

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

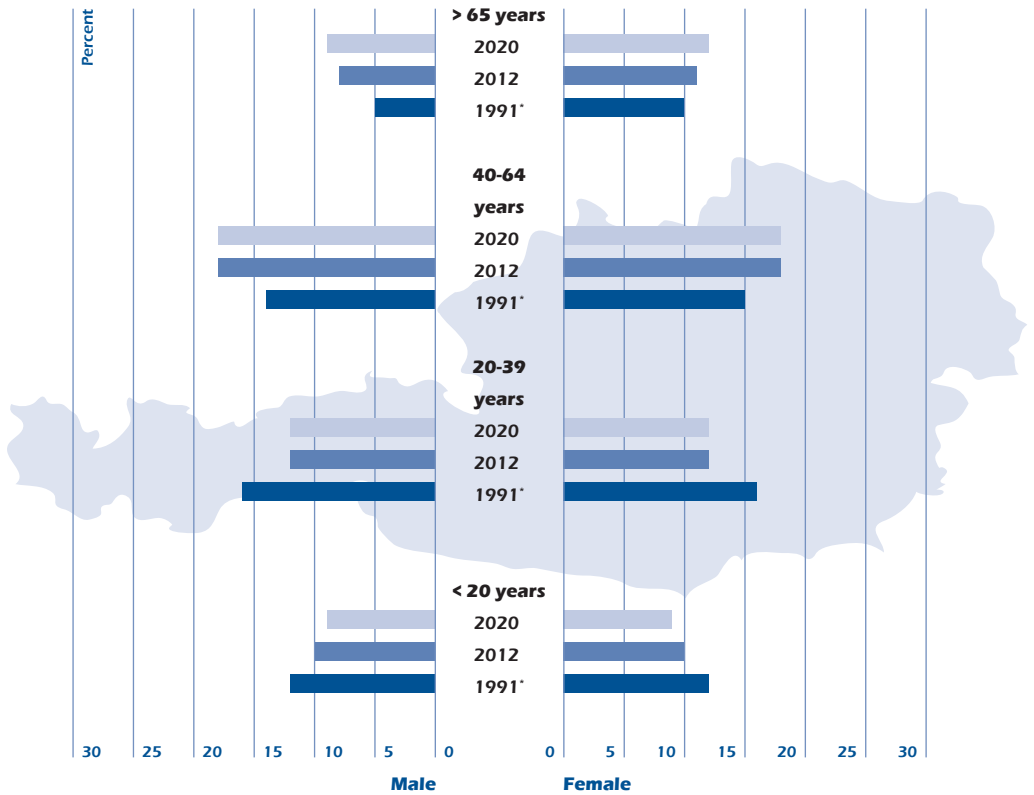
- EHRA White Book 2012
- Official statistics of Health Ministry
- Arrhythmological WG of Armenia
- Institute Cardiology

# AUSTRIA



# 1. Statistics

## Age pyramid for Austria



\* 1990 or last available





#### Healthcare data

Hospitals (per 100.000 population)	3,2	2010
Beds (per 100.000 population)	763,1	2010
Density of physicians (per 1.000 population)	4,8	2010
Density of nurses (per 1.000 population)	7,8	2010

#### Demographic information

Population	8.219.743	2012
Population annual growth rate (%)	0,0	2012
Life expectancy at birth	80	2012
Death rate (per 1.000 population)	9,1	2011
Live births (per 1.000 population)	9,3	2011

#### Economic information

Gross domestic product (U.S dollar-billions)	391,47	2012*
Gross domestic product per capita (U.S dollar-units)	46.330,06	2012*
Total expenditure on health as % of GDP	11,0	2010
General government expenditure on health as % of total expenditure on health	77,7	2009
Private expenditure on health as % of total expenditure on health	22,3	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	43%	43%

## 3. Healthcare System

Compulsory National Health Care System which is based on statutory social insurance.

Basic insurance availability	Yes
Requirements: guaranteed to all inhabitants	

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	96,9%	99,3%
Uninsured citizens	3,1%	0,7%

Distribution of insurance modality		
	2011	2012
Public insurance company	83%	70%
Private insurance company	17%	30%
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 (eg. 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 (eg. 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"/>

Comments: In general, there are no restrictions and the doctors can follow the ESC guidelines. However, each hospital has a certain annual budget for each therapy that (different from hospital to hospital) that triggers triage of patients for certain therapies.

## 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 surgeon or cardiac surgeon

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

**Required period of training to perform implantations** **No**      **0 years**

**Suggested period of training to perform implantations** **No**      **0 years**

**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** **29%**

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



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	61	25
Total Pacemaker units implanted	7.810	7.870
Thereof, New implants	not available	5.709
Thereof, Replacements	not available	2.161

<b>Specialist performing implants</b>		
Cardiologists	Yes	35%
Surgeons	Yes	65%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	30	18
Total CRT units implanted	958	879
Thereof, CRT pacemaker	300	258
Thereof, CRT ICD	658	621

<b>Specialist performing implants</b>		
Cardiologists	Yes	50%
Surgeons	Yes	50%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	30	21
Total ICD units implanted	1.805	1.195
Thereof, Single chamber	1.159	not available
Thereof, Dual chamber	646	not available
First implants	not available	919
Replacements	not available	276

Specialist performing implants		
Cardiologists	Yes	10%
Surgeons	Yes	90%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	40	25
Total loop recorders implanted	400	454

Specialist performing implants		
Cardiologists	Yes	80%
Surgeons	Yes	20%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	4	4
Total lead extraction procedures	not available	220



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	10%
Surgeons	Yes	90%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
		<b>Official name</b>
ICD	Yes	Registry of the Austrian Ministry of Health - GOEG (Gesundheit Österreich GmbH)
Pacing	Yes	Registry of the Austrian Ministry of Health - GOEG (Gesundheit Österreich GmbH)
Electrophysiology	Yes	Registry for Electrophysiology and Ablation: Austrian Society of Cardiology

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

Official name: Registry of the Austrian Ministry of Health - GOEG (Gesundheit Österreich GmbH):  
For device recalls

## 11. Interventional electrophysiology

	<b>2011</b>	<b>2012</b>
Number of ablation centres	18	14
Number of ablations performed	1.805 <sup>*</sup>	2.790
Mean number of ablations per centre	130 <sup>**</sup>	199
Number of AF ablations	510 <sup>*</sup>	1.000
Number of ablation centres (> 50 AF ablations)	4	7
Number of ablation centres (> 10 VT ablations on structural heart diseases)	2	2

<sup>\*</sup> Austrian ablation registry and questionnaire (non-reporting centres: 2)

<sup>\*\*</sup> Austrian ablation registry

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 12. Guidelines

<b>Guidelines adhered to ICD implants and pacemaker implants</b>
------------------------------------------------------------------

National	No
U.S.	No
European	Yes

<b>Necessity of guideline translation to national language</b>	<b>No</b>
----------------------------------------------------------------	-----------

Obstacles to guideline implementation	Ranking of importance <sup>*</sup>						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	5

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

## 13. Sources

<b>Name of National Cardiac Society, National Working Group or arrhythmia body</b>
------------------------------------------------------------------------------------

- Austrian Society of Cardiology Working Group for Rhythmology of the Austrian Society of Cardiology

<b>All sources that were used to fill out the questionnaire for the EHRA White Book 2013</b>
----------------------------------------------------------------------------------------------

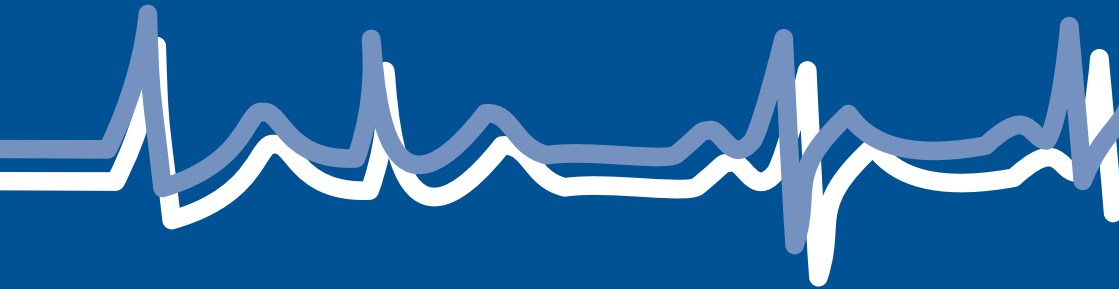
- EHRA White Book 2012
- Austrian Ministry of Health
- GOEG (Gesundheit Österreich GmbH)
- Austrian Society of Cardiology
- Working Group for Rhythmology of the Austrian Society of Cardiology
- Austrian Society of Cardiology





# AZERBAIJAN

Pending data submission.



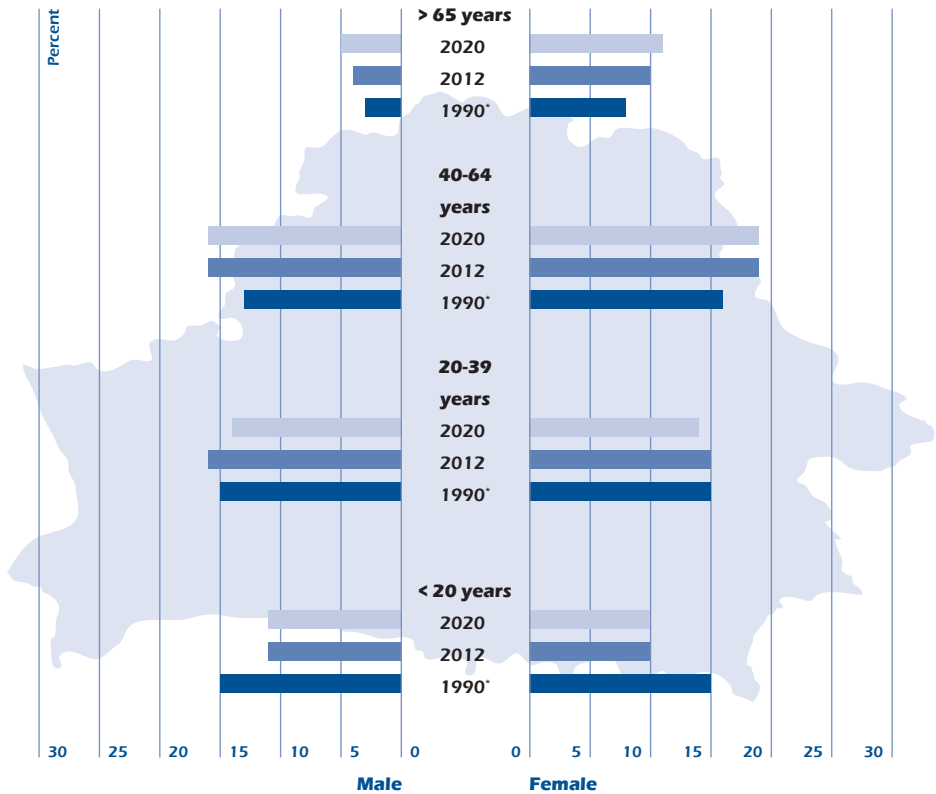


# BELARUS



# 1. Statistics

## Age pyramid for Belarus



\* 1990 or last available



#### Healthcare data

Hospitals (per 100.000 population)	6,9	2011
Beds (per 100.000 population)	1.125,1	2011
Density of physicians (per 1.000 population)	3,8	2011
Density of nurses (per 1.000 population)	10,6	2011

#### Demographic information

Population	9.643.566	2012
Population annual growth rate (%)	-0,2	2012
Life expectancy at birth	72	2012
Death rate (per 1.000 population)	14,0	2009
Live births (per 1.000 population)	11,5	2011

#### Economic information

Gross domestic product (U.S dollar-billions)	58,22	2012*
Gross domestic product per capita (U.S dollar-units)	6.202,01	2012*
Total expenditure on health as % of GDP	5,6	2010
General government expenditure on health as % of total expenditure on health	64,0	2009
Private expenditure on health as % of total expenditure on health	36,0	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	51,9%	52,4%

## 3. Healthcare System

### National Health System

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

Requirements: citizenship

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2011	2012
Public insurance company	100%	100%
Private insurance company	0%	not available
Private co-payment	3%	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 (eg. 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 (eg. 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 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"/>	Roentgen-Endovascular Surgery
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Roentgen-Endovascular Surgery
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"/>	Republican Scientific And Practical Centre «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"/>

<b>Specialist required for</b>		
		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**    **4 months**

<b>Training centres availability</b>	
Pacemaker	<b>1</b>
ICD implantation	<b>1</b>
CRT implantation	<b>1</b>
Electrophysiological studies and catheter ablation	<b>1</b>
Atrial fibrillation ablation	<b>1</b>

**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

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	10	10
Total Pacemaker units implanted	2.474	2.651
Thereof, New implants	2.193	2.329
Thereof, Replacements	281	322

<b>Specialist performing implants</b>		
Cardiologists	No	0%
Surgeons	Yes	100%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	3	1
Total CRT units implanted	49	38
Thereof, CRT pacemaker	10	not available
Thereof, CRT ICD	39	not available

<b>Specialist performing implants</b>		
Cardiologists	No	0%
Surgeons	Yes	100%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	6	7
Total ICD units implanted	131	114
Thereof, Single chamber	85	not available
Thereof, Dual chamber	46	not available
First implants	126	not available
Replacements	5	not available

Specialist performing implants		
Cardiologists	No	0%
Surgeons	Yes	100%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	1	1
Total loop recorders implanted	40	41

Specialist performing implants		
Cardiologists	No	0%
Surgeons	Yes	100%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	1	1
Total lead extraction procedures	not available	40



<b>Specialist performing lead extractions</b>		
Cardiologists	No	0%
Surgeons	Yes	100%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
		Official name
ICD	Yes	IPG registry
Pacing	Yes	IPG registry
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	5	6
Number of ablations performed	583	524
Mean number of ablations per centre	116,6	87,3
Number of AF ablations	38	54
Number of ablation centres (> 50 AF ablations)	0	1
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	1

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>
---------------------------------------------------------------------------------	-----------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	No
European	No

Necessity of guideline translation to national language	Yes

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<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 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"/>	<input type="checkbox"/>	3
Lack of operators	<input type="checkbox"/>	<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

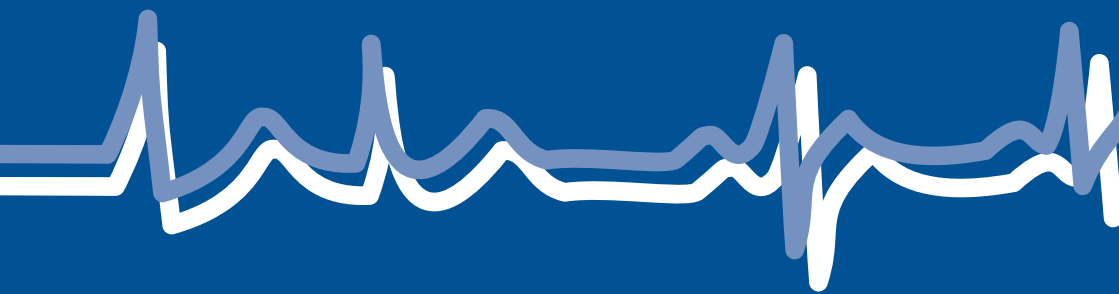
### Name of National Cardiac Society, National Working Group or arrhythmia body

- Belarusian Scientific Society of Cardiologists, Belarusian Heart Rhythm Association

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

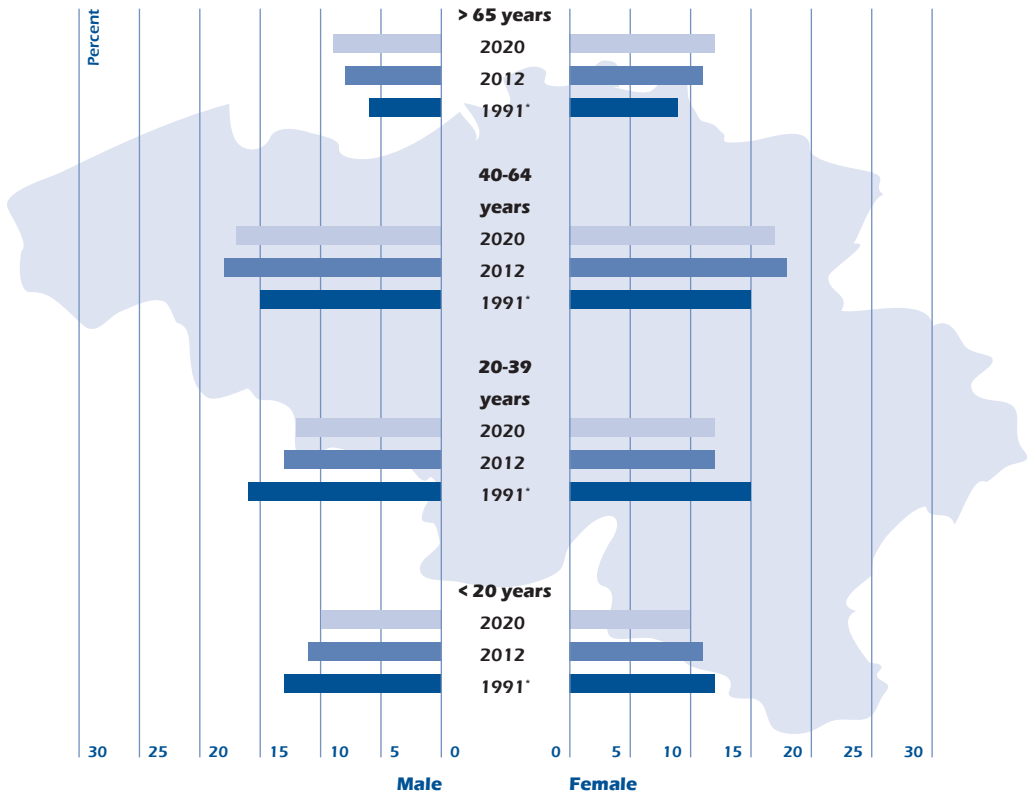
- EHRA White Book 2012
- Official statistics MOH
- Republican Scientific And Practical Centre «Cardiology»

# BELGIUM



# 1. Statistics

## Age pyramid for Belgium



\* 1990 or last available



#### Healthcare data

Hospitals (per 100.000 population)	1,8	2011
Beds (per 100.000 population)	653,0	2011
Density of physicians (per 1.000 population)	3,0	2010
Density of nurses (per 1.000 population)	15,8	2010

#### Demographic information

Population	11.082.744*	2013
Population annual growth rate (%)	0,1	2012
Life expectancy at birth	80	2012
Death rate (per 1.000 population)	9,5	2006
Live births (per 1.000 population)	11,8	2009

\* Info by G. Mairesse

#### Economic information

Gross domestic product (U.S dollar-billions)	476,80	2012*
Gross domestic product per capita (U.S dollar-units)	43.175,35	2012*
Total expenditure on health as % of GDP	10,7	2010
General government expenditure on health as % of total expenditure on health	75,1	2009
Private expenditure on health as % of total expenditure on health	24,9	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	33,6%	31,4%

## 3. Healthcare System

INAMI/RIZIV = National health system

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	99%	99%
Uninsured citizens	1%	1%

Distribution of insurance modality		
	2011	2012
Public insurance company	±80%	78%
Private insurance company	<1%	2%
Private co-payment	±20%	20%

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 (eg. 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 (eg. 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 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: Restrictions only for ICD's

## 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"/>

<b>Specialist required for</b>		
		Specialist
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist or surgeon

<b>Official national competency guidelines for electrophysiological studies or catheter ablation</b>	<b>No</b>
------------------------------------------------------------------------------------------------------	-----------

<b>Required period of training to perform implantations</b>	<b>No</b>	<b>0 years</b>
-------------------------------------------------------------	-----------	----------------

<b>Suggested period of training to perform implantations</b>	<b>No</b>	<b>0 years</b>
--------------------------------------------------------------	-----------	----------------

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

<b>Number of universities (Schools of Medicine)</b>	<b>7</b>
-----------------------------------------------------	----------

<b>Percentage of academic centres among all practicing EP centres</b>	<b>25%</b>
-----------------------------------------------------------------------	------------

<b>Percentage of academic centres among all practicing implanting devices centres</b>	<b>7%</b>
---------------------------------------------------------------------------------------	-----------



## 5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2011	2012
Implanting centres	not available <sup>*</sup>	103
Total Pacemaker units implanted	not available <sup>*</sup>	12.817
Thereof, New implants	not available <sup>*</sup>	8.840
Thereof, Replacements	not available <sup>*</sup>	3.682

<sup>\*</sup> Data not available yet by the Registry of the Belgian Heart Rhythm Association

Specialist performing implants		
Cardiologists	Yes	75%
Surgeons	Yes	25%

## 6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2011	2012
Implanting centres	35	37
Total CRT units implanted	600 <sup>*</sup>	858
Thereof, CRT pacemaker	not available	349
Thereof, CRT ICD	370	507

<sup>\*</sup> Estimation

Specialist performing implants		
Cardiologists	Yes	80%
Surgeons	Yes	20%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	23	23
Total ICD units implanted	2.060	2.197
Thereof, Single chamber	806 <sup>*</sup>	875
Thereof, Dual chamber	551 <sup>*</sup>	648
First implants	1.420	1.524
Replacements	640	673

<sup>\*</sup> Conseil d'accord INAMI (National health system)

Specialist performing implants		
Cardiologists	Yes	80%
Surgeons	Yes	20%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	36	38
Total loop recorders implanted	243	259

Specialist performing implants		
Cardiologists	Yes	80%
Surgeons	Yes	20%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	not available	not available
Total lead extraction procedures	not available	not available



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	not available
Surgeons	Yes	not available

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	Yes	Qermid ICD
Pacing	Yes	Qermid PM
Electrophysiology	Yes	BeHRA database

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

<b>Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions</b>	<b>Yes</b>

Official name: FAGG

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	38	37
Number of ablations performed	5.570	5.886
Mean number of ablations per centre	539 ± 520 <sup>†</sup>	160
Number of AF ablations	1898	2.339
Number of ablation centres (> 50 AF ablations)	22	16
Number of ablation centres (> 10 VT ablations on structural heart diseases)	17	13

<sup>†</sup> min: 3 - max: 1.975

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	No
European	Yes
Comments: For ICD: National Health System guidelines	

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	6
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>
Lack of referral	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

## 13. Sources

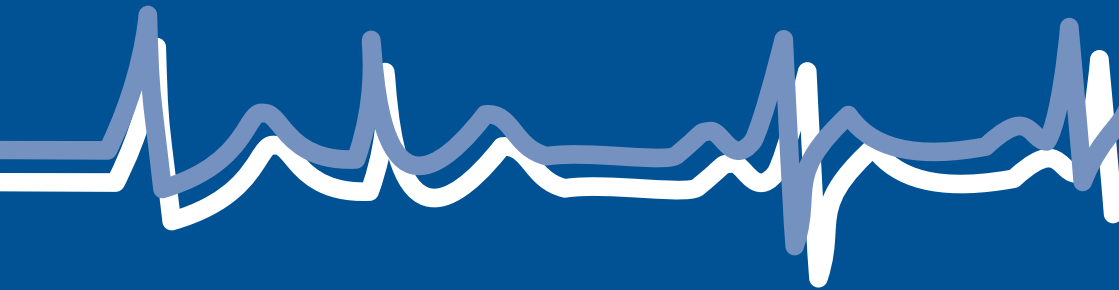
### Name of National Cardiac Society, National Working Group or arrhythmia body

- BeHRA = Belgian Heart Rhythm Association

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

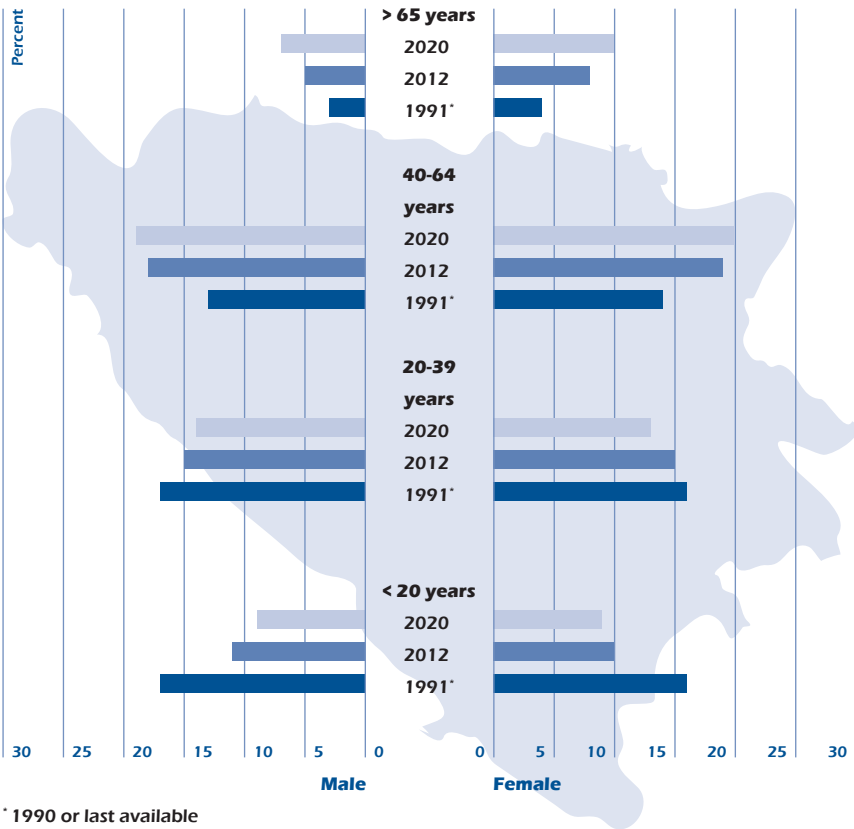
- EHRA White Book 2012
- statbel 2009
- Estimation
- Qermid (NHS) 2011
- Qermid (NHS) 2012
- BeHRA (national society) databases

# BOSNIA & HERZEGOVINA



# 1. Statistics

## Age pyramid for Bosnia & Herzegovina







<b>Healthcare data</b>		
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

<b>Demographic information</b>		
Population	3.879.296	2012
Population annual growth rate (%)	-0,1	2012
Life expectancy at birth	76	2012
Death rate (per 1.000 population)	9,1	2011
Live births (per 1.000 population)	8,3	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	16,55	2012*
Gross domestic product per capita (U.S dollar-units)	4.261,61	2012*
Total expenditure on health as % of GDP	11,1	2010
General government expenditure on health as % of total expenditure on health	61,3	2009
Private expenditure on health as % of total expenditure on health	38,7	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	54%	54%

## 3. Healthcare System

The National healthcare system in Bosnia and Herzegovina is provided through an established network of Health centers of Family medicine (primary care). As a secondary and tertiary care, general hospitals, University Clinical Centers and specialized institutions are providing services. A few private healthcares are incorporated to the healthcare system.

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	74%	74%
Uninsured citizens	26%	26%

Distribution of insurance modality		
	2011	2012
Public insurance company	74%	74%
Private insurance company	0%	0%
Private co-payment	26%	0%

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

Co-payment necessary for the following therapy	
ICD devices	not available
Pacemakers	not available
Ablation	not available

Our healthcare system and insurance are decentralized. We have twelve Cantonal and Republic Ministry of Health. In one Canton co-payment is necessary (20-100%) and in the other co-payment is not necessary.



### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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 checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

<b>Specialist required for</b>		
		Specialist
Catheter ablation	Yes	Internist, cardiologist
ICD or pacemaker implants	Yes	Internist, cardiologist, surgeon

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

**Required period of training to perform implantations** **No** **0 years**

**Suggested period of training to perform implantations** **No** **0 years**

<b>Training centres availability</b>	
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** **20%**

**Percentage of academic centres among all practicing implanting devices centres** **100%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	6	6
Total Pacemaker units implanted	636	909
Thereof, New implants	602	909
Thereof, Replacements	34	not available

<b>Specialist performing implants</b>		
Cardiologists	Yes	50%
Surgeons	Yes	50%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	1	2
Total CRT units implanted	26	21
Thereof, CRT pacemaker	15	15
Thereof, CRT ICD	11	6

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	5	4
Total ICD units implanted	61	53
Thereof, Single chamber	45	47
Thereof, Dual chamber	16	6
First implants	60	53
Replacements	1	not available

Specialist performing implants		
Cardiologists	Yes	90%
Surgeons	No	10%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	1	1
Total loop recorders implanted	6	8

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	0	not available
Total lead extraction procedures	not available	not available



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	not available
Surgeons	No	not available

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	1	1
Number of ablations performed	21	3
Mean number of ablations per centre	21	not available
Number of AF ablations	0	0
Number of ablation centres (>50 AF ablations)	not available	0
Number of ablation centres (>10 VT ablations on structural heart diseases)	not available	not available

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	Yes

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	5
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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

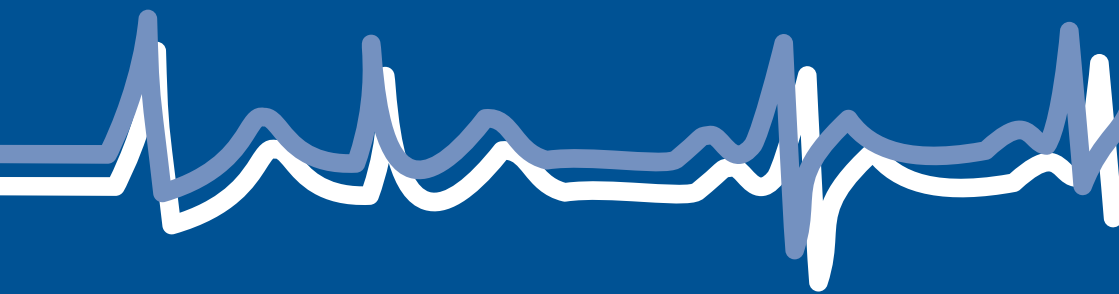
- Working Group for Cardiac Pacing, Association of Cardiologist of Bosnia and Herzegovina

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

- EHRA White Book 2012
- Ministry of Health
- Official statistics
- Only one EP center in University Hospital Tuzla
- 5 University Clinical Centers
- WG for cardiac pacing
- UCC Tuzla
- Association of Cardiologists of Bosnia and Hercegovina; WG for cardiac pacing; Dr. Boris M. Goronja, President; Dr. Elnur Tahirovic, Sarajevo; Prof. Midhat Nurkic, Tuzla; Prof. Emir Fazlibegovic, Mostar; Dr. Adnan Delic, Tuzla

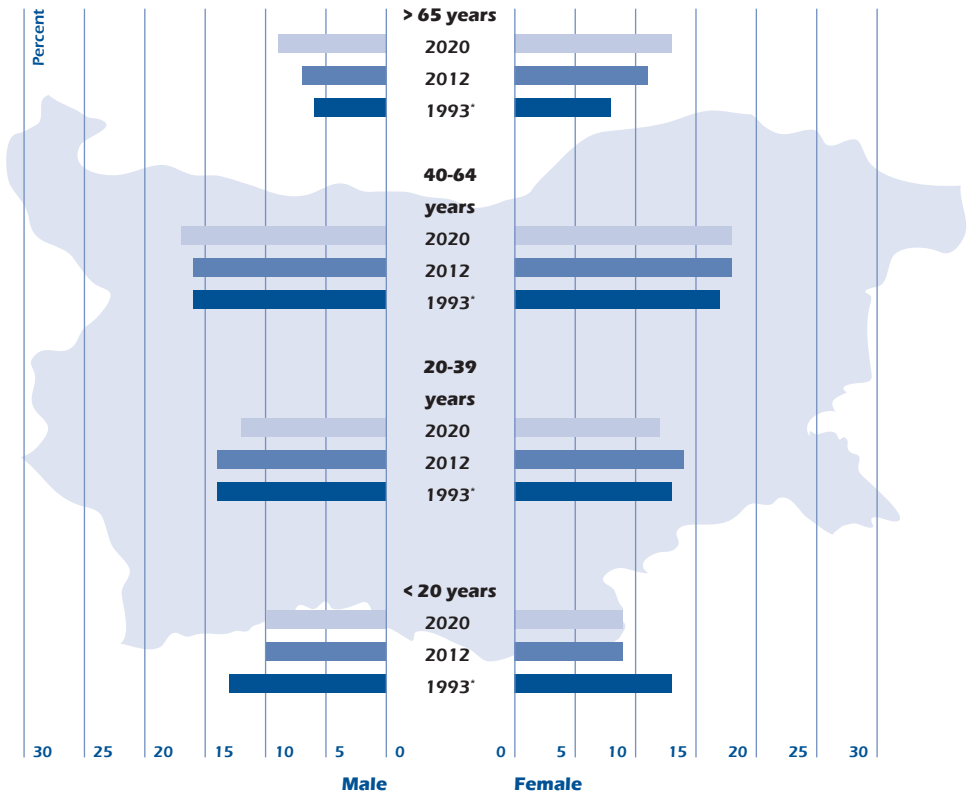


# BULGARIA



# 1. Statistics

## Age pyramid for Bulgaria



\* 1990 or last available



#### Healthcare data

Hospitals (per 100.000 population)	4,6	2010
Beds (per 100.000 population)	649,5	2010
Density of physicians (per 1.000 population)	3,7	2010
Density of nurses (per 1.000 population)	4,6	2010

#### Demographic information

Population	7.037.935	2012
Population annual growth rate (%)	-0,8	2012
Life expectancy at birth	74	2012
Death rate (per 1.000 population)	14,7	2011
Live births (per 1.000 population)	9,6	2011

#### Economic information

Gross domestic product (U.S dollar-billions)	50,81	2012*
Gross domestic product per capita (U.S dollar-units)	6.973,60	2012*
Total expenditure on health as % of GDP	6,9	2010
General government expenditure on health as % of total expenditure on health	55,4	2009
Private expenditure on health as % of total expenditure on health	44,6	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	65%	63%

## 3. Healthcare System

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

Basic insurance availability	Yes
Requirements: Must be health insured	

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	80%	80%
Uninsured citizens	20%	20%

Distribution of insurance modality		
	2011	2012
Public insurance company	75%	75%
Private insurance company	0,9%	1%
Private co-payment	24,1%	24%

Possibility to subscribing to private health insurance plans	Yes

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

Comments: Yes in all the hospitals Co-payment is necessary for ICDs, CRT-D and for ablation for atrial fibrillation.



### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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"/>
Comments:					The patient pays the difference in cost of 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: There is limited reimbursement for ICDs and CRT 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"/>	Be issued by the Medical University - Sofia - Republic of Bulgaria, with recognized specialty of cardiology for expert level and cardiac surgery for baseline. The National standard for device therapy and invasive electrophysiology are in process of regulation
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"/>	There is a national training program - National Training Program electrocardiostimulation
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	St. Ekaterina University Hospital - Sofia National Heart Hospital - Sofia

**National Cardiac Society supporting EHRA certification system**Yes, the Society demands EHRA certification for practice Yes, the Society advises EHRA certification and homologates national certification Yes, the Society advises EHRA certification, but it does not homologate national certification No No answer 

Comments: National training program to electrocardiostimulation is consistent with the requirements of the EHRA.

**Specialist required for**

	Specialist	
Catheter ablation	Yes	Cardiology
ICD or pacemaker implants	Yes	Cardiology, Surgery

**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 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** **36%****Percentage of academic centres among all practicing implanting devices centres** **75%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	14	17
Total Pacemaker units implanted	2.730	3.153
Thereof, New implants	2.303	2.451
Thereof, Replacements	427	702

<b>Specialist performing implants</b>		
Cardiologists	Yes	99,1%
Surgeons	Yes	0,9%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	4	4
Total CRT units implanted	88	198
Thereof, CRT pacemaker	82	181
Thereof, CRT ICD	6	17

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	4	4
Total ICD units implanted	59	47
Thereof, Single chamber	31	28
Thereof, Dual chamber	28	19
First implants	56	42
Replacements	3	5

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	1	1
Total loop recorders implanted	3	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		
	2011	2012
Hospitals performed lead extractions	not available	0
Total lead extraction procedures	not available	not available





<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	Yes	National register for electrocardiostimulation - BGPace
Pacing	Yes	National register for electrocardiostimulation - BGPace
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	1	2
Number of ablations performed	278	422
Mean number of ablations per centre	278	not available
Number of AF ablations	3	49
Number of ablation centres (> 50 AF ablations)	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No
European	Yes

Necessity of guideline translation to national language	Yes

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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 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"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	<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
<ul style="list-style-type: none"> <li>• Bulgarian Society of Interventional Cardiology</li> <li>Bulgarian Society of Interventional Cardiology</li> <li>Bulgarian Society cardiostimulation and electrophysiology</li> </ul>

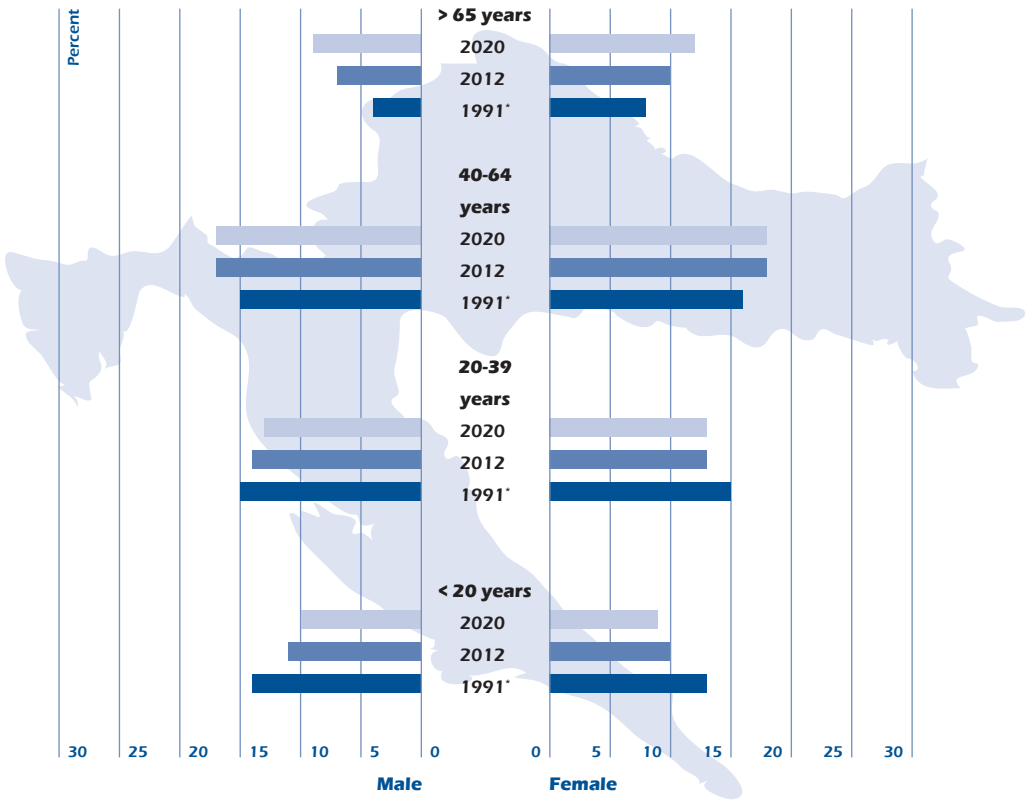
All sources that were used to fill out the questionnaire for the EHRA White Book 2013
<ul style="list-style-type: none"> <li>• EHRA White Book 2012</li> <li>• Bulgarian Society of Cardiology</li> <li>• According to Bulgarian newspapers, these are not official sources.</li> <li>• Ministry of Health</li> <li>• National register for electrocardiostimulation - BGPace</li> <li>• Survey from professional association</li> </ul>

# CROATIA



# 1. Statistics

## Age pyramid for Croatia



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	1,3	2010
Beds (per 100.000 population)	562,1	2010
Density of physicians (per 1.000 population)	2,8	2010
Density of nurses (per 1.000 population)	5,7	2010

<b>Demographic information</b>		
Population	4.480.043	2012
Population annual growth rate (%)	-0,1	2012
Life expectancy at birth	76	2012
Death rate (per 1.000 population)	11,6	2011
Live births (per 1.000 population)	9,4	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	57,49	2012*
Gross domestic product per capita (U.S dollar-units)	13.060,76	2012*
Total expenditure on health as % of GDP	7,8	2010
General government expenditure on health as % of total expenditure on health	84,9	2009
Private expenditure on health as % of total expenditure on health	15,1	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	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
Requirements: This is guaranteed by constitution.	

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	91%	90%
Uninsured citizens	9%	10%

Distribution of insurance modality		
	2011	2012
Public insurance company	91%	90%
Private insurance company	0%	5%
Private co-payment	9%	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 (eg. 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 (eg. 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"/>

<b>Specialist required for</b>		
		Specialist
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist or surgeon

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

**Required period of training to perform implantations** **No** **0 years**

**Suggested period of training to perform implantations** **No** **0 years**

<b>Training centres availability</b>	
Pacemaker	5
ICD implantation	5
CRT implantation	4
Electrophysiological studies and catheter ablation	3
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** **58%**





## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	16	17
Total Pacemaker units implanted	2.532	2.515
Thereof, New implants	2.147	2.191
Thereof, Replacements	385	324

<b>Specialist performing implants</b>		
Cardiologists	Yes	71%
Surgeons	Yes	29%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	8	10
Total CRT units implanted	54	58
Thereof, CRT pacemaker	35	37
Thereof, CRT ICD	19	21

<b>Specialist performing implants</b>		
Cardiologists	Yes	95%
Surgeons	Yes	5%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	12	12
Total ICD units implanted	84	118
Thereof, Single chamber	55	73
Thereof, Dual chamber	29	29
First implants	not available	102
Replacements	not available	16

Specialist performing implants		
Cardiologists	Yes	60%
Surgeons	Yes	40%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	6	5
Total loop recorders implanted	15	7

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	1	3
Total lead extraction procedures	not available	7



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	50%
Surgeons	Yes	50%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>No</b>
-----------------------------------------------------	-----------

Reasons: Not funded

<b>National registry for</b>		
		<b>Official name</b>
ICD	Yes	Report of the WG for arrhythmias and pacemakers of the Croatian Cardiac Society.
Pacing	Yes	Report of the WG for arrhythmias and pacemakers of the Croatian Cardiac Society.
Electrophysiology	Yes	Report of the WG for arrhythmias and pacemakers of the Croatian Cardiac Society.

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	5	5
Number of ablations performed	455	593
Mean number of ablations per centre	91	100
Number of AF ablations	46	79
Number of ablation centres (> 50 AF ablations)	0	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No answer
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<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 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"/>	<input type="checkbox"/>	2
Lack of operators	<input type="checkbox"/>	<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

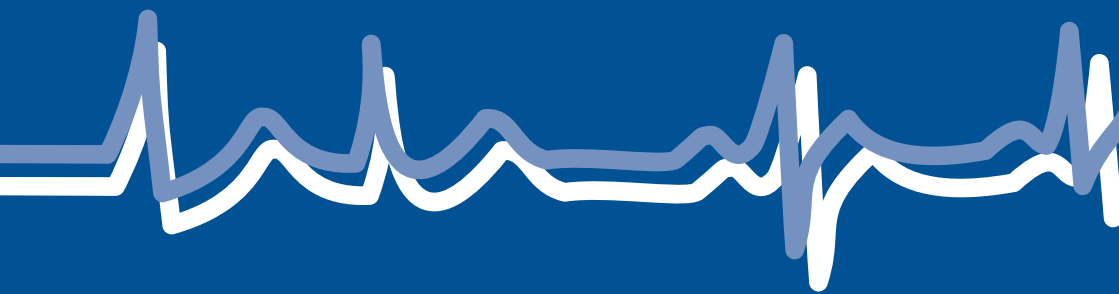
### Name of National Cardiac Society, National Working Group or arrhythmia body

- 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 2013

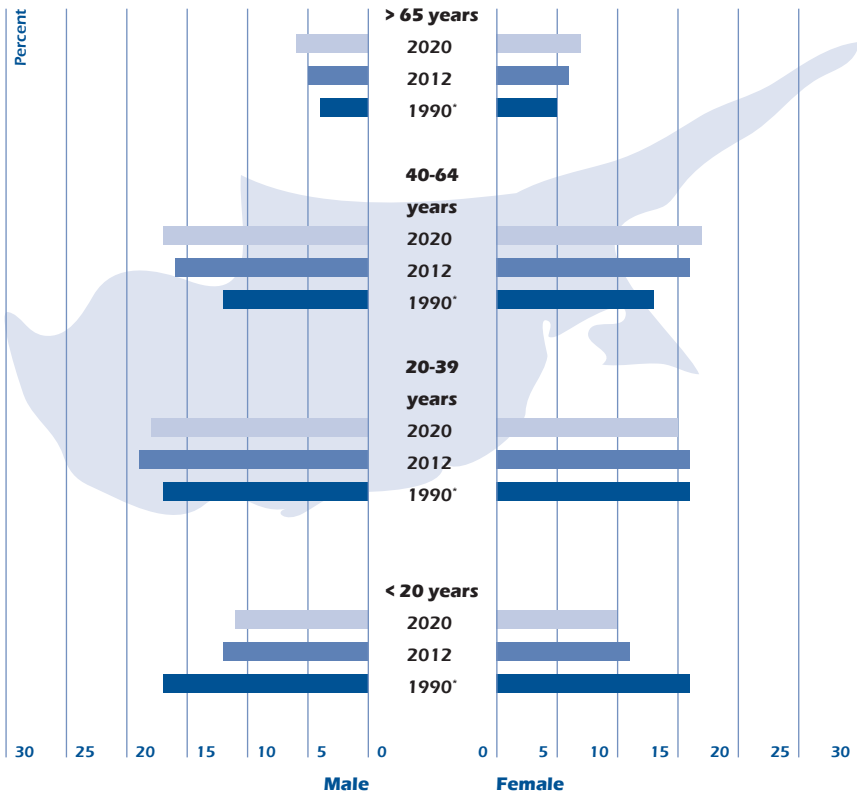
- EHRA White Book 2012
- Croatian Institute of Public Health
- Croatian Institute for Health Insurance
- Croatian Institute for Health Insurance
- Direct reports to the Working group from all centers.
- Report of the WG for arrhythmias and pacemakers of the Croatian Cardiac Society.

# CYPRUS



# 1. Statistics

## Age pyramid for Cyprus



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	10,7	2010
Beds (per 100.000 population)	352,3	2010
Density of physicians (per 1.000 population)	2,9	2010
Density of nurses (per 1.000 population)	4,7	2010

<b>Demographic information</b>		
Population	1.138.071	2012
Population annual growth rate (%)	1,6	2012
Life expectancy at birth	78	2012
Death rate (per 1.000 population)	6,3	2011
Live births (per 1.000 population)	11,2	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	22,45	2012*
Gross domestic product per capita (U.S dollar-units)	25.629,07	2012*
Total expenditure on health as % of GDP	6,0	2010
General government expenditure on health as % of total expenditure on health	41,5	2009
Private expenditure on health as % of total expenditure on health	58,5	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	30%	30%

## 3. Healthcare System

Free medical care is provided by the government at state hospitals based on income criteria.

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	85%	85%
Uninsured citizens	15%	15%

Distribution of insurance modality		
	2011	2012
Public insurance company	85%	85%
Private insurance company	15%	15%
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

Comments: Full payment in the private sector





### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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 the state sector the physician is given a flat salary for all work.

### 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"/>

Comments: There are no official restrictions but the state physicians generally 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 checked="" type="checkbox"/>
No answer	<input type="checkbox"/>

### Specialist required for

	Yes	Specialist
Catheter ablation	Yes	Electrophysiologist (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**      **0 years**

**Suggested period of training to perform implantations** **No**      **0 years**

### 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)** **1**

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

**Percentage of academic centres among all practicing implanting devices centres** **0%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	5	5
Total Pacemaker units implanted	250	240
Thereof, New implants	not available	not available
Thereof, Replacements	not available	not available

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	2	3
Total CRT units implanted	22	28
Thereof, CRT pacemaker	2	not available
Thereof, CRT ICD	20	not available

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	3	3
Total ICD units implanted	65	52
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		
	2011	2012
Implanting centres	2	3
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		
	2011	2012
Hospitals performed lead extractions	not available	0
Total lead extraction procedures	not available	0



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	not available
Surgeons	No	not available

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>No</b>
-----------------------------------------------------	-----------

Reasons: Short distances to hospitals therefore no need.

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	2	3
Number of ablations performed	40	40
Mean number of ablations per centre	30	not available
Number of AF ablations	3	6
Number of ablation centres (> 50 AF ablations)	0	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>
---------------------------------------------------------------------------------	-----------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	2

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

## 13. Sources

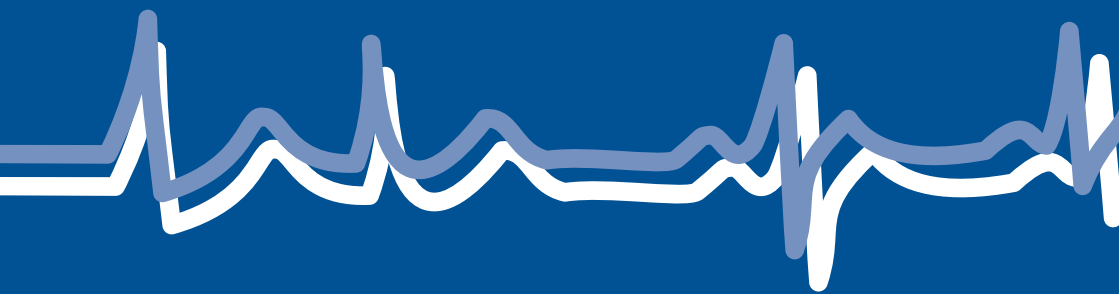
### Name of National Cardiac Society, National Working Group or arrhythmia body

- Cyprus Society of Cardiology

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

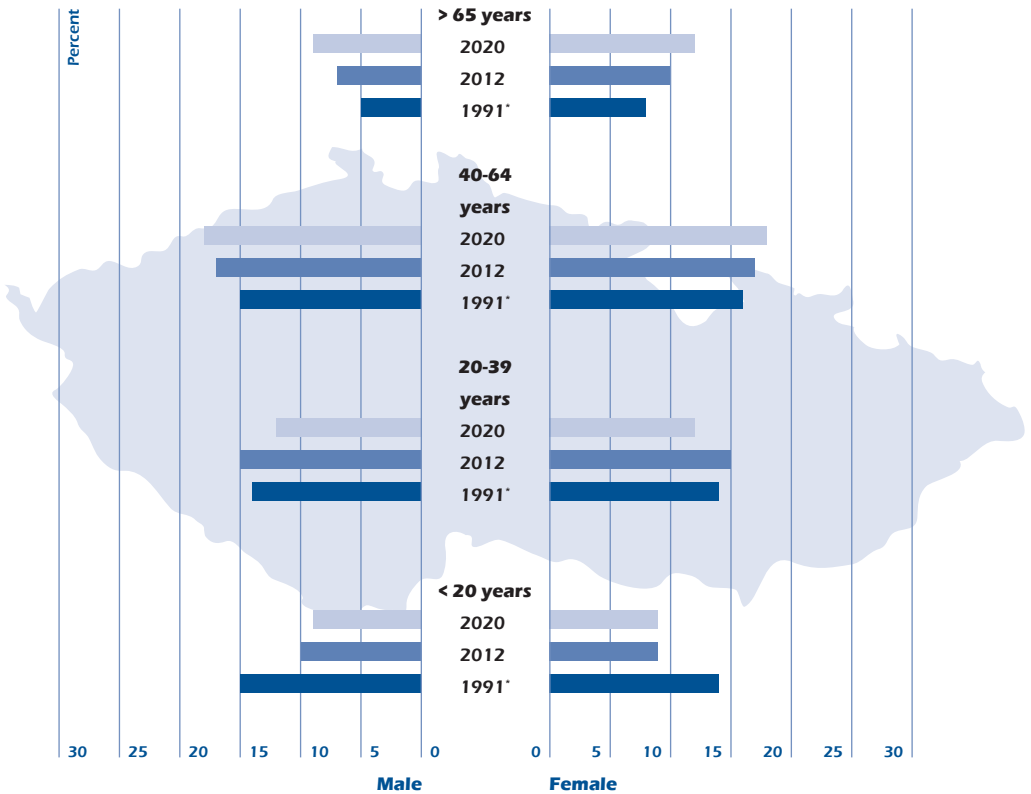
- EHRA White Book 2012
- Ministry of health official statistics
- Hospital statistics
- Personal contact with key physicians
- Private medical school
- Hospital information
- Estimation

# CZECH REPUBLIC



# 1. Statistics

## Age pyramid for Czech Republic



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	2,4	2010
Beds (per 100.000 population)	701,2	2010
Density of physicians (per 1.000 population)	3,6	2010
Density of nurses (per 1.000 population)	8,5	2010

<b>Demographic information</b>		
Population	10.177.300	2012
Population annual growth rate (%)	-0,1	2012
Life expectancy at birth	77	2012
Death rate (per 1.000 population)	10,2	2011
Live births (per 1.000 population)	10,4	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	193,51	2012*
Gross domestic product per capita (U.S dollar-units)	18.336,91	2012*
Total expenditure on health as % of GDP	7,9	2010
General government expenditure on health as % of total expenditure on health	84,0	2009
Private expenditure on health as % of total expenditure on health	16,0	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	not available

## 3. Healthcare System

National Health System

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	99,9%	99,9%
Uninsured citizens	0,1%	0,1%

Distribution of insurance modality		
	2011	2012
Public insurance company	99,9%	99,9%
Private insurance company	0,1%	0,1%
Private co-payment	0,1%	not available

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 (eg. 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 (eg. 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"/>
Comments:					Reimbursement for all procedures is limited to certain number.			

## 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"/>	Cardiologist, licence for implantation
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cardiologist, licence for ep and ablation
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
ICD or pacemaker implants	Yes   Cardiologist, surgeon

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

**Required period of training to perform implantations** **Yes**      **0 years**

**Suggested period of training to perform implantations** **Yes**      **0 years**

**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)** **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

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	37	37
Total Pacemaker units implanted	8.980	9.150
Thereof, New implants	6.277	6.410
Thereof, Replacements	2.703	2.740

<b>Specialist performing implants</b>		
Cardiologists	Yes	95%
Surgeons	Yes	5%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	19	19
Total CRT units implanted	1.460	1.289
Thereof, CRT pacemaker	289	370
Thereof, CRT ICD	1.171	919

<b>Specialist performing implants</b>		
Cardiologists	No	not available
Surgeons	No	not available

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	17	17
Total ICD units implanted	2.751	2.824
Thereof, Single chamber	1.137	949
Thereof, Dual chamber	442*	333
First implants	2.201	1.282
Replacements	550	623

\* + CRT

Specialist performing implants		
Cardiologists	Yes	95%
Surgeons	Yes	5%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	not available
Total loop recorders implanted	250*	250

\* Estimation

Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	No	not available

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	not available	not available
Total lead extraction procedures	not available	300



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	70%
Surgeons	Yes	30%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
		Official name
ICD	Yes	ICD online registry
Pacing	Yes	PM online registry
Electrophysiology	Yes	Ablation online registry

<b>Availability of a national quality insurance system or complication registry</b>	<b>Yes</b>
-------------------------------------------------------------------------------------	------------

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

Official name: State institute for drug control

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	20	20
Number of ablations performed	4.480	4.822
Mean number of ablations per centre	224	241
Number of AF ablations	1.590	1.800
Number of ablation centres (> 50 AF ablations)	8	9
Number of ablation centres (> 10 VT ablations on structural heart diseases)	6	8

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 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	6
Lack of centres	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>
Low awareness of guidelines	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

## 13. Sources

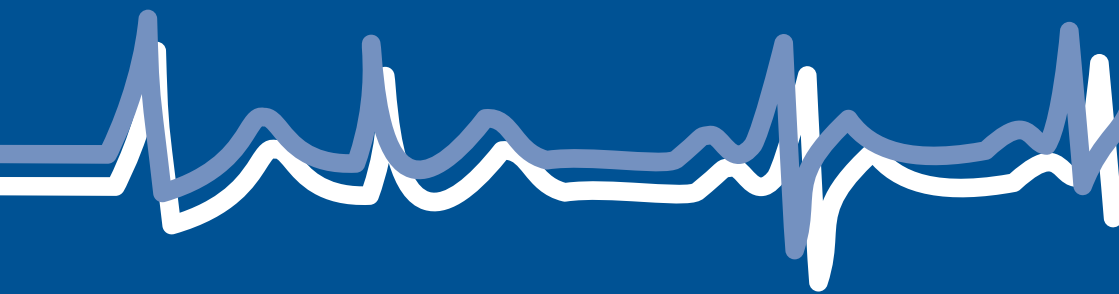
### Name of National Cardiac Society, National Working Group or arrhythmia body

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

- EHRA White Book 2012
- Estimation
- Pacemaker on-line registry
- National on-line registry
- \*1 chamber and 2 chamber ICD - only new implants number is available
- National on-line registry
- Ablation online registry

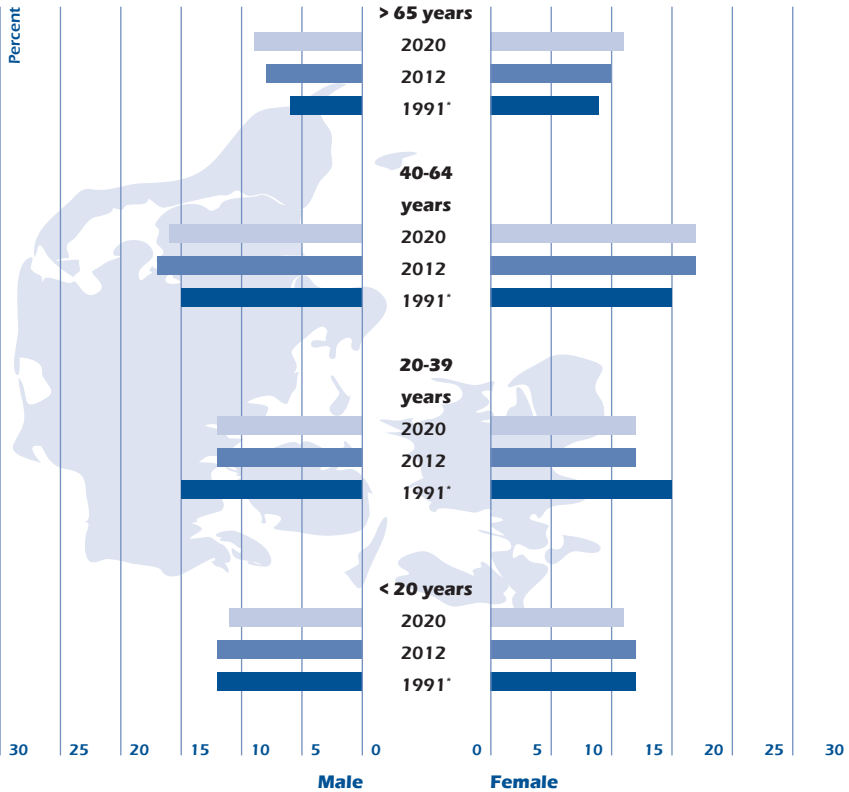


# DENMARK



# 1. Statistics

## Age pyramid for Denmark



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	not available	not available
Beds (per 100.000 population)	349.6	2010
Density of physicians (per 1.000 population)	3.5	2009
Density of nurses (per 1.000 population)	15.7	2009

<b>Demographic information</b>		
Population	5.543.453	2012
Population annual growth rate (%)	0,3	2012
Life expectancy at birth	79	2012
Death rate (per 1.000 population)	9,9	2009
Live births (per 1.000 population)	11,2	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	309,18	2012*
Gross domestic product per capita (U.S dollar-units)	55.447,62	2012*
Total expenditure on health as % of GDP	11,4	2010
General government expenditure on health as % of total expenditure on health	85,0	2009
Private expenditure on health as % of total expenditure on health	15,0	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	not available

## 3. Healthcare System

Public healthcare

Basic insurance availability		Yes
Requirements: none		

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2011	2012
Public insurance company	100%	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 (eg. 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 (eg. 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 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"/>

<b>Specialist required for</b>		
		Specialist
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist or thorax-surgeon

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

Danish Society of Cardiology NBV

**Required period of training to perform implantations** **No** **0 years**

**Suggested period of training to perform implantations** **NO** **0 years**

**Training centres availability**

Pacemaker	9
ICD implantation	5
CRT implantation	6
Electrophysiological studies and catheter ablation	5
Atrial fibrillation ablation	0

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

**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

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	14	9
Total Pacemaker units implanted	4.397	4.663
Thereof, New implants	3.349	3.516
Thereof, Replacements	1.048	1.157

<b>Specialist performing implants</b>		
Cardiologists	Yes	99%
Surgeons	No	1%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	5	6
Total CRT units implanted	873	941
Thereof, CRT pacemaker	289	337
Thereof, CRT ICD	584	604

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	5	6
Total ICD units implanted	1.095	1.207
Thereof, Single chamber	725	825
Thereof, Dual chamber	370	382
First implants	848	896
Replacements	247	311

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	9	9
Total loop recorders implanted	250	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		
	2011	2012
Hospitals performed lead extractions	3	4
Total lead extraction procedures	not available	not available





<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	not available
Surgeons	Yes	not available

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
		Official name
ICD	Yes	DANISH Pacemaker and ICD Registry
Pacing	Yes	DANISH Pacemaker and ICD Registry
Electrophysiology	Yes	ablation.dk

<b>Availability of a national quality insurance system or complication registry</b>	<b>Yes</b>
-------------------------------------------------------------------------------------	------------

Official name: DANISH Pacemaker and ICD Registry and ablation.dk

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

	2011	2012
Number of ablation centres	6	7
Number of ablations performed	2.529	3.271
Mean number of ablations per centre	422	467
Number of AF ablations	1.074	1.450
Number of ablation centres (> 50 AF ablations)	6	6
Number of ablation centres (> 10 VT ablations on structural heart diseases)	6	5

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	No
European	No

Necessity of guideline translation to national language	No
---------------------------------------------------------	----

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	6
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input 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"/>	<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, working Group of Arrhythmias

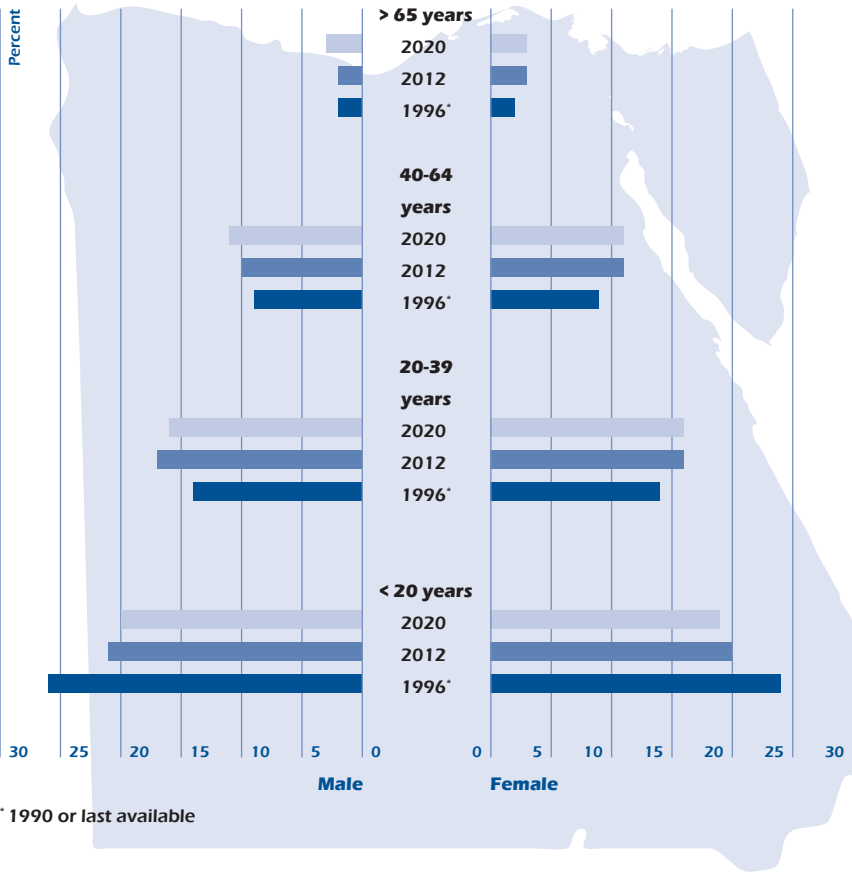
All sources that were used to fill out the questionnaire for the EHRA White Book 2013
· EHRA White Book 2012
· DANISH Pacemaker and ICD Registry
· ablation.dk

# EGYPT



# 1. Statistics

## Age pyramid for Egypt





#### 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	83.688.164	2012
Population annual growth rate (%)	1,9	2012
Life expectancy at birth	73	2012
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)	255,00	2012*
Gross domestic product per capita (U.S dollar-units)	3.109,47	2012*
Total expenditure on health as % of GDP	not available	not available
General government expenditure on health as % of total expenditure on health	39,5	2009
Private expenditure on health as % of total expenditure on health	60,5	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	not available

## 3. Healthcare System

Egypt has a segmented health system. There are different public and private providers and financing agents. The main agents are: the government sector, the public sector which is known as Health Insurance Organisation (HIO), the Curative Care Organisations (CCO) and private organisations. Healthcare providers in the government sector are the Ministry of Health (MOH), teaching and university hospitals and Military and Police Hospitals

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	not available	75%
Uninsured citizens	not available	25%

Distribution of insurance modality		
	2011	2012
Public insurance company	not available	60%
Private insurance company	not available	10%
Private co-payment	not available	5%

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

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

Comments: For primary prevention public health insurance is not covering the expenses and needs co-payment



### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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: For the public insurance its very insufficient and not related to the complexity or the duration of the procedures.					The same as physician 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 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EPS Diploma of the ECRA
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EPS Diploma of the ECRA
Allied professionals	<input type="checkbox"/>	<input checked="" 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 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** **3 years**

**Suggested period of training to perform implantations** **Yes** **3 years**

**Training centres availability**

Pacemaker	28
ICD implantation	11
CRT implantation	11
Electrophysiological studies and catheter ablation	11
Atrial fibrillation ablation	5

**Number of universities (Schools of Medicine)** **22**

**Percentage of academic centres among all practicing EP centres** **28%**

**Percentage of academic centres among all practicing implanting devices centres** **28%**





## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	not available	28
Total Pacemaker units implanted	not available	2.500
Thereof, New implants	not available	not available
Thereof, Replacements	not available	not available

<b>Specialist performing implants</b>		
Cardiologists	Yes	96%
Surgeons	Yes	4%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	not available	11
Total CRT units implanted	not available	354
Thereof, CRT pacemaker	not available	284
Thereof, CRT ICD	not available	70

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	11
Total ICD units implanted	not available	151
Thereof, Single chamber	not available	138
Thereof, Dual chamber	not available	13
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		
	2011	2012
Implanting centres	not available	3
Total loop recorders implanted	not available	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		
	2011	2012
Hospitals performed lead extractions	not available	2
Total lead extraction procedures	not available	26



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>No</b>
-----------------------------------------------------	-----------

Reasons: Expensive not covered by the insurance companies

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	not available	11
Number of ablations performed	not available	887
Mean number of ablations per centre	not available	not available
Number of AF ablations	not available	24
Number of ablation centres (> 50 AF ablations)	not available	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	1

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>
---------------------------------------------------------------------------------	-----------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	
Low awareness of guidelines	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

## 13. Sources

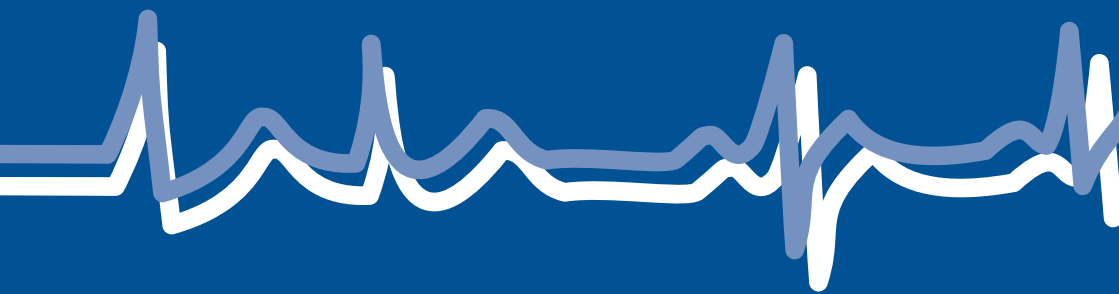
### Name of National Cardiac Society, National Working Group or arrhythmia body

- Egyptian Cardiac Rhythm Association (ECRA)

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

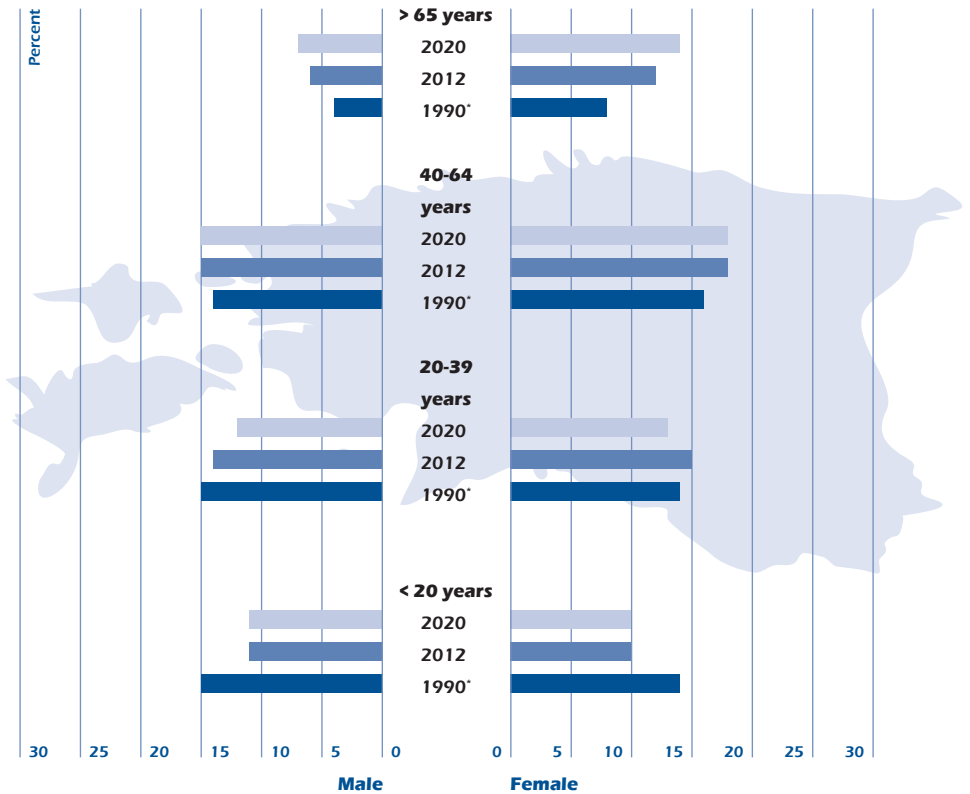
- EHRA White Book 2012
- Hospital statistics
- Estimation
- Estimation of the Egyptian Cardiac Rhythm Association
- Sales data
- Survey from professional association

# ESTONIA



# 1. Statistics

## Age pyramid for Estonia



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	4,4	2010
Beds (per 100.000 population)	533,2	2010
Density of physicians (per 1.000 population)	3,2	2010
Density of nurses (per 1.000 population)	6,4	2010

<b>Demographic information</b>		
Population	1.274.709	2012
Population annual growth rate (%)	-0,7	2012
Life expectancy at birth	74	2012
Death rate (per 1.000 population)	11,4	2011
Live births (per 1.000 population)	11,0	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	21,42	2012*
Gross domestic product per capita (U.S dollar-units)	15.986,55	2012*
Total expenditure on health as % of GDP	6,0	2010
General government expenditure on health as % of total expenditure on health	78,4	2009
Private expenditure on health as % of total expenditure on health	21,6	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	54%

## 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: 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; a person joining with the scheme voluntarily.		

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	95%	95%
Uninsured citizens	5%	5%

Distribution of insurance modality		
	2011	2012
Public insurance company	95%	100%
Private insurance company	1%	0%
Private co-payment	1%	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 (eg. 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 (eg. 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: Limited reimbursement for ICD and CRT treatment. In 2012 2.128.500 EUR for 1.280.000 inhabitants. No restrictions for ablation and pacemaker treatment.

## 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 certification system of Estonian Society of cardiology.
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The certification system of Estonian Society of cardiology.
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Hospital
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The certification system of Estonian 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 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
ICD or pacemaker implants	Yes   Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation	No
	<input type="checkbox"/>

Required period of training to perform implantations	Yes	100 implantations
	<input type="checkbox"/>	<input type="checkbox"/>

Suggested period of training to perform implantations	Yes	100 implantations
	<input type="checkbox"/>	<input type="checkbox"/>

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



<b>Number of universities (Schools of Medicine)</b>	<b>1</b>
-----------------------------------------------------	----------

<b>Percentage of academic centres among all practicing EP centres</b>	<b>50%</b>
-----------------------------------------------------------------------	------------

<b>Percentage of academic centres among all practicing implanting devices centres</b>	<b>20%</b>
---------------------------------------------------------------------------------------	------------

## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	5	5
Total Pacemaker units implanted	983	954
Thereof, New implants	862	854
Thereof, Replacements	121	91

<b>Specialist performing implants</b>		
Cardiologists	Yes	65%
Surgeons	Yes	35%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	2	2
Total CRT units implanted	75	68
Thereof, CRT pacemaker	46	42
Thereof, CRT ICD	29	26

<b>Specialist performing implants</b>		
Cardiologists	Yes	71%
Surgeons	Yes	29%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	2	2
Total ICD units implanted	58	101
Thereof, Single chamber	15	22
Thereof, Dual chamber	43	79
First implants	57	94
Replacements	1	7

Specialist performing implants		
Cardiologists	Yes	80%
Surgeons	Yes	20%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	2	2
Total loop recorders implanted	8	3

Specialist performing implants		
Cardiologists	Yes	67%
Surgeons	Yes	33%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	not available	not available
Total lead extraction procedures	not available	not available



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	not available
Surgeons	Yes	not available

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

<b>Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions</b>	<b>Yes</b>

Official name: State Agency of Medicine

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	2	2
Number of ablations performed	385	332
Mean number of ablations per centre	193	166
Number of AF ablations	115	34
Number of ablation centres (> 50 AF ablations)	1	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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 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"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

## 13. Sources

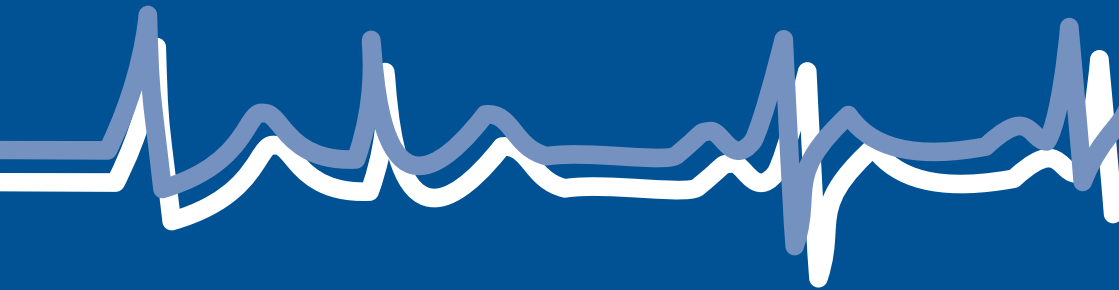
### Name of National Cardiac Society, National Working Group or arrhythmia body

· Estonian Society of Cardiology, Working Group of Arrhythmias

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

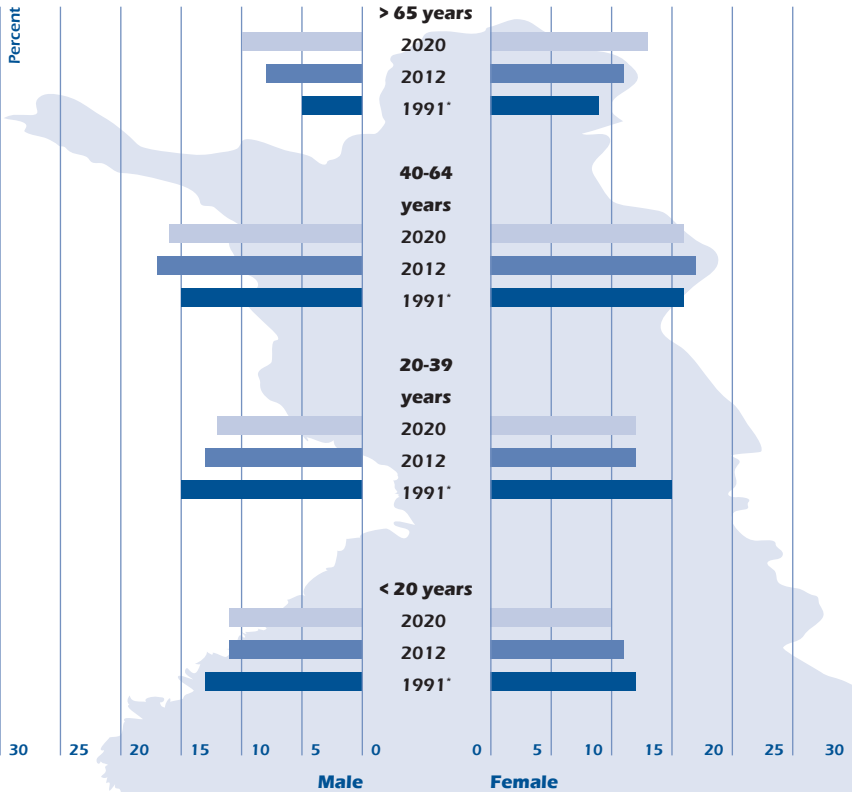
- EHRA White Book 2012
- The National Institute for Health Development
- Estonian Health Insurance Fund
- Estonian Society of Cardiology

# FINLAND



# 1. Statistics

## Age pyramid for Finland



\* 1990 or last available





<b>Healthcare data</b>		
Hospitals (per 100.000 population)	5,2	2010
Beds (per 100.000 population)	584,7	2010
Density of physicians (per 1.000 population)	2,7	2008
Density of nurses (per 1.000 population)	10,0	2009

<b>Demographic information</b>		
Population	5.262.930	2012
Population annual growth rate (%)	0,1	2012
Life expectancy at birth	79	2012
Death rate (per 1.000 population)	9,4	2011
Live births (per 1.000 population)	11,1	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	247,19	2012*
Gross domestic product per capita (U.S dollar-units)	45.544,53	2012*
Total expenditure on health as % of GDP	9,0	2010
General government expenditure on health as % of total expenditure on health	74,7	2009
Private expenditure on health as % of total expenditure on health	25,3	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	not available

## 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. (Highlights on health in Finland, WHO, 2004)

Basic insurance availability	Yes

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2011	2012
Public insurance company	75%	75%
Private insurance company	2%	2%
Private co-payment	23%	23%

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 (eg. 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 (eg. 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 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"/>

<b>Specialist required for</b>		
		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** **0 years**

**Suggested period of training to perform implantations** **No** **0 years**

<b>Training centres availability</b>	
Pacemaker	25
ICD implantation	16
CRT implantation	7
Electrophysiological studies and catheter ablation	8
Atrial fibrillation ablation	5

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

**Percentage of academic centres among all practicing EP centres** **71%**

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

## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	25	20
Total Pacemaker units implanted	4.852	not available
Thereof, New implants	3.738	3.956
Thereof, Replacements	1.114	not available

<b>Specialist performing implants</b>		
Cardiologists	Yes	not available
Surgeons	Yes	not available
Other: internists	Yes	not available

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	8	12
Total CRT units implanted	327	380
Thereof, CRT pacemaker	142	not available
Thereof, CRT ICD	185	not available

<b>Specialist performing implants</b>		
Cardiologists	Yes	not available
Surgeons	Yes	not available

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	16	19
Total ICD units implanted	703	not available
Thereof, Single chamber	not available	not available
Thereof, Dual chamber	not available	not available
First implants	446	629
Replacements	257	not available

Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	Yes	not available

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	16	not available
Total loop recorders implanted	230	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		
	2011	2012
Hospitals performed lead extractions	5	5
Total lead extraction procedures	not available	not available



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	not available
Surgeons	Yes	not available

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	7	7
Number of ablations performed	1.906	2.183
Mean number of ablations per centre	not available	not available
Number of AF ablations	476	577
Number of ablation centres (> 50 AF ablations)	4	4
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	5
Lack of referral	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>	<input type="checkbox"/>	3

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

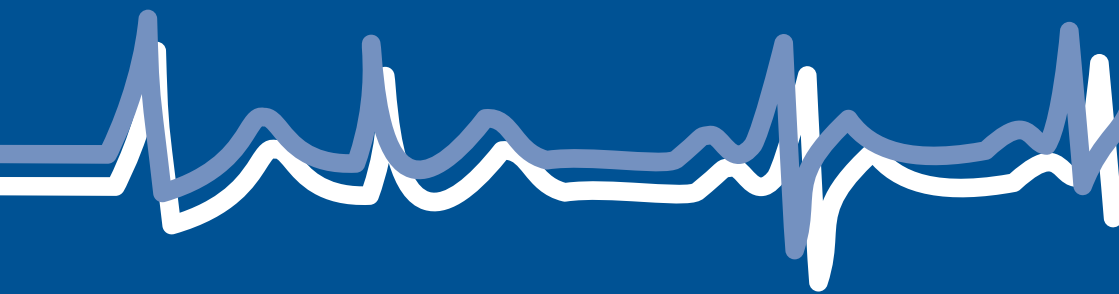
## 13. Sources

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

All sources that were used to fill out the questionnaire for the EHRA White Book 2013
· EHRA White Book 2012
· Survey from professional association

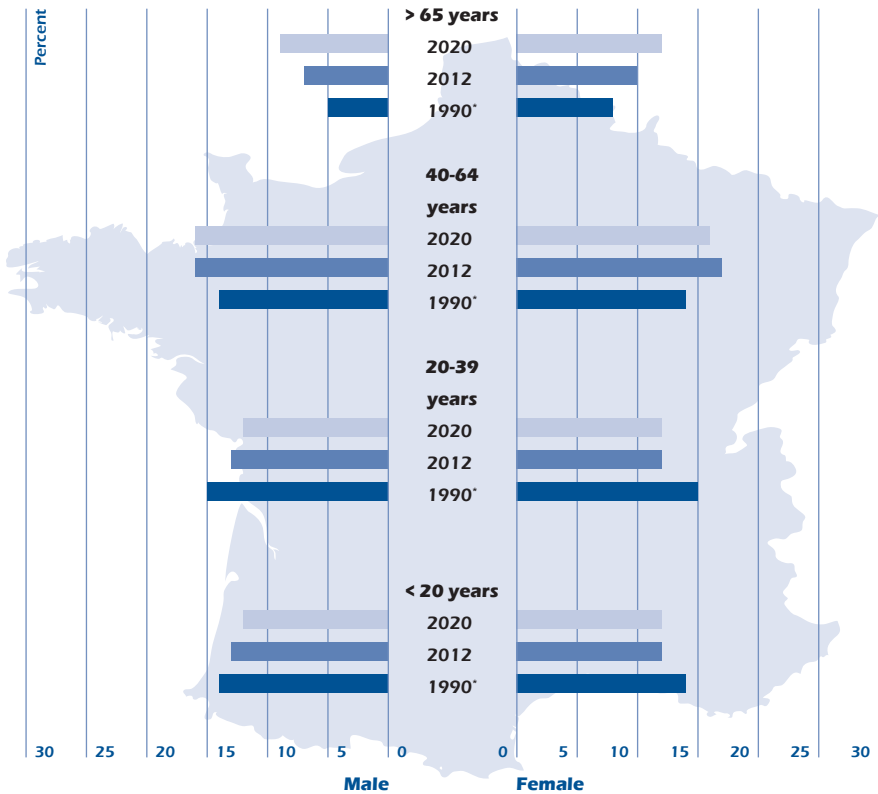


# FRANCE



# 1. Statistics

## Age pyramid for France



\* 1990 or last available



#### Healthcare data

Hospitals (per 100.000 population)	4,3	2010
Beds (per 100.000 population)	663,7	2010
Density of physicians (per 1.000 population)	3,1	2011
Density of nurses (per 1.000 population)	9,3	2011

#### Demographic information

Population	65.630.692	2012
Population annual growth rate (%)	0,5	2012
Life expectancy at birth	82	2012
Death rate (per 1.000 population)	8,6	2009
Live births (per 1.000 population)	12,7	2009

#### Economic information

Gross domestic product (U.S dollar-billions)	2.580,42	2012*
Gross domestic product per capita (U.S dollar-units)	40.689,93	2012*
Total expenditure on health as % of GDP	11,9	2010
General government expenditure on health as % of total expenditure on health	77,9	2009
Private expenditure on health as % of total expenditure on health	22,1	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	32%	26%

## 3. Healthcare System

National health system for all citizens, funded by a mandatory percentage of the incomes. Private co-payment is only for additional costs (corrective lenses and dental care)

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

Requirements: They all have access (the ones who work pay for the workless and retired). It is not a „basic“ insurance but a full insurance. Only corrective lenses and dental care are „basic“

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2011	2012
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	40%*	0%

\* Estimation for private co-payment

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 (eg. 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 (eg. 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 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: in public practice this reimbursement is refunded by the physician to the hospital (100%). The physician himself just receives a salary.

### 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"/>
Body issuing the guidelines: Société Française de Cardiologie	

## 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"/>	Diplôme Inter Universitaire de Rythmologie et Stimulation cardiaque
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Diplôme Inter Universitaire de Rythmologie et Stimulation cardiaque
Allied professionals	<input type="checkbox"/>	<input checked="" 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	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist, Surgeon

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

French society of cardiology

**Required period of training to perform implantations** **No**      **0 years**

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

**Training centres availability**

Pacemaker	55
ICD implantation	55
CRT implantation	55
Electrophysiological studies and catheter ablation	40
Atrial fibrillation ablation	40

**Number of universities (Schools of Medicine)** **31**

**Percentage of academic centres among all practicing EP centres** **62%**

**Percentage of academic centres among all practicing implanting devices centres** **62%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	492	474
Total Pacemaker units implanted	63.100	62.846
Thereof, New implants	50.100	50.277
Thereof, Replacements	13.000	12.569

<b>Specialist performing implants</b>		
Cardiologists	Yes	95%
Surgeons	Yes	5%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	150	159
Total CRT units implanted	8.040	8.605
Thereof, CRT pacemaker	2.741	3.103
Thereof, CRT ICD	5.299	5.502

<b>Specialist performing implants</b>		
Cardiologists	Yes	98%
Surgeons	Yes	2%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	141	148
Total ICD units implanted	6.672	6.986
Thereof, Single chamber	3.474	3.714
Thereof, Dual chamber	3.198	3.272
First implants	5.340	5.589
Replacements	1.332	1.397

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	250	260
Total loop recorders implanted	1.500	1.600

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	37	42
Total lead extraction procedures	not available	2.000





<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	70%
Surgeons	Yes	20%
Other:		10%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

<b>Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions</b>	<b>Yes</b>

Official name: For device recalls: Agence Nationale de Sécurité des médicaments et dispositifs médicaux

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	not available	195
Number of ablations performed	31.175	31.000
Mean number of ablations per centre	not available	not available
Number of AF ablations	6.488	8.500
Number of ablation centres (> 50 AF ablations)	not available	8.500
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	39

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	No
European	Yes

Necessity of guideline translation to national language	Yes

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	

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

### Other obstacles to guideline implementation

Estimation

## 13. Sources

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

· French Society of Cardiology / Pacing and electrophysiology working group

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

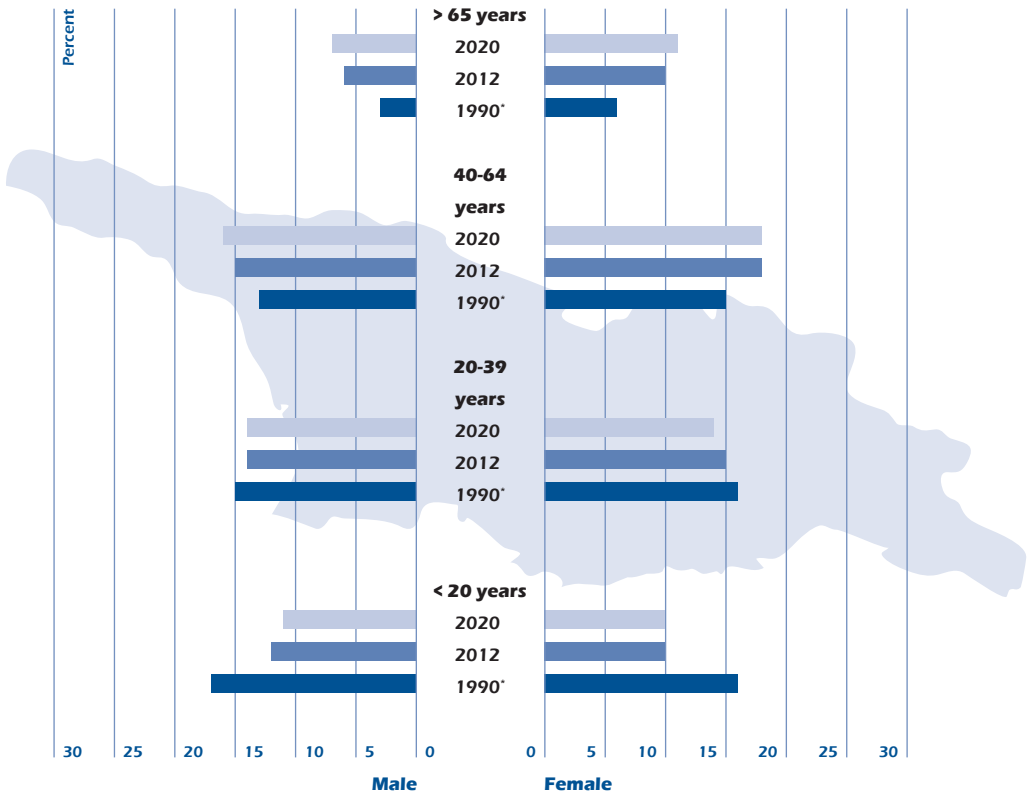
- EHRA White Book 2012
- Estimation
- French law
- Official statistics please, note that 75% have a private insurance only for additional costs like lenses and dental care
- Official
- Official Note that, in this case, 62% is a mean calculated because the numbers are different for PMs and ICDs : 43% for ICDs and 81% for PMs, therefore 62% is a mean)
- IHMT Q1 2013 Global report
- Sales data
- French Society of Cardiology

# GEORGIA



# 1. Statistics

## Age pyramid for Georgia



\* 1990 or last available



#### Healthcare data

Hospitals (per 100.000 population)	5,5	2011
Beds (per 100.000 population)	281,0	2011
Density of physicians (per 1.000 population)	4,1	2011
Density of nurses (per 1.000 population)	4,1	2011

#### Demographic information

Population	4.570.934	2012
Population annual growth rate (%)	-0,3	2012
Life expectancy at birth	77	2012
Death rate (per 1.000 population)	10,7	2010
Live births (per 1.000 population)	12,9	2011

#### Economic information

Gross domestic product (U.S dollar-billions)	15,80	2012*
Gross domestic product per capita (U.S dollar-units)	3.513,64	2012*
Total expenditure on health as % of GDP	10,1	2010
General government expenditure on health as % of total expenditure on health	22,3	2009
Private expenditure on health as % of total expenditure on health	77,7	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	not available

## 3. Healthcare System

NHS Fund, Private Insurance companies and State health programs executed by private insurance companies.

Basic insurance availability	Yes
Requirements: Not have private insurance or be part of state health program.	

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	33%	45%
Uninsured citizens	67%	55%

Distribution of insurance modality		
	2011	2012
Public insurance company	25%	25%
Private insurance company	60%	60%
Private co-payment	15%	15%

Possibility to subscribing to private health insurance plans	Yes

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

Comments: In private sector

### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cardiology, cardiac electrophysiology
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cardiology, cardiac electrophysiology
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 checked="" type="checkbox"/>
No	<input type="checkbox"/>
No answer	<input type="checkbox"/>

<b>Specialist required for</b>		
		Specialist
Catheter ablation	Yes	Cardiac electrophysiologist
ICD or pacemaker implants	Yes	Cardiac electrophysiologist

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

**Required period of training to perform implantations** **No** **0 years**

**Suggested period of training to perform implantations** **No** **0 years**

<b>Training centres availability</b>	
Pacemaker	0
ICD implantation	0
CRT implantation	0
Electrophysiological studies and catheter ablation	0
Atrial fibrillation ablation	0

**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

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	8	9
Total Pacemaker units implanted	383	467
Thereof, New implants	not available	398
Thereof, Replacements	not available	69

<b>Specialist performing implants</b>		
Cardiologists	Yes	95%
Surgeons	Yes	5%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	5	6
Total CRT units implanted	15	33
Thereof, CRT pacemaker	4	6
Thereof, CRT ICD	11	27

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	6	7
Total ICD units implanted	24	53
Thereof, Single chamber	22	47
Thereof, Dual chamber	2	6
First implants	21	52
Replacements	3	1

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	0	2
Total loop recorders implanted	0	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		
	2011	2012
Hospitals performed lead extractions	0	not available
Total lead extraction procedures	not available	not available



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	not available
Surgeons	Yes	not available

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>No</b>
-----------------------------------------------------	-----------

Reasons: additional costs that are not funded

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	6	6
Number of ablations performed	253	344
Mean number of ablations per centre	42	57
Number of AF ablations	39	49
Number of ablation centres (> 50 AF ablations)	0	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>
---------------------------------------------------------------------------------	-----------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	Yes

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3
Lack of trained personnel	<input type="checkbox"/>	<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 type="checkbox"/>	<input checked="" 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"/>	<input type="checkbox"/>	5

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

## 13. Sources

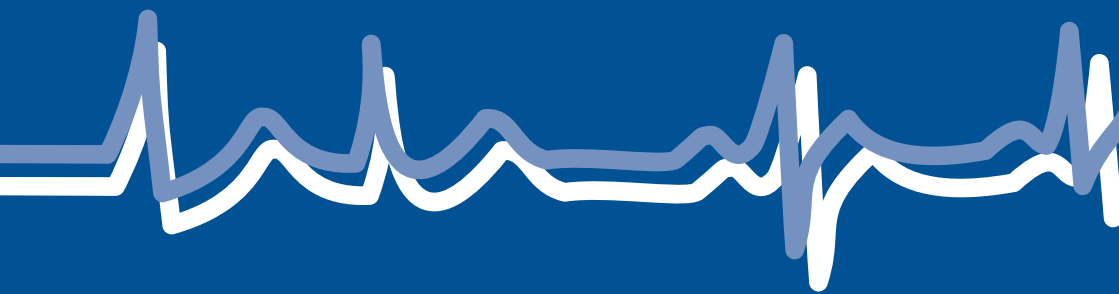
### Name of National Cardiac Society, National Working Group or arrhythmia body

- Georgian Heart Rhythm Association

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

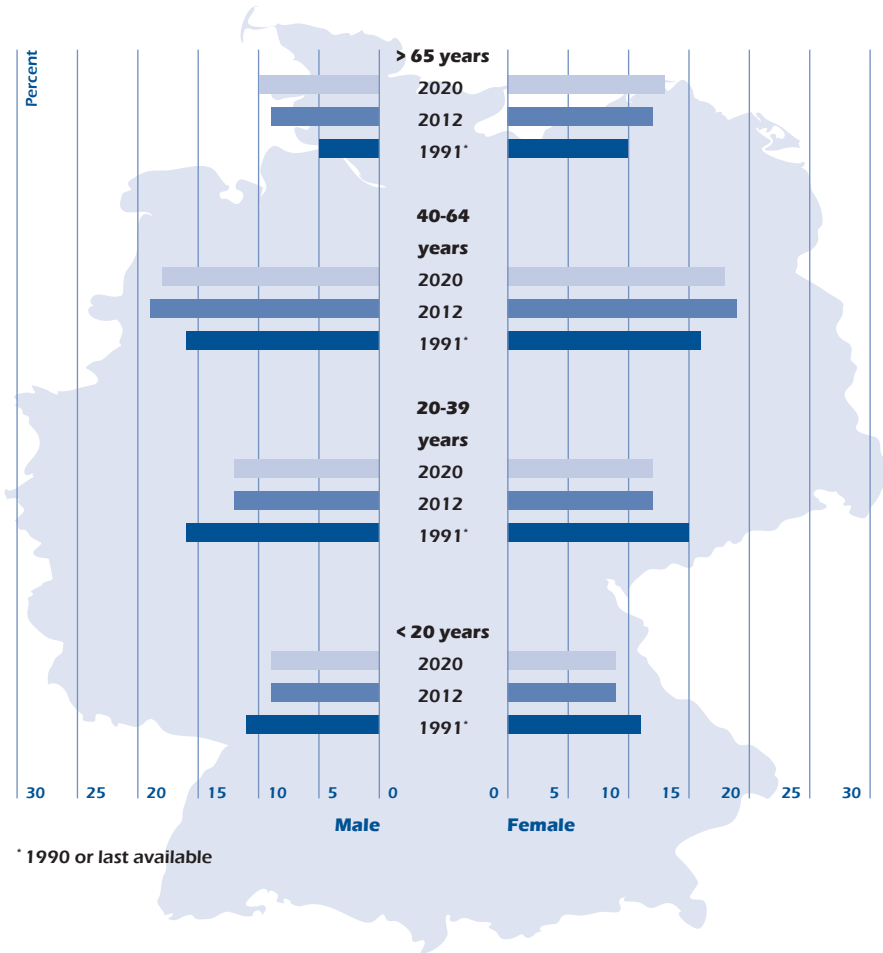
- EHRA White Book 2012
- Ministry of Health
- Estimation
- Statistics Office
- Data provided by implanting centers

# GERMANY



# 1. Statistics

## Age pyramid for Germany





<b>Healthcare data</b>		
Hospitals (per 100.000 population)	4,0	2010
Beds (per 100.000 population)	825,0	2010
Density of physicians (per 1.000 population)	3,7	2010
Density of nurses (per 1.000 population)	11,5	2010

<b>Demographic information</b>		
Population	81.305.856	2012
Population annual growth rate (%)	-0,2	2012
Life expectancy at birth	80	2012
Death rate (per 1.000 population)	10,4	2011
Live births (per 1.000 population)	8,3	2010

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	3.366,65	2012*
Gross domestic product per capita (U.S dollar-units)	41.167,55	2012*
Total expenditure on health as % of GDP	11,6	2010
General government expenditure on health as % of total expenditure on health	76,9	2009
Private expenditure on health as % of total expenditure on health	23,1	2009

\* IMF estimative

## 2. Country

<b>Proportion of deaths resulting from cardiovascular disease</b>		
	2011	2012
	not available	40%

## 3. Healthcare System

There are numerous non-private health insurance companies and numerous private health insurance companies.

<b>Basic insurance availability</b>	<b>Yes</b>
-------------------------------------	------------

<b>Percentage of insured and uninsured citizens</b>		
	2011	2012
Insured citizens	not available	not available
Uninsured citizens	not available	not available

<b>Distribution of insurance modality</b>		
	2011	2012
Public insurance company	not available	not available
Private insurance company	not available	25%
Private co-payment	not available	25%

<b>Possibility to subscribing to private health insurance plans</b>	<b>Yes</b>
---------------------------------------------------------------------	------------

<b>Co-payment necessary for the following therapy</b>	
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 (eg. 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 (eg. 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: Different in private practice versus community hospital.

### 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"/>	Curriculum specific rhythmology - devices
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Allied professionals	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Curriculum specific rhythmology - electrophysiology and ablation
Training centres	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Curriculum specific rhythmology

### 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
ICD or pacemaker implants	Yes	Cardiologist, cardiac surgeon, exceptionally vascular surgeon, thoracic or other surgeon, internist

### Official national competency guidelines for electrophysiological studies or catheter ablation

No

### Required period of training to perform implantations

No

0 years

### Suggested period of training to perform implantations

Yes

15 months

### Training centres availability

Pacemaker	500
ICD implantation	500
CRT implantation	250
Electrophysiological studies and catheter ablation	100
Atrial fibrillation ablation	50

### Number of universities (Schools of Medicine)

37

### Percentage of academic centres among all practicing EP centres

20%

### Percentage of academic centres among all practicing implanting devices centres

10%



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>			
	2011		2012
Implanting centres	1.041		1.048
Total Pacemaker units implanted	106.953		106.567
Thereof, New implants	not available		not available
Thereof, Replacements	not available		not available

<b>Specialist performing implants</b>			
Cardiologists		Yes	60%
Surgeons		Yes	28%
Other: Cardiac and vascular surgeon, thoracic or other surgeon		Yes	12%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>			
	2011		2012
Implanting centres	411		490
Total CRT units implanted	16.425		17.949
Thereof, CRT pacemaker	1.792		2.224
Thereof, CRT ICD	14.633		15.725

<b>Specialist performing implants</b>			
Cardiologists		Yes	45%
Surgeons		Yes	5%
Other: Cardiac and vascular surgeon, thoracic or other surgeon		Yes	50%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	607	670
Total ICD units implanted	26.579	26.536
Thereof, Single chamber	16.158	15.319
Thereof, Dual chamber	10.421	11.217
First implants	not available	not available
Replacements	not available	not available

Specialist performing implants		
Cardiologists	Yes	30%
Surgeons	Yes	30%
Other: Cardiac and vascular surgeon, thoracic or other surgeon	Yes	40%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	560	560
Total loop recorders implanted	7.000*	7.000

\* Approximation

Specialist performing implants		
Cardiologists	No	0%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	not available	57
Total lead extraction procedures	not available	800



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	40%
Surgeons	Yes	60%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	Yes	Institut für Herzinfarktforschung
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>Yes</b>

Official name: AQUA institute

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	200*	230
Number of ablations performed	50.000*	38.000
Mean number of ablations per centre	200*	250
Number of AF ablations	15.000*	14.000
Number of ablation centres (> 50 AF ablations)	not available	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available

\* Approximation

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No
European	Yes

Necessity of guideline translation to national language	Yes

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	6
Lack of referral	<input type="checkbox"/>	<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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Low awareness of guidelines	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	4

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

### Other obstacles to guideline implementation

1. Hostility towards invasive and expensive cardiac therapy, 2. Lack of knowledge (no effective system of continuous education and provision of high quality therapy to patients)

## 13. Sources

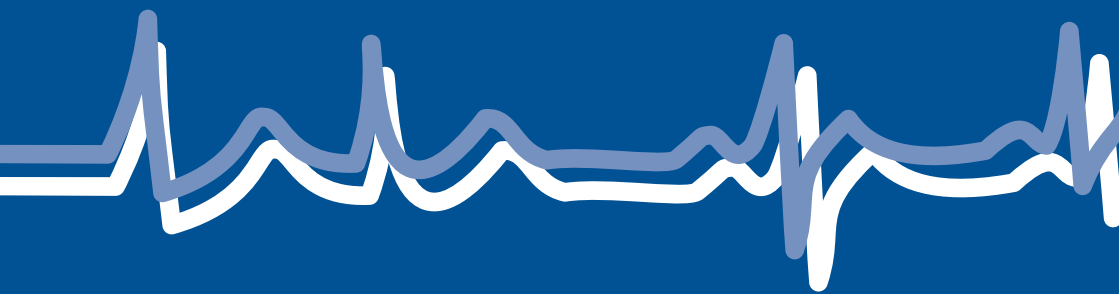
### Name of National Cardiac Society, National Working Group or arrhythmia body

· German Cardiac Society, Working Group on Arrhythmias

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

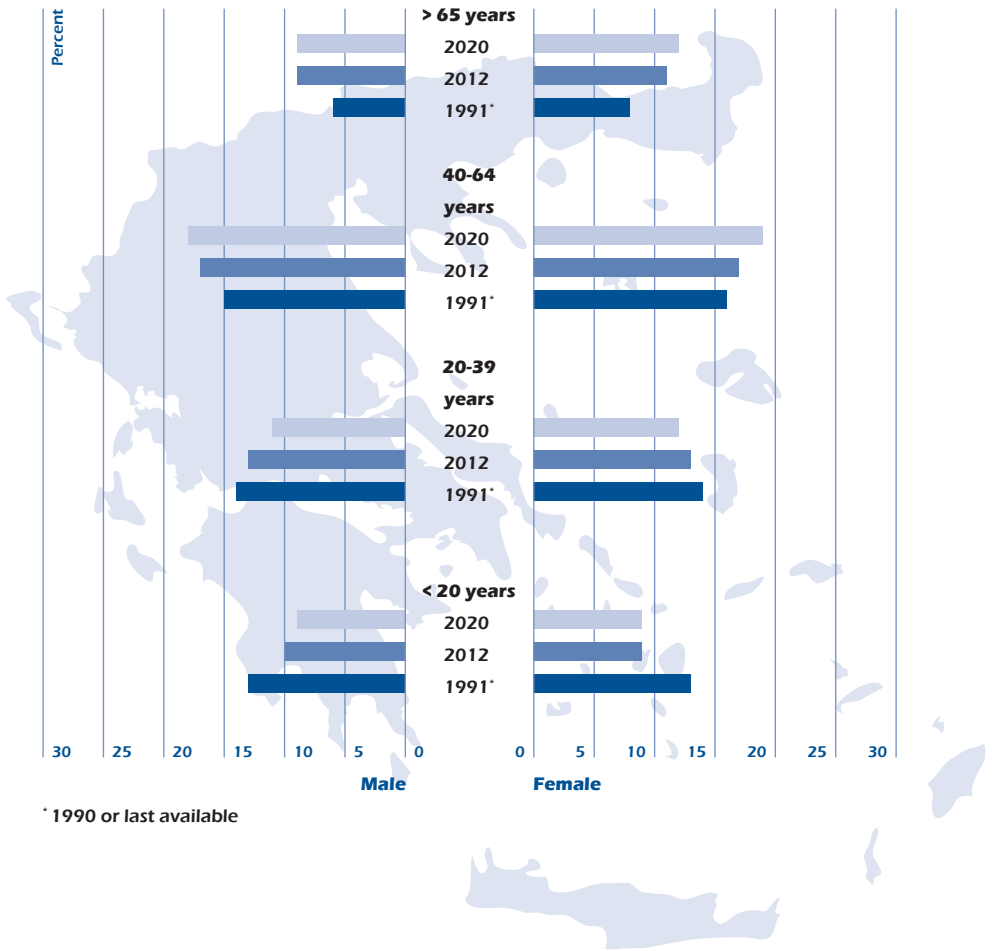
- EHRA White Book 2012
- Deutsches Statistisches Bundesamt, [www.destatis.de](http://www.destatis.de)
- Verband der Privaten Krankenversicherung e. V
- Registry data
- Wikipedia
- Estimation
- Professional association

# 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	2010
Density of nurses (per 1.000 population)	3,5	2009

#### Demographic information

Population	10.767.827	2012
Population annual growth rate (%)	0,1	2012
Life expectancy at birth	80	2012
Death rate (per 1.000 population)	9,7	2010
Live births (per 1.000 population)	10,2	2010

#### Economic information

Gross domestic product (U.S dollar-billions)	254,98	2012*
Gross domestic product per capita (U.S dollar-units)	22.757,22	2012*
Total expenditure on health as % of GDP	10,3	2010
General government expenditure on health as % of total expenditure on health	61,7	2009
Private expenditure on health as % of total expenditure on health	38,3	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	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: Citizens have to pay every year their contribution to the public insurance system.	

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	95%	90%
Uninsured citizens	5%	10%

Distribution of insurance modality		
	2011	2012
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 (eg. 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 (eg. 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 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 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"/>

<b>Specialist required for</b>		
		Specialist
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist

<b>Official national competency guidelines for electrophysiological studies or catheter ablation</b>	<b>No</b>
------------------------------------------------------------------------------------------------------	-----------

<b>Required period of training to perform implantations</b>	<b>Yes</b>	<b>1 year</b>
-------------------------------------------------------------	------------	---------------

<b>Suggested period of training to perform implantations</b>	<b>Yes</b>	<b>1 year</b>
--------------------------------------------------------------	------------	---------------

<b>Training centres availability</b>	
Pacemaker	15
ICD implantation	6
CRT implantation	8
Electrophysiological studies and catheter ablation	8
Atrial fibrillation ablation	6

<b>Number of universities (Schools of Medicine)</b>	<b>7</b>
-----------------------------------------------------	----------

<b>Percentage of academic centres among all practicing EP centres</b>	<b>25%</b>
-----------------------------------------------------------------------	------------

<b>Percentage of academic centres among all practicing implanting devices centres</b>	<b>12%</b>
---------------------------------------------------------------------------------------	------------



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	56	56
Total Pacemaker units implanted	7.548	7.440
Thereof, New implants	5.588	5.505
Thereof, Replacements	1.960	1.934

<b>Specialist performing implants</b>		
Cardiologists	Yes	95%
Surgeons	No	5%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	16	16
Total CRT units implanted	396	487
Thereof, CRT pacemaker	32	25
Thereof, CRT ICD	364	462

<b>Specialist performing implants</b>		
Cardiologists	Yes	98%
Surgeons	Yes	2%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	24	24
Total ICD units implanted	892	938
Thereof, Single chamber	158	168
Thereof, Dual chamber	734	770
First implants	714	751
Replacements	178	187

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	14	16
Total loop recorders implanted	74	105

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	17	8
Total lead extraction procedures	not available	25



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	90%
Surgeons	Yes	10%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	Yes	There is a national registry of ablations

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	23	29
Number of ablations performed	1.400	1.410
Mean number of ablations per centre	61	not available
Number of AF ablations	340	395
Number of ablation centres (> 50 AF ablations)	4	6
Number of ablation centres (> 10 VT ablations on structural heart diseases)	10	6

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	6
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>
Lack of referral	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>
Low awareness of guidelines	<input type="checkbox"/>	<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"/>	<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

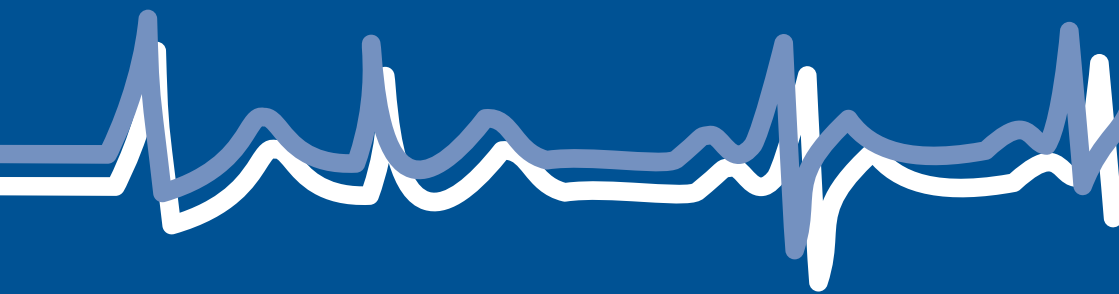
- Greek National Working Group of Electrophysiology and Pacing

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

- EHRA White Book 2012
- Ministry of health and labour
- Sales Data
- Estimation
- National Registry of Ablations

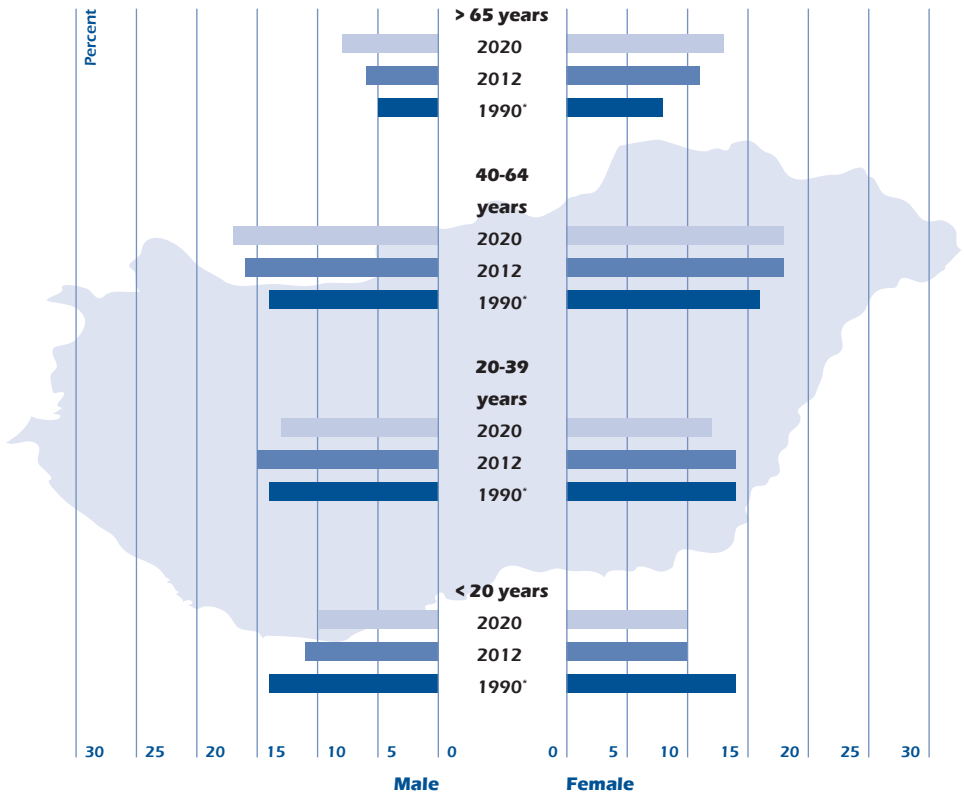


# HUNGARY



# 1. Statistics

## Age pyramid for Hungary



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	1,8	2010
Beds (per 100.000 population)	718,2	2010
Density of physicians (per 1.000 population)	2,9	2010
Density of nurses (per 1.000 population)	6,4	2010

<b>Demographic information</b>		
Population	9.958.453	2012
Population annual growth rate (%)	-0,2	2012
Life expectancy at birth	75	2012
Death rate (per 1.000 population)	12,9	2011
Live births (per 1.000 population)	8,8	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	128,84	2012*
Gross domestic product per capita (U.S dollar-units)	12.933,59	2012*
Total expenditure on health as % of GDP	7,3	2010
General government expenditure on health as % of total expenditure on health	69,7	2009
Private expenditure on health as % of total expenditure on health	30,3	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	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
------------------------------	-----

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	98%	98%
Uninsured citizens	2%	2%

Distribution of insurance modality		
	2011	2012
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 (eg. 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 (eg. 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

	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 Electrophysiology and Ablation
Allied professionals	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Arrhythmologist license in 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**

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/cardiologist fellow
ICD or pacemaker implants	Yes	Cardiologist/cardiologist fellow/heart surgeon/anaesthesiologist

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

Hungarian Society of Cardiology

**Required period of training to perform implantations** **Yes**      **2 years****Suggested period of training to perform implantations** **No**      **0 years****Training centres availability**

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****Percentage of academic centres among all practicing EP centres** **40%****Percentage of academic centres among all practicing implanting devices centres** **25%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	16	16
Total Pacemaker units implanted	5.822	6.046
Thereof, New implants	not available	4.742
Thereof, Replacements	not available	1.304

<b>Specialist performing implants</b>		
Cardiologists	Yes	90%
Surgeons	Yes	5%
Other: anaesthesiologist	Yes	5%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	13	13
Total CRT units implanted	806	884
Thereof, CRT pacemaker	454	497
Thereof, CRT ICD	352	387

<b>Specialist performing implants</b>		
Cardiologists	Yes	98%
Surgeons	Yes	2%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	13	13
Total ICD units implanted	794	844
Thereof, Single chamber	588	603
Thereof, Dual chamber	206	241
First implants	not available	604
Replacements	not available	240

Specialist performing implants		
Cardiologists	Yes	95%
Surgeons	Yes	2%
Other: anaesthesiologist	Yes	3%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	0	0
Total loop recorders implanted	0	0

Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	No	not available

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	2	7
Total lead extraction procedures	not available	73





<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	90%
Surgeons	Yes	10%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	Yes	Hungarian Online Pacemaker Registry
Pacing	Yes	Hungarian Online Pacemaker Registry
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No answer</b>

<b>Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions</b>	<b>Yes</b>

Official name: National Health Insurance Fund

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	10	10
Number of ablations performed	2.926	3.129
Mean number of ablations per centre	293	313
Number of AF ablations	606	742
Number of ablation centres (> 50 AF ablations)	5	5
Number of ablation centres (> 10 VT ablations on structural heart diseases)	3	2

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	Yes

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	2
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<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"/>	<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 2013

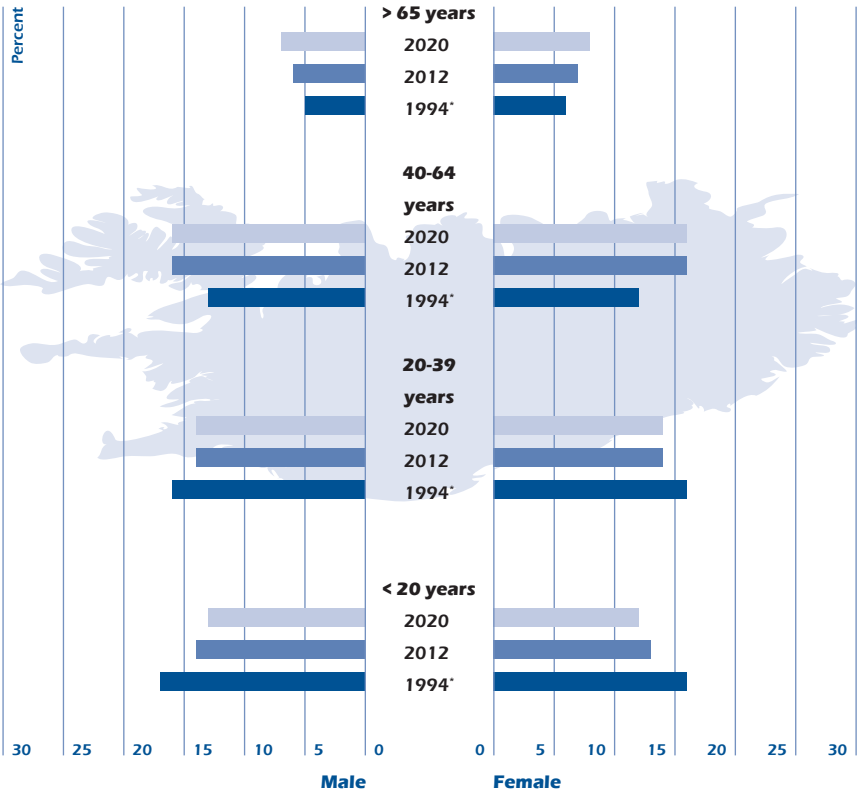
- EHRA White Book 2012
- National Health Insurance Fund
- WG on Cardiac Arrhythmias and Pacing, Hungarian Society of Cardiology

# ICELAND



# 1. Statistics

## Age pyramid for Iceland



\* 1990 or last available

<b>Healthcare data</b>		
Hospitals (per 100.000 population)	6,8	2005
Beds (per 100.000 population)	578,7	2007
Density of physicians (per 1.000 population)	3,5	2011
Density of nurses (per 1.000 population)	15,3	2010

<b>Demographic information</b>		
Population	313.183	2012
Population annual growth rate (%)	0,7	2012
Life expectancy at birth	81	2012
Death rate (per 1.000 population)	6,3	2009
Live births (per 1.000 population)	14,1	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	13,55	2012*
Gross domestic product per capita (U.S dollar-units)	41.150,79	2012*
Total expenditure on health as % of GDP	9,4	2010
General government expenditure on health as % of total expenditure on health	82,2	2009
Private expenditure on health as % of total expenditure on health	17,8	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	40%	36%

## 3. Healthcare System

Iceland has a nationalized health care system which is fully government funded. There is universal access for all citizens and legal aliens.

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2011	2012
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 (eg. 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 (eg. 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 physician is on a basic fixed salary irrespective of the number of procedures performed.					The hospital receives a fixed budget each year from the government. No additional reimbursement is received for 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Specialist in cardiology
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Specialist in cardiology
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 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 or cardiac surgeon

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

**Required period of training to perform implantations** **No**      **0 years**

**Suggested period of training to perform implantations** **Yes**      **At least one 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)** **1**

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

**Percentage of academic centres among all practicing implanting devices centres** **100%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	2	1
Total Pacemaker units implanted	313	303
Thereof, New implants	270	161
Thereof, Replacements	43	42

<b>Specialist performing implants</b>		
Cardiologists	Yes	50%
Surgeons	Yes	50%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	1	1
Total CRT units implanted	15	10
Thereof, CRT pacemaker	11	7
Thereof, CRT ICD	4	3

<b>Specialist performing implants</b>		
Cardiologists	Yes	50%
Surgeons	Yes	50%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	1	1
Total ICD units implanted	35	42
Thereof, Single chamber	23	25
Thereof, Dual chamber	12	17
First implants	24	33
Replacements	11	9

Specialist performing implants		
Cardiologists	Yes	50%
Surgeons	Yes	50%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	1	1
Total loop recorders implanted	7	8

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	0	0
Total lead extraction procedures	not available	0

## Specialist performing lead extractions

## 10. Device specific

Availability of remote monitoring of devices **Yes**

### National registry for

		Official name
ICD	No	
Pacing	Yes	Landspítali University Hospital Pacemaker 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

	2011	2012
Number of ablation centres	1	1
Number of ablations performed	63	75
Mean number of ablations per centre	63	75
Number of AF ablations	15	24
Number of ablation centres (> 50 AF ablations)	0	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	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

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input type="checkbox"/>	<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 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"/>	<input type="checkbox"/>	5
Lack of trained personnel	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3

1 = no obstacle

5 = great obstacle

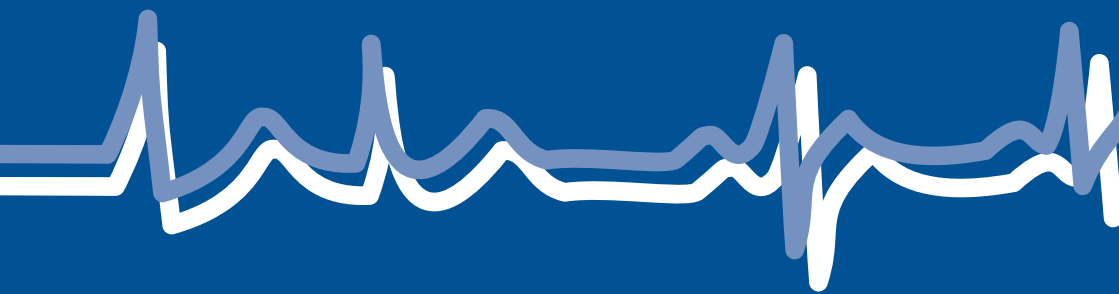
\* (1 = top; 6 = lowest)

## 13. Sources

Name of National Cardiac Society, National Working Group or arrhythmia body
· Icelandic Society of Cardiology

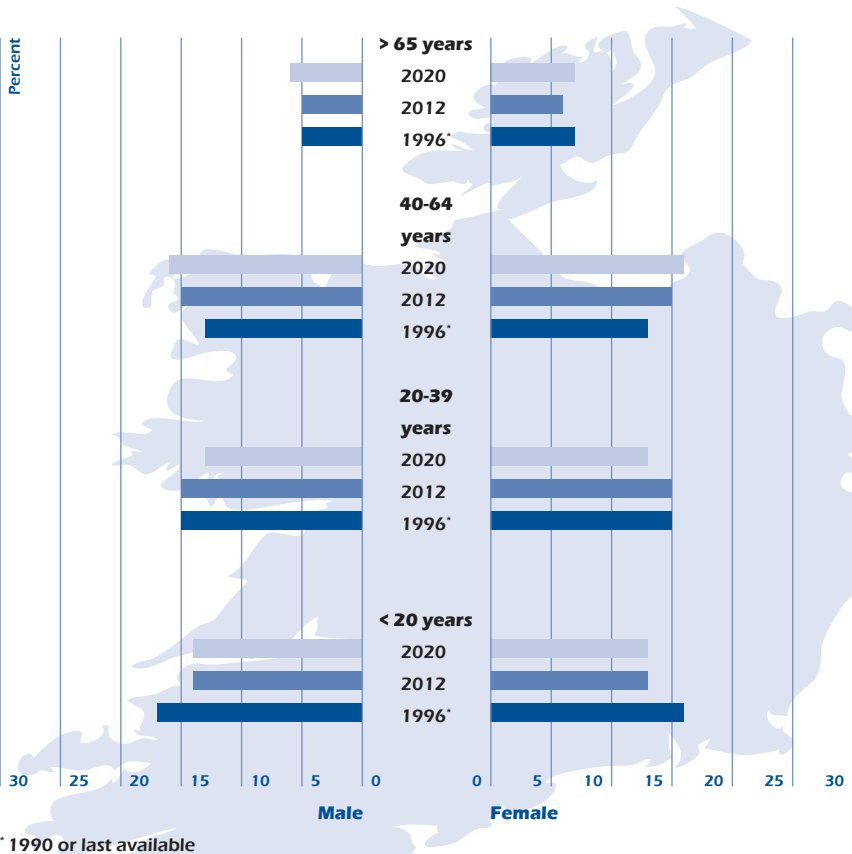
All sources that were used to fill out the questionnaire for the EHRA White Book 2013
· EHRA White Book 2012
· Estimation based on prior statistics
· Ministry of Health
· Icelandic Society of Cardiology
· Landspítali University Hospital Pacemaker Registry
· Landspítali University Hospital official statistics 2012
· Landspítali University Hospital official statistics
· Directorate of Health

# IRELAND



# 1. Statistics

## Age pyramid for Ireland



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	2,2	2010
Beds (per 100.000 population)	315,0	2010
Density of physicians (per 1.000 population)	3,2	2011
Density of nurses (per 1.000 population)	13,1	2010

<b>Demographic information</b>		
Population	4.722.028	2012
Population annual growth rate (%)	1,1	2012
Life expectancy at birth	80	2012
Death rate (per 1.000 population)	6,1	2010
Live births (per 1.000 population)	16,3	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	204,71	2012*
Gross domestic product per capita (U.S dollar-units)	44.781,19	2012*
Total expenditure on health as % of GDP	9,2	2010
General government expenditure on health as % of total expenditure on health	75,0	2009
Private expenditure on health as % of total expenditure on health	25,0	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	32,9%	33%

## 3. Healthcare System

National Health system and Private Healthcare: Privately Insured citizens – 2010 approx 2.25 million (49%) 2011 approx 2.2 million (48%) - source: Health Insurance Authority Annual Report.

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

Requirements: All citizens entitled to national health service.

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	30%	48%
Uninsured citizens	70%	52%

Distribution of insurance modality		
	2011	2012
Public insurance company	32%	52%
Private insurance company	47%	48%
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 (eg. 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 (eg. 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**

Majority are trained in USA in accredited programs - accredited by ACC - HRS. There is not a separate accreditation process for the subspeciality of cardiac electrophysiology in Ireland as majority are trained in USA.

**Required period of training to perform implantations** **Yes**    **6\* years**

\*Cardiology training program

**Suggested period of training to perform implantations** **Yes**    **6\* years**

\*Cardiology training program

**Training centres availability**

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**



<b>Percentage of academic centres among all practicing EP centres</b>	<b>50%</b>
-----------------------------------------------------------------------	------------

<b>Percentage of academic centres among all practicing implanting devices centres</b>	<b>63%</b>
---------------------------------------------------------------------------------------	------------

## 5. Pacemakers

### Pacemaker units implanted and number of implanting centres

	2011	2012
Implanting centres	17	17
Total Pacemaker units implanted	2.367	2.129
Thereof, New implants	not available	2.129
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

	2011	2012
Implanting centres	17	17
Total CRT units implanted	268	286
Thereof, CRT pacemaker	39	51
Thereof, CRT ICD	223	235

### Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	17	17
Total ICD units implanted	654	682
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		
	2011	2012
Implanting centres	17	17
Total loop recorders implanted	301	343

Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	not available	2
Total lead extraction procedures	not available	not available



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	50%
Surgeons	Yes	50%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
		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	

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

Official name: Irish Medicines Board

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	11	12
Number of ablations performed	1000*	1000
Mean number of ablations per centre	not available	83
Number of AF ablations	450**	450
Number of ablation centres (> 50 AF ablations)	2	2
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available

\*Approximation, EP Subgroup ICS; \*\*Approximation

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>
---------------------------------------------------------------------------------	-----------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No answer
U.S.	Yes
European	No answer

Necessity of guideline translation to national language	No answer

Obstacles to guideline implementation	Ranking of importance <sup>*</sup>						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
Lack of reimbursement, limited financial resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
Lack of referral	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
Lack of trained personnel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0

1 = no obstacle

5 = great obstacle

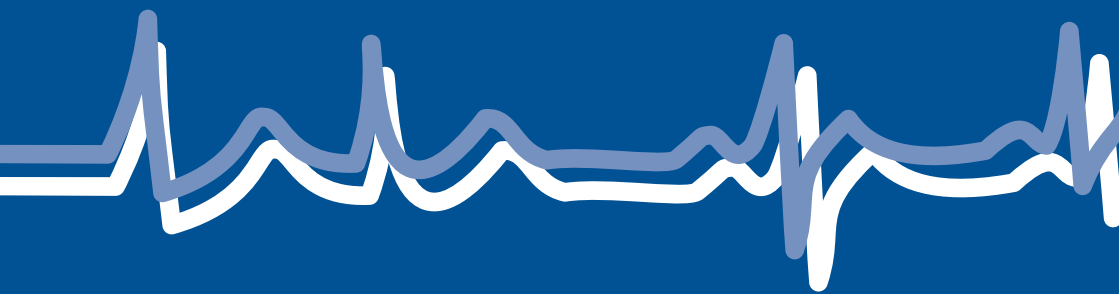
\* (1 = top; 6 = lowest)

## 13. Sources

Name of National Cardiac Society, National Working Group or arrhythmia body
· EP Subgroup of Irish Cardiac Society

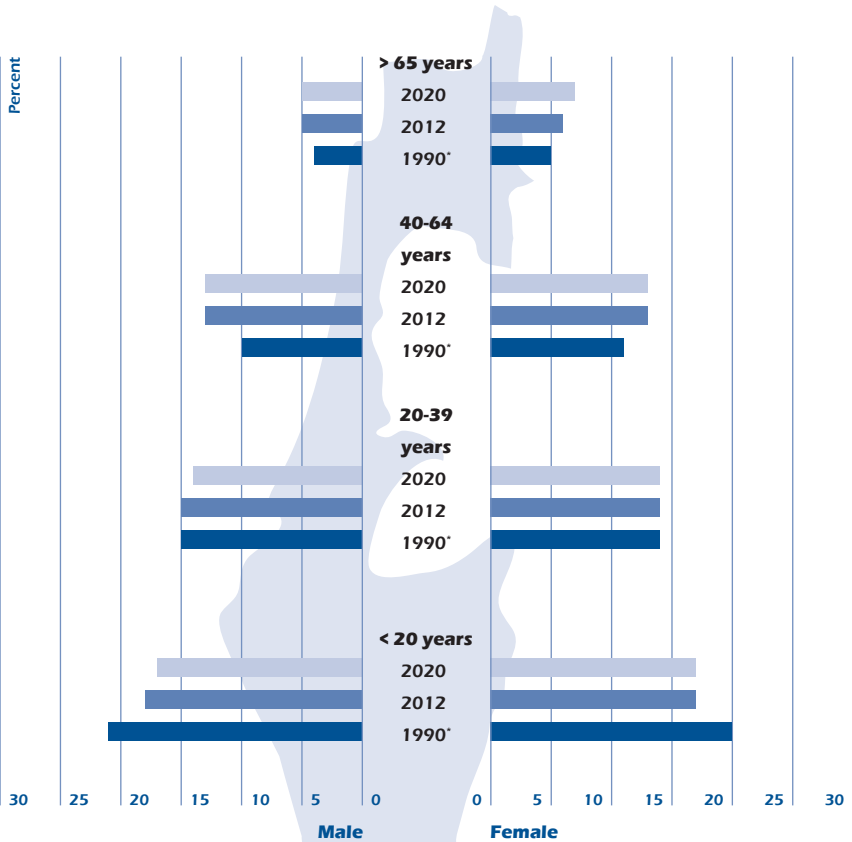
All sources that were used to fill out the questionnaire for the EHRA White Book 2013
· EHRA White Book 201
· Insured citizens – 2010 approx 2.25 million (49%) 2011 approx 2.2 million (48%) – source: Health Insurance Authority Annual Report
· Department of Health, Health Insurance Authority Annual Report, Department of Finance, Central Statistics Office, Industry

# ISRAEL



# 1. Statistics

## Age pyramid for Israel



\* 1990 or last available





<b>Healthcare data</b>		
Hospitals (per 100.000 population)	1,6	2011
Beds (per 100.000 population)	327,7	2011
Density of physicians (per 1.000 population)	3,0	2011
Density of nurses (per 1.000 population)	5,1	2011

<b>Demographic information</b>		
Population	7.590.758	2012
Population annual growth rate (%)	1,6	2012
Life expectancy at birth	81	2012
Death rate (per 1.000 population)	5,2	2010
Live births (per 1.000 population)	21,3	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	246,78	2012*
Gross domestic product per capita (U.S dollar-units)	32.060,47	2012*
Total expenditure on health as % of GDP	7,6	2010
General government expenditure on health as % of total expenditure on health	60,3	2009
Private expenditure on health as % of total expenditure on health	39,7	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	17%	17%

## 3. Healthcare System

Mostly covered by a comprehensive national health insurance. People can purchase additional private insurance.

Basic insurance availability	Yes
Requirements: None	

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	99%	100%
Uninsured citizens	1%	0%

Distribution of insurance modality		
	2011	2012
Public insurance company	85%	80%
Private insurance company	1%	20%
Private co-payment	14%	0%

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

Co-payment necessary for the following therapy	
ICD devices	not available
Pacemakers	not available
Ablation	not available

### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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 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"/>
Body issuing the guidelines: ESC, ACC/AHA Israeli SOCIETY OF CARDIOLOGY	

## 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 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 type="checkbox"/>
No answer	<input checked="" type="checkbox"/>

<b>Specialist required for</b>		
		Specialist
Catheter ablation	Yes	Electrophysiology
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** **0 years**

**Suggested period of training to perform implantations** **No** **0 years**

<b>Training centres availability</b>	
Pacemaker	22
ICD implantation	22
CRT implantation	22
Electrophysiological studies and catheter ablation	10
Atrial fibrillation ablation	10

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

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

**Percentage of academic centres among all practicing implanting devices centres** **100%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	22	18
Total Pacemaker units implanted	3.737	4.236
Thereof, New implants	2.615	3.000
Thereof, Replacements	1.121	1.236

<b>Specialist performing implants</b>		
Cardiologists (incl. EP)	Yes	95%
Surgeons	Yes	5%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	20	21
Total CRT units implanted	527	898
Thereof, CRT pacemaker	100	172
Thereof, CRT ICD	627*	726

\* full CRT with LV lead

<b>Specialist performing implants</b>		
Cardiologists	Yes	90%
Surgeons	Yes	10%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	22	21
Total ICD units implanted	1.164	1038
Thereof, Single chamber	349	417
Thereof, Dual chamber	815	621
First implants	609	677
Replacements	555	361

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	21
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		
	2011	2012
Hospitals performed lead extractions	3	5
Total lead extraction procedures	not available	1

<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	80%
Surgeons	Yes	20%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	Yes	Israeli ICD Registry
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	12	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	not available
Number of ablation centres (> 50 AF ablations)	3	2
Number of ablation centres (> 10 VT ablations on structural heart diseases)	3	4

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	No
---------------------------------------------------------	----

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>	<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

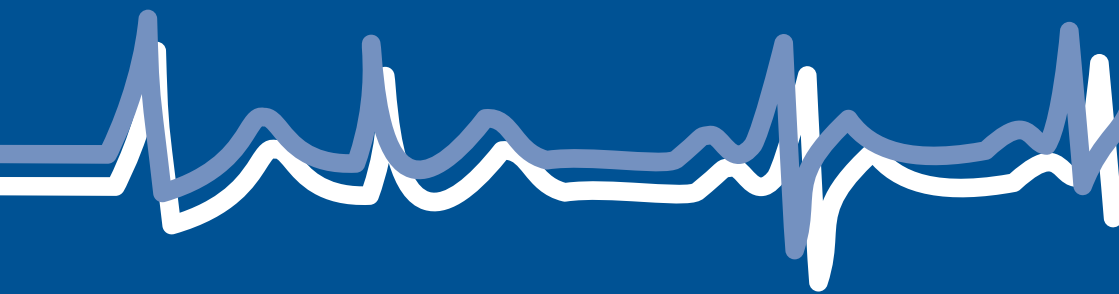
- Israeli Working Group of Electrophysiology and Pacing, Israeli Heart Association

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

- EHRA White Book 2012
- Central statistics national agency
- Ministry of health
- National ICD Registry Device companies report

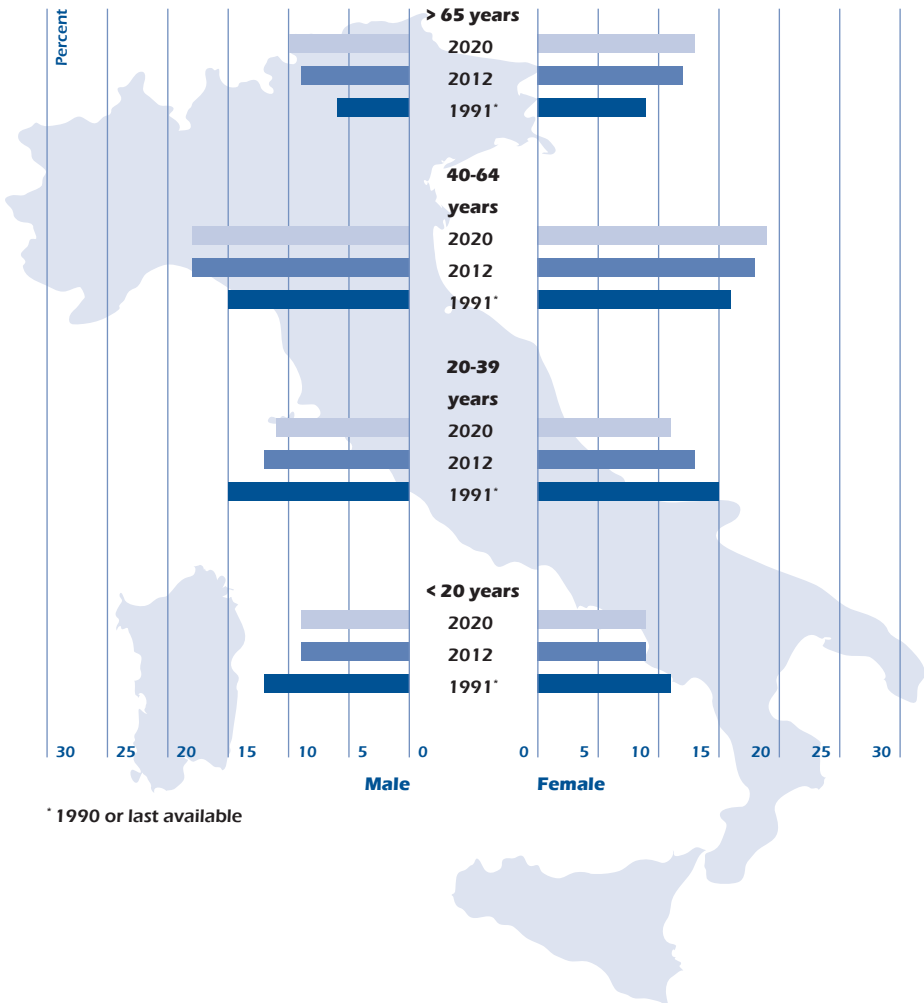


# ITALY



# 1. Statistics

## Age pyramid for Italy





#### Healthcare data

Hospitals (per 100.000 population)	2,0	2010
Beds (per 100.000 population)	352,5	2010
Density of physicians (per 1.000 population)	3,7	2009
Density of nurses (per 1.000 population)	6,6	2010

#### Demographic information

Population	61.261.254	2012
Population annual growth rate (%)	0,4	2012
Life expectancy at birth	82	2012
Death rate (per 1.000 population)	9,8	2009
Live births (per 1.000 population)	9,3	2010

#### Economic information

Gross domestic product (U.S dollar-billions)	1.980,45	2012*
Gross domestic product per capita (U.S dollar-units)	32.521,96	2012*
Total expenditure on health as % of GDP	9,5	2010
General government expenditure on health as % of total expenditure on health	77,9	2009
Private expenditure on health as % of total expenditure on health	22,1	2009

\* IMF estimative

## 2. Country

<b>Proportion of deaths resulting from cardiovascular disease</b>		
	<b>2011</b>	<b>2012</b>
	<b>0,38%</b>	<b>0,375%</b>

## 3. Healthcare System

National health system

<b>Basic insurance availability</b>	<b>Yes</b>
-------------------------------------	------------

<b>Percentage of insured and uninsured citizens</b>		
	<b>2011</b>	<b>2012</b>
<b>Insured citizens</b>	<b>100%</b>	<b>100%</b>
<b>Uninsured citizens</b>	<b>0%</b>	<b>0%</b>

<b>Distribution of insurance modality</b>		
	<b>2011</b>	<b>2012</b>
<b>Public insurance company</b>	<b>100%</b>	<b>100%</b>
<b>Private insurance company</b>	<b>0%</b>	<b>0%</b>
<b>Private co-payment</b>	<b>0%</b>	<b>0%</b>

<b>Possibility to subscribing to private health insurance plans</b>	<b>Yes</b>
---------------------------------------------------------------------	------------

<b>Co-payment necessary for the following therapy</b>	
<b>ICD devices</b>	<b>No</b>
<b>Pacemakers</b>	<b>No</b>
<b>Ablation</b>	<b>No</b>

### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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"/>
Body issuing the guidelines: AIAC	

## 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
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AIAC
Allied professionals	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AIAC
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"/>

<b>Specialist required for</b>		
		Specialist
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist

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

**Required period of training to perform implantations** **No** **0 years**

**Suggested period of training to perform implantations** **No** **0 years**

<b>Training centres availability</b>	
Pacemaker	No answer
ICD implantation	No answer
CRT implantation	No answer
Electrophysiological studies and catheter ablation	No answer
Atrial fibrillation ablation	No answer

**Number of universities (Schools of Medicine)** **35**

**Percentage of academic centres among all practicing EP centres** **70%**

**Percentage of academic centres among all practicing implanting devices centres** **70%**



## 5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2011	2012
Implanting centres	400	400
Total Pacemaker units implanted	63.100 <sup>*</sup>	61.300
Thereof, New implants	45.430 <sup>**</sup>	44.700
Thereof, Replacements	17.670 <sup>**</sup>	16.600

<sup>\*</sup> EUROMED 2011, <sup>\*\*</sup> Approximation

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2011	2012
Implanting centres	350 <sup>**</sup>	350
Total CRT units implanted	12.380 <sup>*</sup>	11.900
Thereof, CRT pacemaker	2.000 <sup>*</sup>	1.900
Thereof, CRT ICD	10.380 <sup>*</sup>	10.000

<sup>\*</sup> EUROMED 2011  
<sup>\*\*</sup> Approximation

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	360*	360
Total ICD units implanted	11.970*	12000
Thereof, Single chamber	5.300*	5000
Thereof, Dual chamber	6.670*	7000
First implants	9.200**	8160
Replacements	2.750**	3840

\* EUCOMED 2011, \*\* Approximation

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	350
Total loop recorders implanted	2300*	2.500

\* Approximation

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	57	not available
Total lead extraction procedures	not available	not available



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	Yes	AIAC
Pacing	Yes	AIAC
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	170 <sup>*</sup>	not available
Number of ablations performed	19.000 <sup>*</sup>	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 ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available

<sup>\*</sup> Approximation

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	No
European	Yes

Necessity of guideline translation to national language	Yes

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

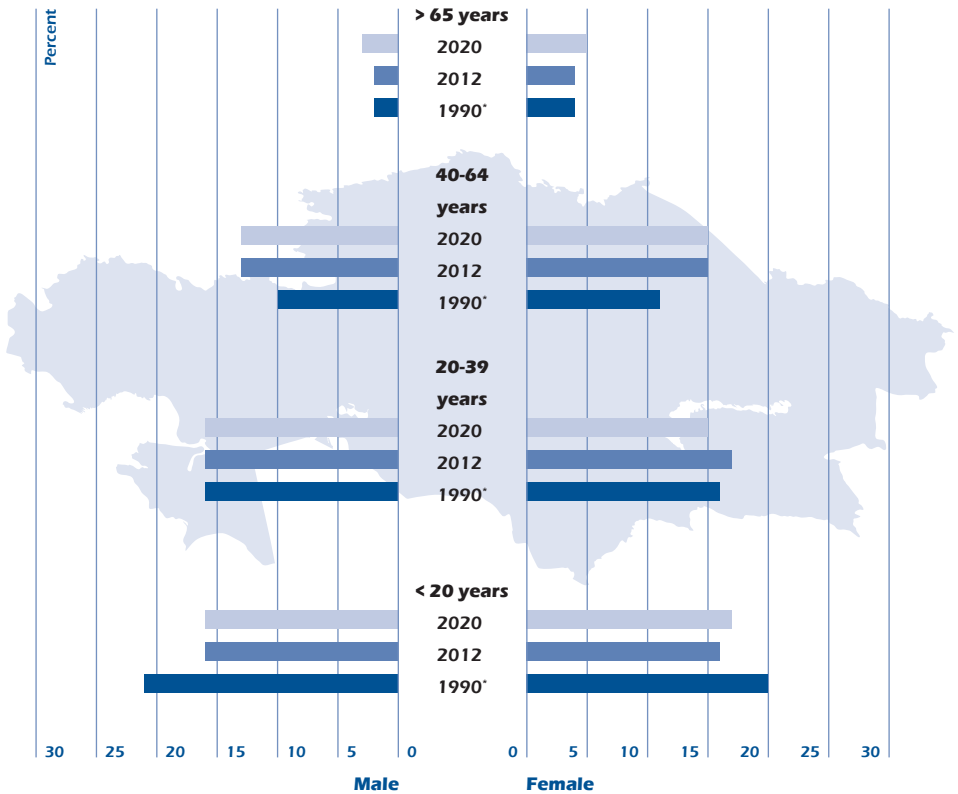
All sources that were used to fill out the questionnaire for the EHRA White Book 2013
· EHRA White Book 2012
· SIC sanità
· AIAC

# KAZAKHSTAN



# 1. Statistics

## Age pyramid for Kazakhstan



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	6,4	2009
Beds (per 100.000 population)	761,4	2009
Density of physicians (per 1.000 population)	3,8	2009
Density of nurses (per 1.000 population)	7,1	2009

<b>Demographic information</b>		
Population	17.522.010	2012
Population annual growth rate (%)	1,3	2012
Life expectancy at birth	70	2012
Death rate (per 1.000 population)	8,9	2010
Live births (per 1.000 population)	22,5	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	200,64	2012*
Gross domestic product per capita (U.S dollar-units)	12.021,22	2012*
Total expenditure on health as % of GDP	4,3	2010
General government expenditure on health as % of total expenditure on health	59,2	2010
Private expenditure on health as % of total expenditure on health	40,8	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	35,5%	29,9%

## 3. Healthcare System

Mainly National Health System that provides medical care for free, but there are private medical centers and private insurance companies.

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2011	2012
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: Patients pay for these therapies only in private medical centers.

### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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 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 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"/>	Cardiologist, cardiac surgeon
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"/>

<b>Specialist required for</b>		
		Specialist
Catheter ablation	Yes	Interventional cardiologist or cardiac surgeon, specially trained for the catheter ablation
ICD or pacemaker implants	Yes	Cardiac surgeon

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

**Required period of training to perform implantations** **No** **0 years**

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

<b>Training centres availability</b>	
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%**





## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	19	22
Total Pacemaker units implanted	846	1.227
Thereof, New implants	755	1.174
Thereof, Replacements	91	113

<b>Specialist performing implants</b>		
Cardiologists	Yes	26%
Surgeons	Yes	74%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	5	6
Total CRT units implanted	149	153
Thereof, CRT pacemaker	92	42
Thereof, CRT ICD	57	111

<b>Specialist performing implants</b>		
Cardiologists	Yes	26%
Surgeons	Yes	74%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	5	5
Total ICD units implanted	42	116
Thereof, Single chamber	7	31
Thereof, Dual chamber	35	85
First implants	42	116
Replacements	0	0

Specialist performing implants		
Cardiologists	Yes	26%
Surgeons	Yes	74%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	1	4
Total loop recorders implanted	1	27

Specialist performing implants		
Cardiologists	Yes	37%
Surgeons	Yes	63%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	not available	2
Total lead extraction procedures	not available	2



<b>Specialist performing lead extractions</b>		
Cardiologists	No	0%
Surgeons	Yes	100%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	5	7
Number of ablations performed	648	1.006
Mean number of ablations per centre	129,6	143,7
Number of AF ablations	104	195
Number of ablation centres (> 50 AF ablations)	not available	2
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available

<b>Availability of a national registry for interventional electrophysiology</b>	<b>not available</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No answer
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	6
Lack of referral	<input type="checkbox"/>	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>	<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

- Association of Cardiologists of Kazakhstan

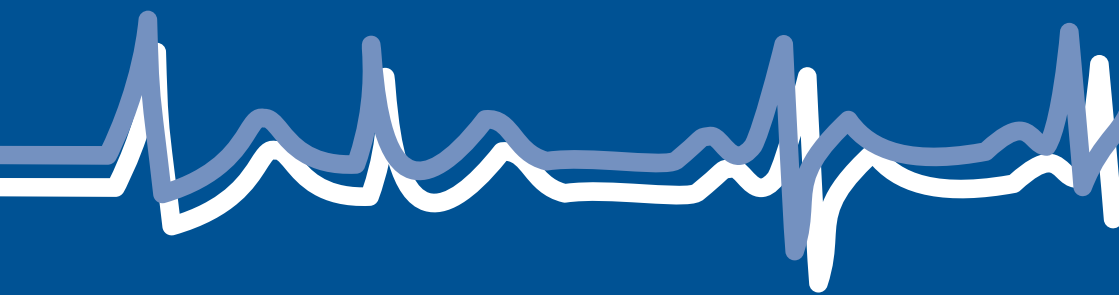
### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

- EHRA White Book 2012
- Ministry of Health
- Estimation of the number of treatments according to data provided by the regional hospitals
- Association of Cardiologists of Kazakhstan
- Training centers for pacemaker, ICD, CRT implantation, electrophysiological studies and catheter ablation



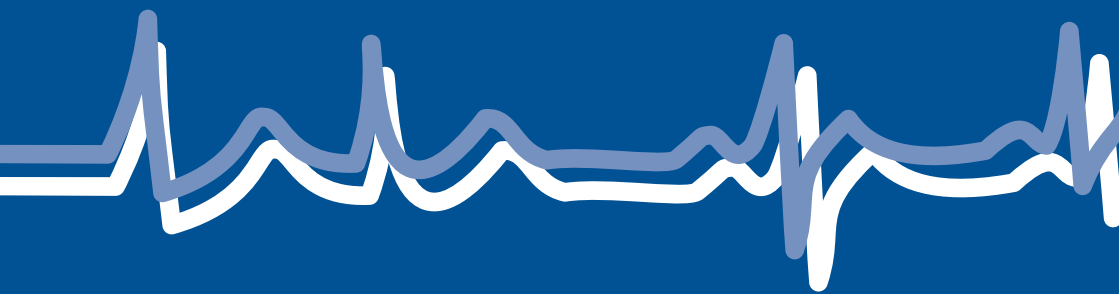
# KOSOVO

Pending data submission.



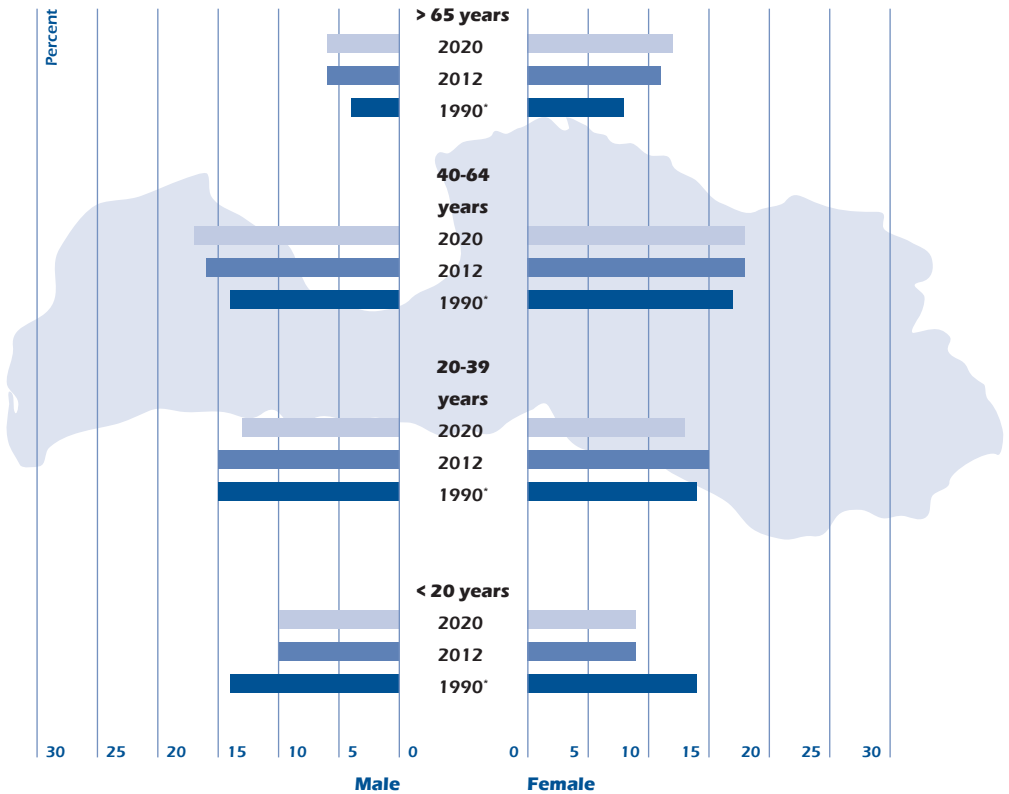


# LATVIA



# 1. Statistics

## Age pyramid for Latvia



\* 1990 or last available





#### Healthcare data

Hospitals (per 100.000 population)	3,0	2010
Beds (per 100.000 population)	532,4	2010
Density of physicians (per 1.000 population)	2,9	2010
Density of nurses (per 1.000 population)	4,9	2010

#### Demographic information

Population	2.191.580	2012
Population annual growth rate (%)	-0,6	2012
Life expectancy at birth	73	2012
Death rate (per 1.000 population)	13,4	2010
Live births (per 1.000 population)	9,0	2011

#### Economic information

Gross domestic product (U.S dollar-billions)	27,19	2012*
Gross domestic product per capita (U.S dollar-units)	13.316,18	2012*
Total expenditure on health as % of GDP	6,7	2010
General government expenditure on health as % of total expenditure on health	61,6	2009
Private expenditure on health as % of total expenditure on health	38,4	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	53,8%

## 3. Healthcare System

National Health system. The Ministry of Healthcare and municipalities.

Basic insurance availability	Yes
Requirements: Basic insurance available for all inhabitants	

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2011	2012
Public insurance company	90%	90%
Private insurance company	10%	10%
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

Comments: Co-payment is fixed and is similar for all implantable devices.



### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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: There are differences between numbers of patients, capacity of Latvian Centre of Cardiology and economical situation in Country/Health Economic and States Financing Programms due to Budget constrains.

There are differences between numbers of patients, capacity of Latvian Centre of Cardiology and economical situation in Country/Health Economic and States Financing Programms due to Budget constrains.

### 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 are restriction – economical situation in country/Health Economic and States Financing Programms due to Budget constrains.

## 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"/>	Method certificates. since 2009. for all The First Speciality must be Cardiologist
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Method certificates. since 2009. for all The First Speciality must be Cardiologist
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Method certificates.
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	National Healthcare department and 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

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

Cardiologist

**Required period of training to perform implantations** **Yes**      **0 years****Suggested period of training to perform implantations** **Yes**      **0 years****Training centres availability**

Pacemaker	<b>1</b>
ICD implantation	<b>1</b>
CRT implantation	<b>1</b>
Electrophysiological studies and catheter ablation	<b>1</b>
Atrial fibrillation ablation	<b>1</b>

**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

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	3	3
Total Pacemaker units implanted	1.213	1.201
Thereof, New implants	1.009	947
Thereof, Replacements	204	254

<b>Specialist performing implants</b>		
Cardiologists	Yes	60%
Surgeons	Yes	40%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	2	2
Total CRT units implanted	54	76
Thereof, CRT pacemaker	22	25
Thereof, CRT ICD	32	51

<b>Specialist performing implants</b>		
Cardiologists	Yes	60%
Surgeons	Yes	40%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	3	2
Total ICD units implanted	63	70
Thereof, Single chamber	20	26
Thereof, Dual chamber	43	44
First implants	56	64
Replacements	7	6

Specialist performing implants		
Cardiologists	Yes	60%
Surgeons	Yes	40%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	2	2
Total loop recorders implanted	30	18

Specialist performing implants		
Cardiologists	Yes	60%
Surgeons	Yes	40%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	1	1
Total lead extraction procedures	not available	6



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	20%
Surgeons	Yes	80%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
		<b>Official name</b>
ICD	Yes	National Society of Cardiology. National Register of Pacemakers
Pacing	Yes	National Society of Cardiology. National Register of Pacemakers
Electrophysiology	Yes	National Society of Cardiology. National Register of Electrophysiology

<b>Availability of a national quality insurance system or complication registry</b>	<b>Yes</b>
-------------------------------------------------------------------------------------	------------

Official name: National Healthcare Agency

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

Official name: National Healthcare Agency

## 11. Interventional electrophysiology

	<b>2011</b>	<b>2012</b>
Number of ablation centres	2	2
Number of ablations performed	545 <sup>†</sup>	589
Mean number of ablations per centre	272,5	not available
Number of AF ablations	69	58
Number of ablation centres (> 50 AF ablations)	1	1
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	1

<sup>†</sup> In Latvian Centre of Cardiology were 525 EP procedures performed

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 12. Guidelines

<b>Guidelines adhered to ICD implants and pacemaker implants</b>
------------------------------------------------------------------

National	Yes
U.S.	Yes
European	Yes

<b>Necessity of guideline translation to national language</b>	<b>Yes</b>
----------------------------------------------------------------	------------

<b>Obstacles to guideline implementation</b>	<b>Ranking of importance<sup>*</sup></b>					
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>

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

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

## 13. Sources

<b>Name of National Cardiac Society, National Working Group or arrhythmia body</b>
------------------------------------------------------------------------------------

· Latvian Society Of Cardiology. National Working Group of Arrhythmology

<b>All sources that were used to fill out the questionnaire for the EHRA White Book 2013</b>
----------------------------------------------------------------------------------------------

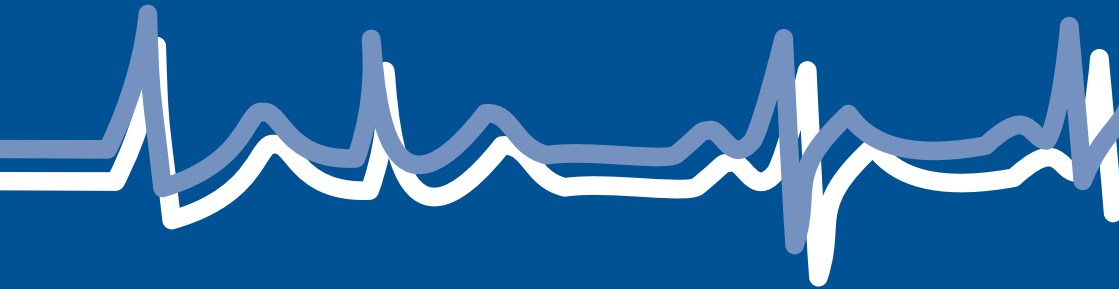
- EHRA White Book 2012
- National (Latvian) Ministry of Healthcare
- Healthcare Economy Centre
- National Register of Electrophysiology
- Latvian National Society of Cardiology
- Latvian Centre of Cardiology
- National Working Group of Arrhythmology



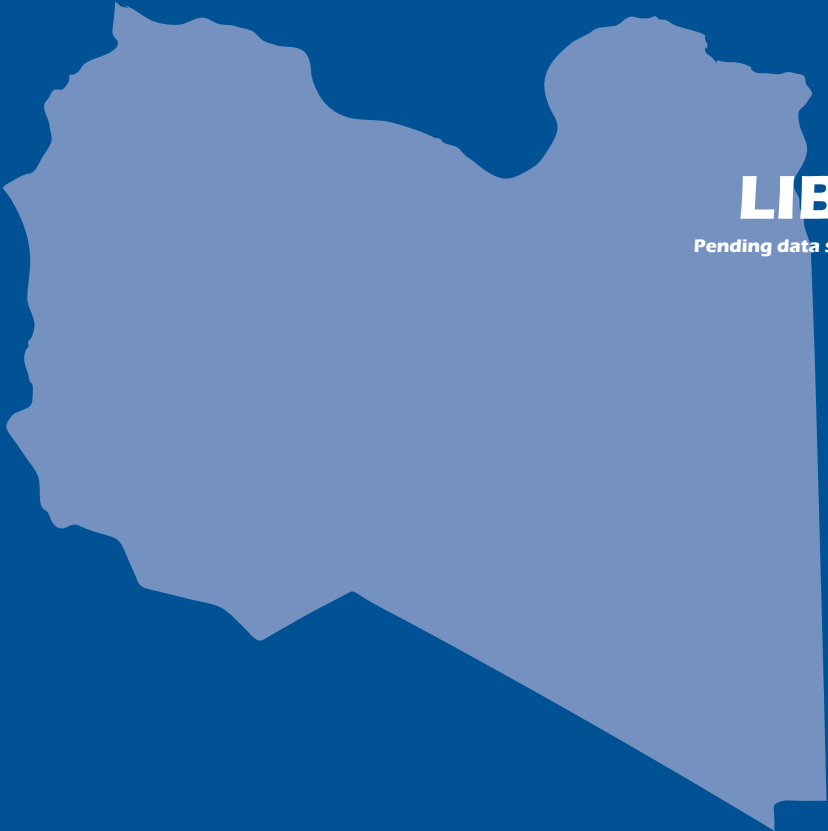


# LEBANON

Pending data submission.

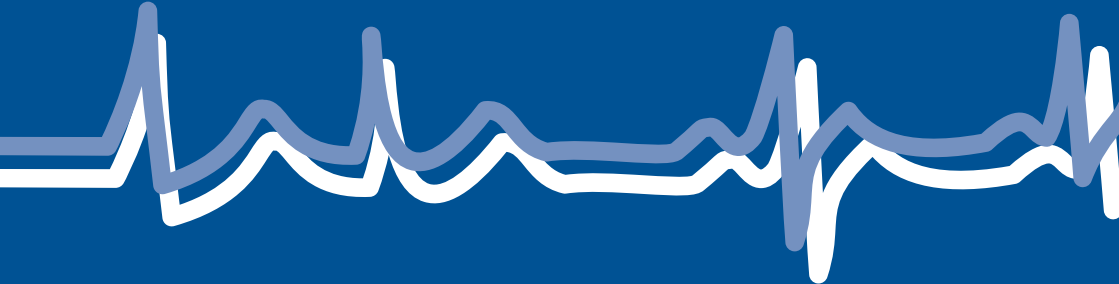






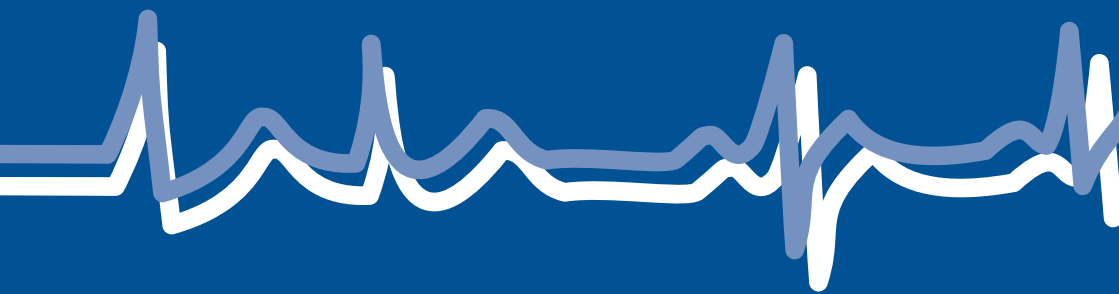
# LIBYA

Pending data submission.



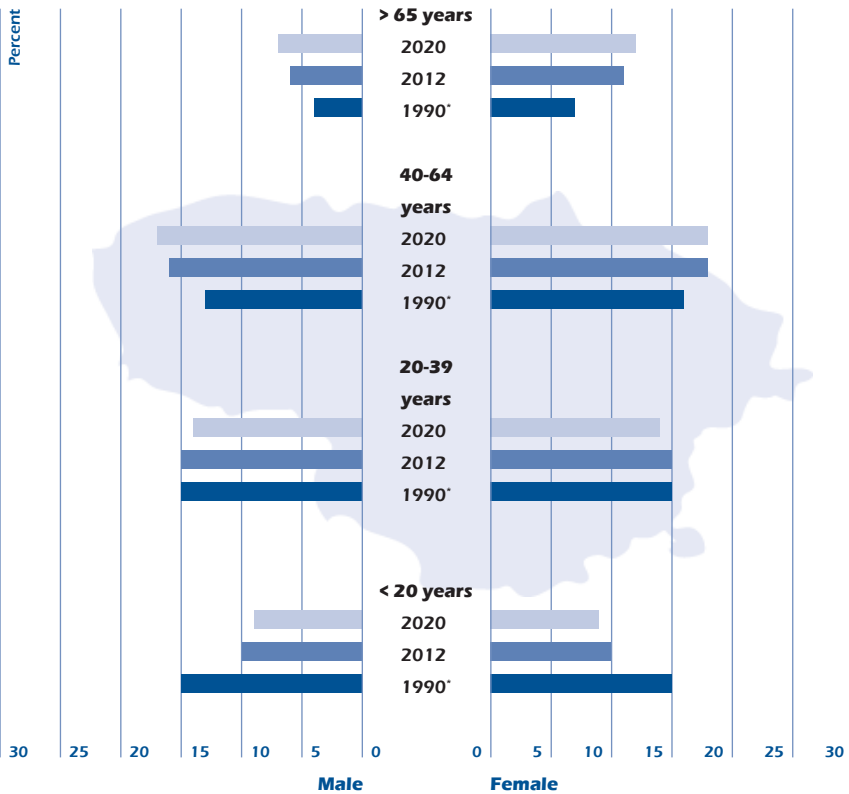


# LITHUANIA



# 1. Statistics

## Age pyramid for Lithuania



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	3,4	2010
Beds (per 100.000 population)	675,1	2010
Density of physicians (per 1.000 population)	3,7	2010
Density of nurses (per 1.000 population)	7,2	2010

<b>Demographic information</b>		
Population	3.525.761	2012
Population annual growth rate (%)	-0,3	2012
Life expectancy at birth	76	2012
Death rate (per 1.000 population)	12,8	2010
Live births (per 1.000 population)	10,7	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	41,22	2012*
Gross domestic product per capita (U.S dollar-units)	12.873,03	2012*
Total expenditure on health as % of GDP	7,0	2010
General government expenditure on health as % of total expenditure on health	73,4	2009
Private expenditure on health as % of total expenditure on health	26,6	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	56,1%	not available

## 3. Healthcare System

National Health System Fund.

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	98%	98%
Uninsured citizens	2%	2%

Distribution of insurance modality		
	2011	2012
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 (eg. 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 (eg. 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"/>
Comments:					There are limits (quotas) for procedure numbers			

### 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"/>	State Healthcare Accreditation Agency
Invasive electrophysiology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	State Healthcare Accreditation Agency
Allied professionals	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	State Healthcare Accreditation Agency
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 trained in invasive electrophysiology
ICD or pacemaker implants	Yes	Cardiologist trained in invasive electrophysiology

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

**Required period of training to perform implantations** **No** **0 years**

**Suggested period of training to perform implantations** **No** **0 years**

**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** **67%**

**Percentage of academic centres among all practicing implanting devices centres** **67%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	4	4
Total Pacemaker units implanted	2.526	2.666
Thereof, New implants	2.147	2.245
Thereof, Replacements	379	421

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	3	3
Total CRT units implanted	108	139
Thereof, CRT pacemaker	83	111
Thereof, CRT ICD	25	28

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	3	3
Total ICD units implanted	117	149
Thereof, Single chamber	87	24
Thereof, Dual chamber	30	96
First implants	98	132
Replacements	19	17

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	2	2
Total loop recorders implanted	18	19

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	2	2
Total lead extraction procedures	not available	10

<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>No</b>
Reasons: no reimbursement	

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

<b>Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions</b>	<b>Yes</b>
Official name: State Healthcare Accreditation Agency	

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	3	3
Number of ablations performed	801	856
Mean number of ablations per centre	267	285
Number of AF ablations	66	28
Number of ablation centres (> 50 AF ablations)	not available	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	0

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>
---------------------------------------------------------------------------------	-----------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input type="checkbox"/>	<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 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"/>	<input type="checkbox"/>	6
Lack of trained personnel	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	5
Lack of operators	<input type="checkbox"/>	<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

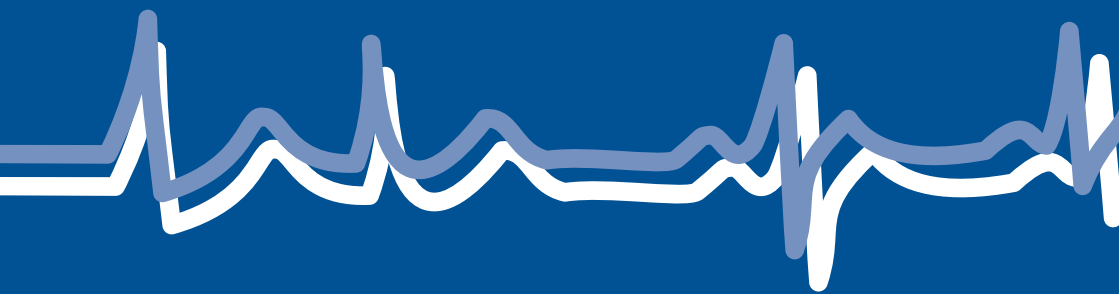
### Name of National Cardiac Society, National Working Group or arrhythmia body

- Lithuanian Society of Cardiology; Working Group on Arrhythmias and Electrophysiology

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

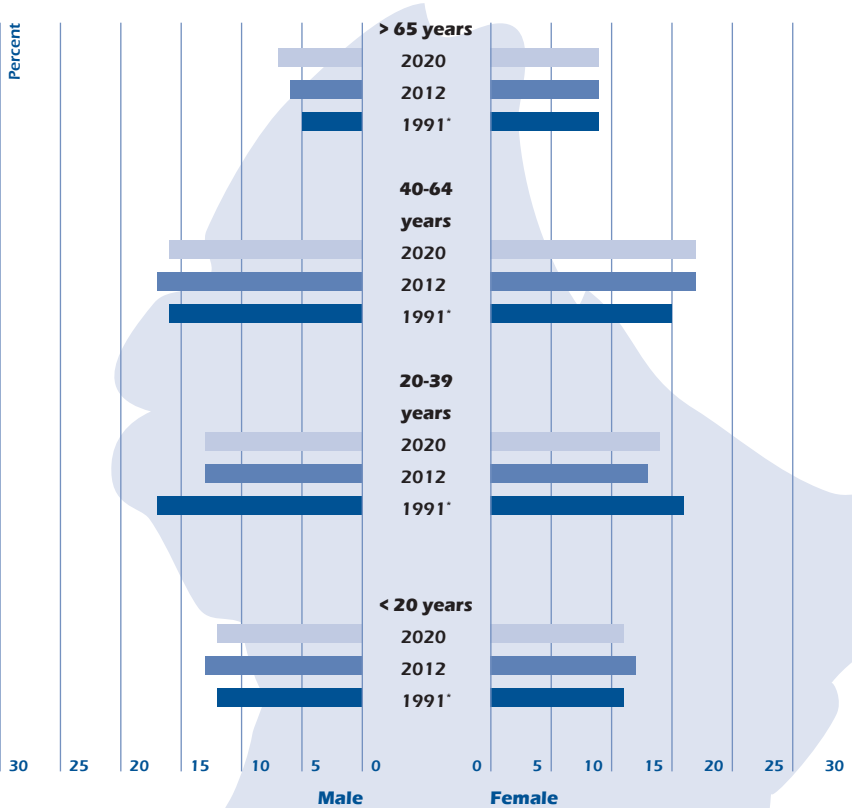
- EHRA White Book 2012
- Short survey of the centres

# LUXEMBOURG



# 1. Statistics

## Age pyramid for Luxembourg



\* 1990 or last available





<b>Healthcare data</b>		
Hospitals (per 100.000 population)	2,4	2010
Beds (per 100.000 population)	536,7	2010
Density of physicians (per 1.000 population)	2,8	2011
Density of nurses (per 1.000 population)	17,0	2011

<b>Demographic information</b>		
Population	509.074	2012
Population annual growth rate (%)	1,1	2012
Life expectancy at birth	80	2012
Death rate (per 1.000 population)	7,1	2010
Live births (per 1.000 population)	10,9	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	55,29	2012*
Gross domestic product per capita (U.S dollar-units)	105.719,97	2012*
Total expenditure on health as % of GDP	7,8	2010
General government expenditure on health as % of total expenditure on health	84,0	2009
Private expenditure on health as % of total expenditure on health	16,0	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	34%

## 3. Healthcare System

### National Health System

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

Requirements: Pay your social contribution to the Social Security (1/2 by your employer and 1/2 by yourself)

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	100%
Uninsured citizens	not available	0%

Distribution of insurance modality		
	2011	2012
Public insurance company	100%	100%
Private insurance company	58%	60%
Private co-payment	not available	60%

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 (eg. 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 (eg. 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"/>

<b>Specialist required for</b>		
		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** **0 years**

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

<b>Training centres availability</b>	
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%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	5	5
Total Pacemaker units implanted	169*	316
Thereof, New implants	101	218
Thereof, Replacements	68	98

\* refers to 2 centres

<b>Specialist performing implants</b>		
Cardiologists	Yes	95%
Surgeons	Yes	5%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	1	1
Total CRT units implanted	20	30
Thereof, CRT pacemaker	7	6
Thereof, CRT ICD	13	24

<b>Specialist performing implants</b>		
Cardiologists	Yes	95%
Surgeons	Yes	5%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	1	1
Total ICD units implanted	50	76
Thereof, Single chamber	28	34
Thereof, Dual chamber	9	18
First implants	40	62
Replacements	10	14

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	1	1
Total loop recorders implanted	2	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		
	2011	2012
Hospitals performed lead extractions	1	1
Total lead extraction procedures	not available	9



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	1%
Surgeons	Yes	99%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
		Official name
ICD	Yes	INCCI (INSTITUT NATIONAL DE CHIRURGIE CARDIAQUE ET CARDIOLOGIE INVASIVE)
Pacing	No	
Electrophysiology	Yes	INCCI

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

Official name: MINISTRY OF HEALTH

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	1	1
Number of ablations performed	127	153
Mean number of ablations per centre	127	153
Number of AF ablations	27	31
Number of ablation centres (> 50 AF ablations)	0	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	No

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

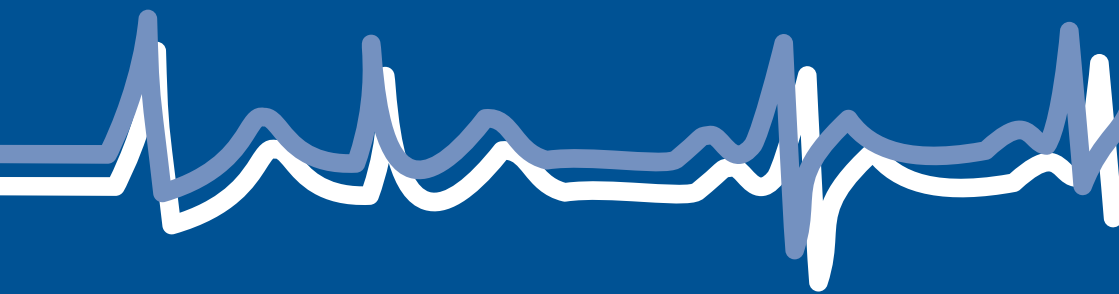
- Société Luxembourgeoise de Cardiologie

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

- EHRA White Book 2012
- Ministry of Health
- Estimation
- Sample short survey: Data from 4 centers
- INCCI

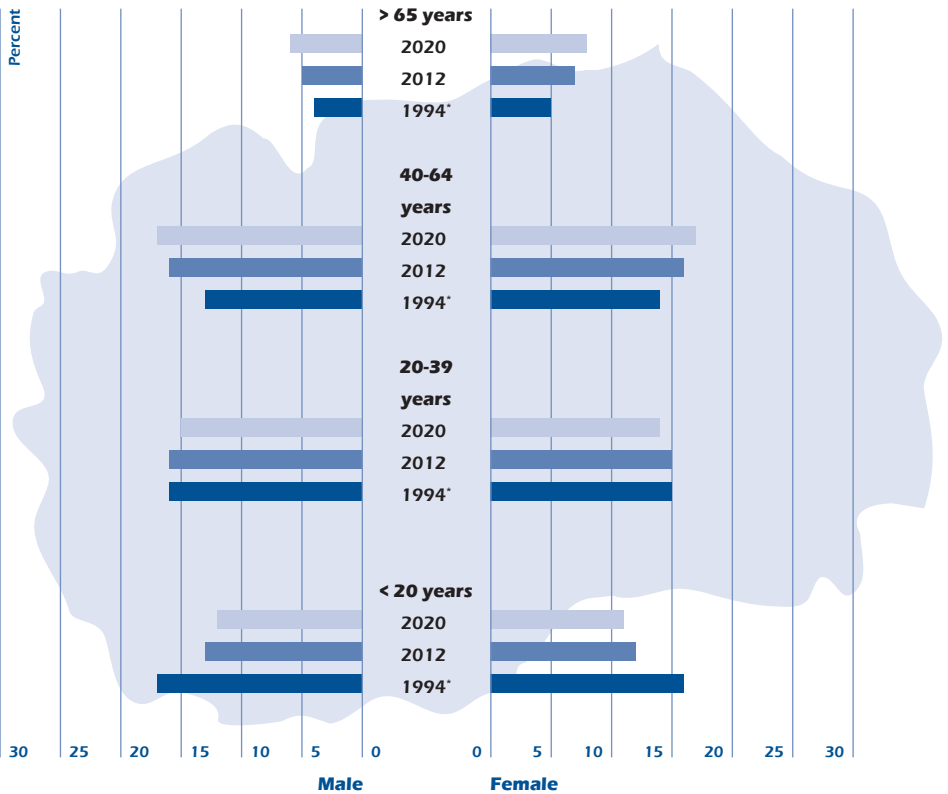


# MACEDONIA FYR



# 1. Statistics

## Age pyramid for Macedonia FYR



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	3,1	2010
Beds (per 100.000 population)	459,1	2010
Density of physicians (per 1.000 population)	2,7	2010
Density of nurses (per 1.000 population)	4,2	2010

<b>Demographic information</b>		
Population	2.082.370	2012
Population annual growth rate (%)	0,2	2012
Life expectancy at birth	75	2012
Death rate (per 1.000 population)	9,3	2010
Live births (per 1.000 population)	11,8	2010

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	10,20	2012*
Gross domestic product per capita (U.S dollar-units)	4.935,16	2012*
Total expenditure on health as % of GDP	7,1	2010
General government expenditure on health as % of total expenditure on health	66,5	2009
Private expenditure on health as % of total expenditure on health	33,5	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	52%

## 3. Healthcare System

National Health System provides national health care. There are also private health care providers (hospitals, clinics).

Basic insurance availability	Yes
Requirements: employment, social welfare, unemployment benefit	

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	90%	90%
Uninsured citizens	10%	10%

Distribution of insurance modality		
	2011	2012
Public insurance company	90%	80%
Private insurance company	10%	10%
Private co-payment	0%	10%

Possibility to subscribing to private health insurance plans	Yes

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

Comments: No co-payment needed for public hospitals. Co-payment only in private hospitals.



### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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"/>
Comments:					Private hospitals do not receive reimbursement nor incentives			

### 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 the indications have to 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 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** **0 years**

**Suggested period of training to perform implantations** **Yes** Until proficiency and independent work is achieved

**Training centres availability**

Pacemaker	3
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

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	2	3
Total Pacemaker units implanted	362	345
Thereof, New implants	286	276
Thereof, Replacements	76	69

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	2	2
Total CRT units implanted	16	11
Thereof, CRT pacemaker	6	8
Thereof, CRT ICD	10	3

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	2	2
Total ICD units implanted	26	15
Thereof, Single chamber	8	9
Thereof, Dual chamber	18	4
First implants	20	13
Replacements	6	2

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	2	2
Total loop recorders implanted	0	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		
	2011	2012
Hospitals performed lead extractions	2	3
Total lead extraction procedures	not available	6





<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	66,7%
Surgeons	Yes	33,3%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
		Official name
ICD	Yes	National ICD Registry
Pacing	No	
Electrophysiology	Yes	National Registry for Electrophysiology

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	2	2
Number of ablations performed	53	62
Mean number of ablations per centre	32/21	31
Number of AF ablations	0	0
Number of ablation centres (> 50 AF ablations)	0	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>
---------------------------------------------------------------------------------	-----------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	
	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input type="checkbox"/>	<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 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"/>	<input type="checkbox"/>	5
Lack of trained personnel	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	6
Lack of operators	<input type="checkbox"/>	<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)

### Other obstacles to guideline implementation

Different obstacles exist for public and private hospitals. Both are burdened with high financial expenditures for devices and procedures

## 13. Sources

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

- Macedonian Society for Cardiology

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

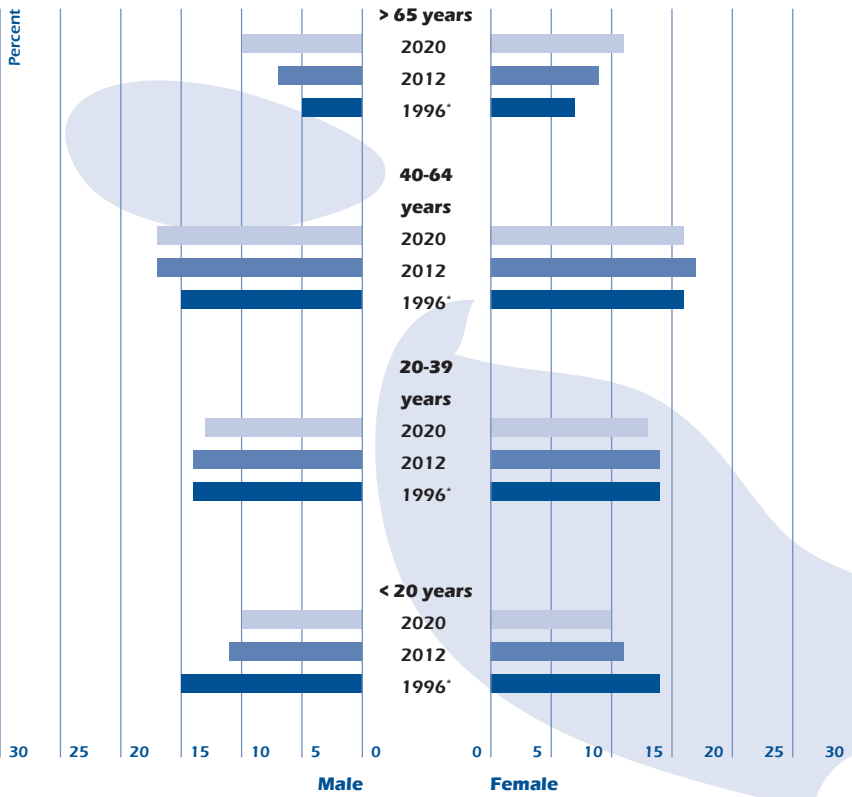
- EHRA White Book 2012
- Estimation
- professional information
- Faculty of Medicine
- Official hospital statistics

# MALTA



# 1. Statistics

## Age pyramid for Malta



\* 1990 or last available



#### Healthcare data

Hospitals (per 100.000 population)	1,7	2011
Beds (per 100.000 population)	446,8	2011
Density of physicians (per 1.000 population)	3,2	2011
Density of nurses (per 1.000 population)	7,1	2011

#### Demographic information

Population	409.836	2012
Population annual growth rate (%)	0,4	2012
Life expectancy at birth	80	2012
Death rate (per 1.000 population)	7,9	2011
Live births (per 1.000 population)	10,3	2011

#### Economic information

Gross domestic product (U.S dollar-billions)	8,42	2012*
Gross domestic product per capita (U.S dollar-units)	19.740,25	2012*
Total expenditure on health as % of GDP	8,7	2010
General government expenditure on health as % of total expenditure on health	64,8	2009
Private expenditure on health as % of total expenditure on health	35,2	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	38%	35%

## 3. Healthcare System

National Health Service providing free health care to all the population.

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2011	2012
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 (eg. 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 (eg. 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"/>
Body issuing the guidelines: Maltese Health Authority	

## 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"/>	Cardiology Accreditation
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 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	Accredited Cardiologist
ICD or pacemaker implants	Yes	Accredited Cardiologist

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

Maltese National Society adopts ESC Guidelines

**Required period of training to perform implantations** **Yes**      **5 years****Suggested period of training to perform implantations** **No**      **0 years****Training centres availability**

Pacemaker	<b>1</b>
ICD implantation	<b>1</b>
CRT implantation	<b>1</b>
Electrophysiological studies and catheter ablation	<b>1</b>
Atrial fibrillation ablation	<b>1</b>

**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

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	2	2
Total Pacemaker units implanted	302	264
Thereof, New implants	254	212
Thereof, Replacements	48	52

### Specialist performing implants


## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	1	1
Total CRT units implanted	23	34
Thereof, CRT pacemaker	4	1
Thereof, CRT ICD	19	33

### Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	1	1
Total ICD units implanted	29	54
Thereof, Single chamber	0	0
Thereof, Dual chamber	18	17
First implants	18	17
Replacements	11	20

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	1	1
Total loop recorders implanted	3	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		
	2011	2012
Hospitals performed lead extractions	0	0
Total lead extraction procedures	not available	0



<b>Specialist performing lead extractions</b>		
Cardiologists	No	0%
Surgeons	No	0%
Other: sent abroad	No	0%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
		Official name
ICD	Yes	National Registry for ICD
Pacing	Yes	National Registry for pacemakers
Electrophysiology	Yes	National Registry for electrophysiology

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	1	1
Number of ablations performed	8	10
Mean number of ablations per centre	8	10
Number of AF ablations	0	0
Number of ablation centres (> 50 AF ablations)	0	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	1

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>
---------------------------------------------------------------------------------	-----------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	No
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	2
Lack of referral	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Lack of operators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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
· Maltese Cardiac Society

All sources that were used to fill out the questionnaire for the EHRA White Book 2013
· EHRA White Book 2012
· Registry
· Official statistics



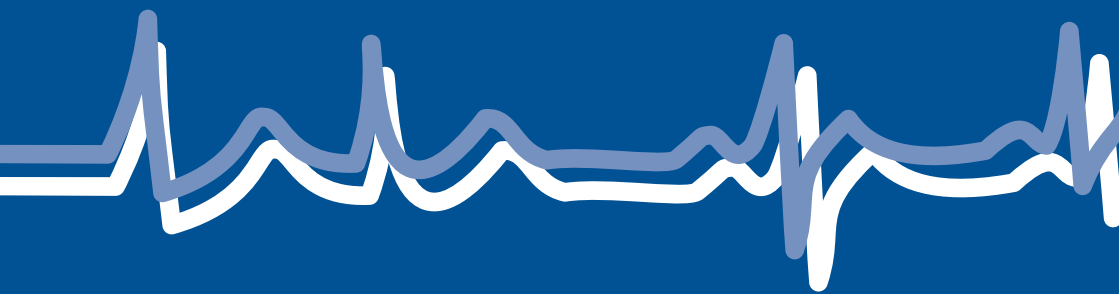
# MOLDOVA

Pending data submission.



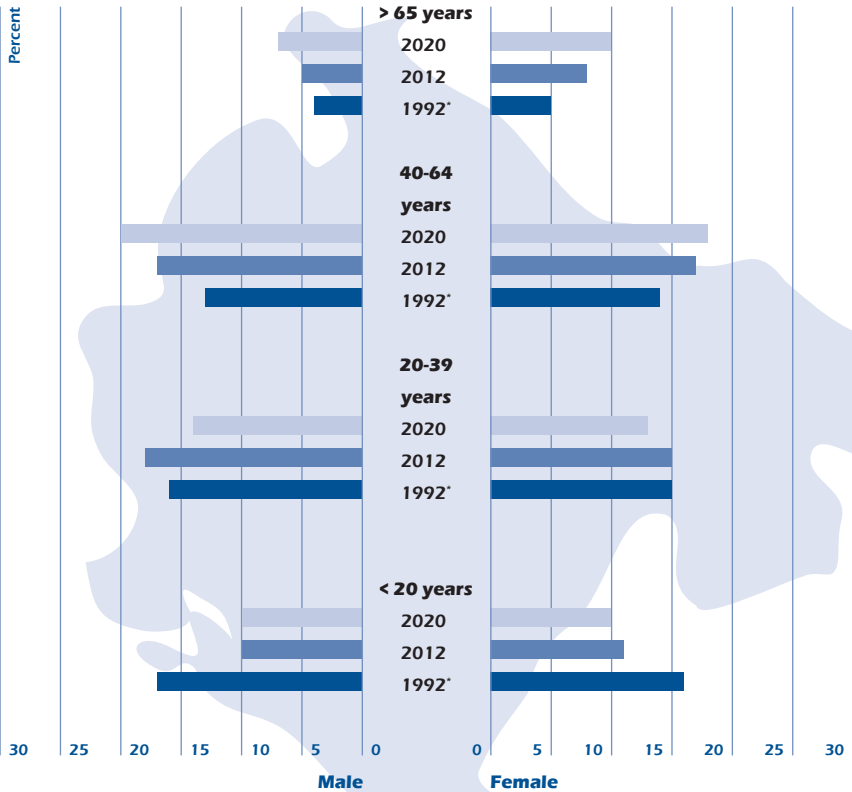


# MONTENEGRO



# 1. Statistics

## Age pyramid for Montenegro



\* 1990 or last available





<b>Healthcare data</b>		
Hospitals (per 100.000 population)	1,8	2010
Beds (per 100.000 population)	399,5	2010
Density of physicians (per 1.000 population)	2,1	2010
Density of nurses (per 1.000 population)	5,6	2010

<b>Demographic information</b>		
Population	657.394	2012
Population annual growth rate (%)	-0,7	2012
Life expectancy at birth	78	2012
Death rate (per 1.000 population)	9,3	2009
Live births (per 1.000 population)	11,6	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	4,33	2012*
Gross domestic product per capita (U.S dollar-units)	6.965,53	2012*
Total expenditure on health as % of GDP	9,1	2010
General government expenditure on health as % of total expenditure on health	71,3	2009
Private expenditure on health as % of total expenditure on health	28,7	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	54%	52%

## 3. Healthcare System

National Health System provided complete health insurance for every procedure. There is no private insurance for any health services. But now we have started an initiative to change the kind of insurance as a kind of participation.

Basic insurance availability		Yes
Requirements: citizens must have some kind of employment or be in office work.		

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	96%	99%
Uninsured citizens	4%	1%

Distribution of insurance modality		
	2011	2012
Public insurance company	100%	100%
Private insurance company	not available	0%
Private co-payment	not available	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: There is no possibility to provide these procedures in private sectors. There is only one Center in our Country, in Clinical Center of Montenegro since 1998. We are a country with 650 000 inhabitants.



### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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: Now, we prepare a project evaluating the severity of the workplace in accordance with the team to determine the appropriate financial compensation.					As I have already said there is only one Center for pacemakers and heart electrophysiology in Montenegro. We have a restrictive budget, especially in this time of financial crisis and transition.			

### 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: Absolutely no limits except for programs of transplantations of heart and lungs. For all other procedures which are not feasible in our country the patient is sent in some of the centers abroad. So this kind of insurance is very expensive for national 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"/>	In practice it is necessary for doctors and technicians to spend at least 3 - 6 months in one of the training centers for implantation processes and follow up of devices. Also from time to time we have visiting experts for some kind of procedures and for very difficult patients especially for program of electrophysiology
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"/>	National Medical Association issues a certificate that allied professionals may perform specified procedures in the Clinical Center of Montenegro
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 who has completed training for catheter ablation in some high volume center.
ICD or pacemaker implants	Yes	We started implant procedures with one vascular surgeon 13 years ago and he was alone for these procedures till 2011. From 2011, one cardiologist completed his training program. Now, we have another young cardiologist who will finish his training for one year.

### Official national competency guidelines for electrophysiological studies or catheter ablation

No

### Required period of training to perform implantations

**Yes** Minimum one year but for conventional pacemakers this period last 6 months.

### Suggested period of training to perform implantations

**Yes** A suggested period of training to perform implantations is half year to one year. This is our experience and suggestions from high volume centers.

### 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



<b>Percentage of academic centres among all practicing EP centres</b>	<b>100%</b>
-----------------------------------------------------------------------	-------------

<b>Percentage of academic centres among all practicing implanting devices centres</b>	<b>100%</b>
---------------------------------------------------------------------------------------	-------------

## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	1	1
Total Pacemaker units implanted	175	143
Thereof, New implants	162	119
Thereof, Replacements	13	24

<b>Specialist performing implants</b>		
Cardiologists	Yes	50%
Surgeons	Yes	50%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Total		

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	1	1
Total ICD units implanted	31	29
Thereof, Single chamber	20	19
Thereof, Dual chamber	11	10
First implants	29	25
Replacements	2	4

Specialist performing implants		
Cardiologists	Yes	30%
Surgeons	Yes	70%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	1	1
Total loop recorders implanted	2	2

Specialist performing implants		
Cardiologists	No	0%
Surgeons	Yes	100%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	1	0
Total lead extraction procedures	not available	0



<b>Specialist performing implants</b>		
Cardiologists	No	0%
Surgeons	Yes	100%

Comments: We send patients in other centers abroad

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>No</b>
-----------------------------------------------------	-----------

Reasons: The system is the high cost.

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

Official name: National Control Agency for the drugs and the devices

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	1	1
Number of ablations performed	7	98
Mean number of ablations per centre	7	98
Number of AF ablations	0	0
Number of ablation centres (> 50 AF ablations)	0	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	1

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>
---------------------------------------------------------------------------------	-----------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No
European	Yes

Necessity of guideline translation to national language	Yes

Obstacles to guideline implementation	Ranking of importance <sup>*</sup>						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	5

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

### Other obstacles to guideline implementation

We have no National guideline as well as there are no consensus about offer in some situation even suboptimal device therapy like single chamber ICD just for save the life if there is no other possibility in that moment.

## 13. Sources

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

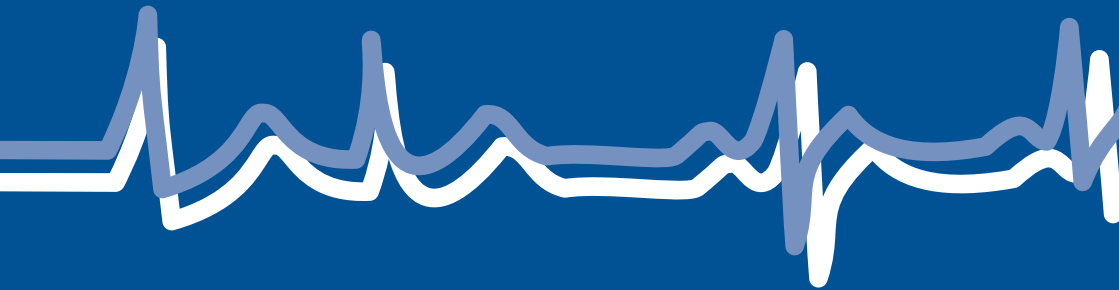
· Center for pacemaker and electrophysiology of Clinical Center of Montenegro

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

- EHRA White Book 2012
- Institute of Public Health, Statistical Yearbook
- Institute for Public Health, Statistical Office of Montenegro - MONSTAT
- Ministry of Health, Health Insurance Fund
- Ministry of Health and Health Found Insurance. (The Center for pacemaker and electrophysiology exists only in CC of Montenegro)
- Sample survey from your operating register book - angiography protocol
- Sample survey from your operating register book. The problem is that in 2012 procedures for implantation of a CRT system, the implantation of electrodes in synus coronarius perform alliened doctor. From 2007 (when we started with implantation of CRT) till these days alliened doctor implanted CRT because we have no cardiologists which are trained enough for this procedures
- Sample survey from register operating book . We do not have system for AF ablation.
- Survey for professional association.
- Finding is consistent with data from the official service of Clinical Center of Montenegro which supplying with devices our Center.

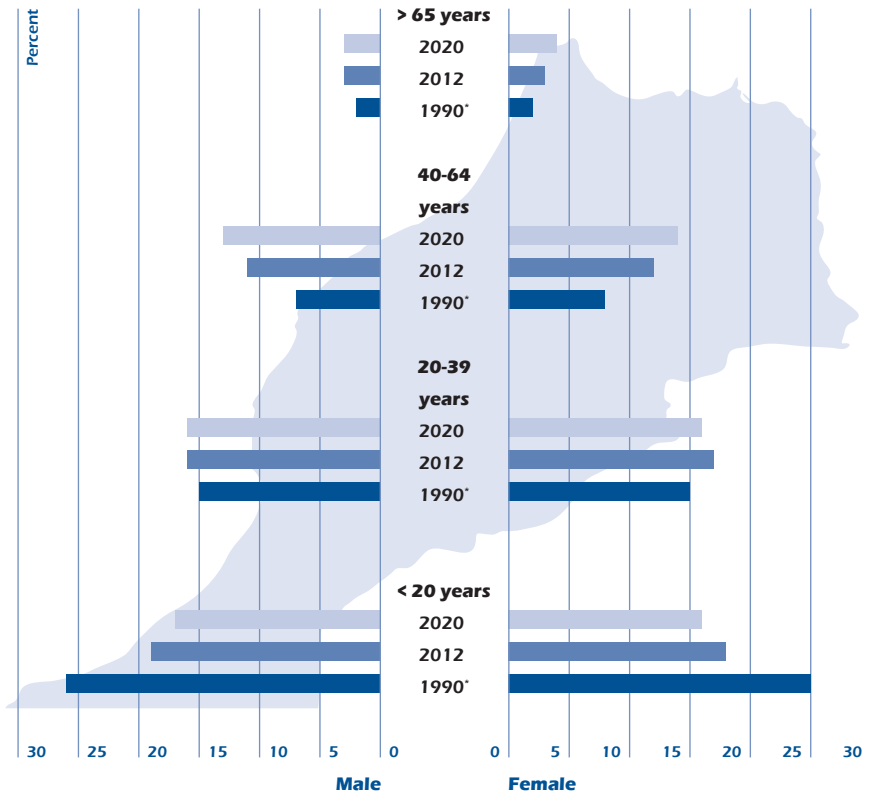


# MOROCCO



# 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)	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	32.309.239	2012
Population annual growth rate (%)	1,1	2012
Life expectancy at birth	76	2012
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)	97,17	2012*
Gross domestic product per capita (U.S dollar-units)	2.987,92	2012*
Total expenditure on health as % of GDP	not available	not available
General government expenditure on health as % of total expenditure on health	38,8	2009
Private expenditure on health as % of total expenditure on health	61,2	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	23%

## 3. Healthcare System

Governmental insurance: AMO, RAMED private insurance.

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	30%	62%
Uninsured citizens	70%	38%

Distribution of insurance modality		
	2011	2012
Public insurance company	34%	70%
Private insurance company	5%	20%
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 (eg. 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 (eg. 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 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 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: 3 and 6 months after procedure					between 3 and 6 months after procedure			

### 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: restrictions for primary prevention according to the 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"/>	Certification of rythmology
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Certificate of electrophysiology studies
Allied professionals	<input type="checkbox"/>	<input checked="" 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"/>

Comments: we hope to advise EHRA certification and homologate national certification

### Specialist required for

	Specialist
Catheter ablation	Yes   Cardiologist
ICD or pacemaker implants	Yes   Cardiologist and cardiovascular surgeon

**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** **2 years**

### Training centres availability

Pacemaker	11
ICD implantation	7
CRT implantation	6
Electrophysiological studies and catheter ablation	5
Atrial fibrillation ablation	1

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

**Percentage of academic centres among all practicing EP centres** **40%**

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



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	13	11
Total Pacemaker units implanted	1.240	1.231
Thereof, New implants	not available	1.200
Thereof, Replacements	not available	31

<b>Specialist performing implants</b>		
Cardiologists	Yes	98%
Surgeons	Yes	2%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	5	7
Total CRT units implanted	>30*	57
Thereof, CRT pacemaker	30	42
Thereof, CRT ICD	not available	15

\* Recensement societe de PM

<b>Specialist performing implants</b>		
Cardiologists	Yes	99%
Surgeons	Yes	1%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	7
Total ICD units implanted	40	21
Thereof, Single chamber	not available	12
Thereof, Dual chamber	not available	9
First implants	not available	21
Replacements	not available	0

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	0	1
Total loop recorders implanted	0	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		
	2011	2012
Hospitals performed lead extractions	0	2
Total lead extraction procedures	not available	10





<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	99%
Surgeons	Yes	1%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	No answer	
Pacing	No answer	
Electrophysiology	No answer	

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	5	5
Number of ablations performed	100	216
Mean number of ablations per centre	30	20
Number of AF ablations	6	5
Number of ablation centres (> 50 AF ablations)	0	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	0

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input type="checkbox"/>	<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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	4
Lack of trained personnel	<input type="checkbox"/>	<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 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 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

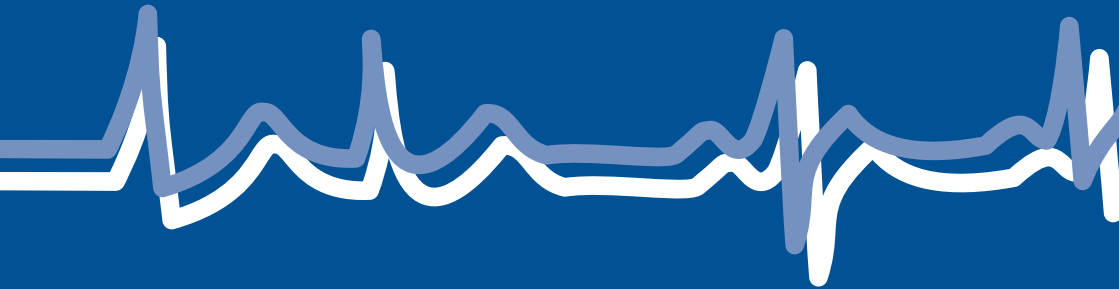
- SMC: société marocaine de cardiologie filiale de rythmologie de la SMC

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

- EHRA White Book 2012
- Health ministry
- Estimation
- Data selles
- High education ministry
- Filial of rytmology
- Sales data
- Professional association
- SMC : moroccan cardiological society

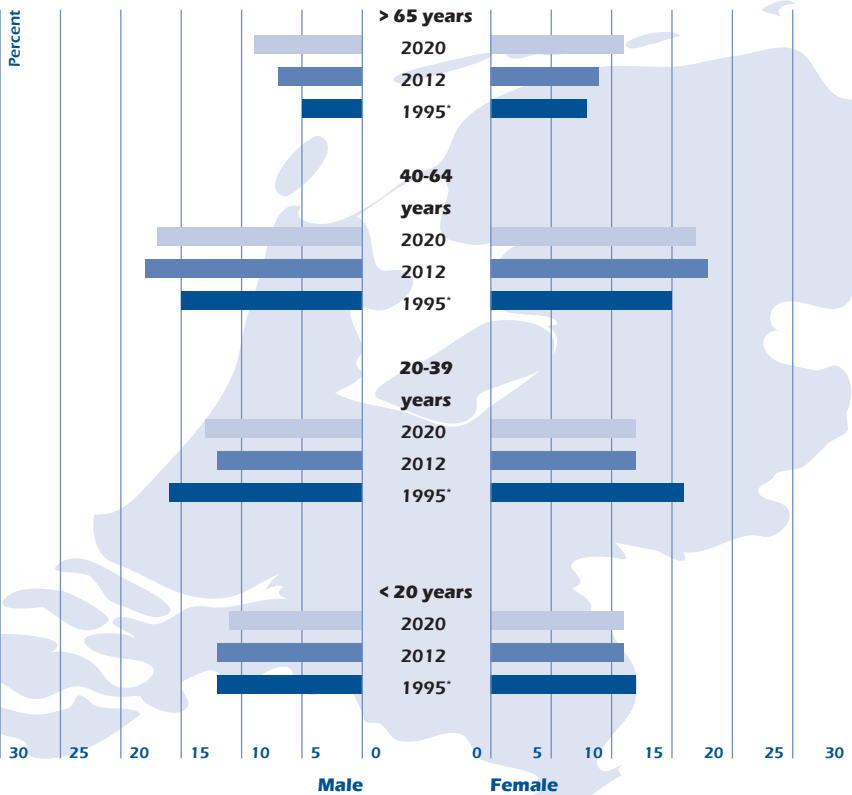
# NETHERLANDS\*

\* data are not complete



# 1. Statistics

## Age pyramid for Netherlands



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	1,7	2010
Beds (per 100.000 population)	466,0	2009
Density of physicians (per 1.000 population)	2,9	2009
Density of nurses (per 1.000 population)	8,6	2008

<b>Demographic information</b>		
Population	16.730.632	2012
Population annual growth rate (%)	0,5	2012
Life expectancy at birth	81	2012
Death rate (per 1.000 population)	8,1	2011
Live births (per 1.000 population)	11,1	2010

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	770,22	2012*
Gross domestic product per capita (U.S dollar-units)	45.942,36	2012*
Total expenditure on health as % of GDP	11,9	2010
General government expenditure on health as % of total expenditure on health	79,0	2009
Private expenditure on health as % of total expenditure on health	14,3	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	28%

## 3. Healthcare System

In the Netherlands, as of 2006, there is a new health insurance act. The system offers basic health insurance for all citizens.

Basic insurance availability	Yes	
Requirements: Obligatory for all citizens		

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	not available	99,2%
Uninsured citizens	not available	0,8%

Distribution of insurance modality		
	2011	2012
Public insurance company	0%	0%
Private insurance company	100%	100%
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 (eg. 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 (eg. 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 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 or IBHRE certification
Training centres	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NVVC praktijkrichtlijn voor ICD centra. NHRA opleidingsdocument voor invasieve elektrofysiologie

**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"/>

Comments: For device therapy, IBHRE certification is also accepted

**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**

Netherlands Heart Rhythm Association (NHRA)

**Required period of training to perform implantations** **No** **0 years****Suggested period of training to perform implantations** **Yes** There is a minimum number of implants required**Training centres availability**

Pacemaker	<b>17</b>
ICD implantation	<b>12</b>
CRT implantation	<b>12</b>
Electrophysiological studies and catheter ablation	<b>12</b>
Atrial fibrillation ablation	<b>12</b>

**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%**





## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	87	90
Total Pacemaker units implanted	9.736	9.370
Thereof, New implants	7.246	7.031
Thereof, Replacements	2.490	2.339

<b>Specialist performing implants</b>		
Cardiologists	Yes	90%
Surgeons	Yes	5%
Other: Nurse practitioners	Yes	5%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	30	28
Total CRT units implanted	2.162	2.076
Thereof, CRT pacemaker	481	462
Thereof, CRT ICD	1.681	1.614

<b>Specialist performing implants</b>		
Cardiologists	Yes	90%
Surgeons	Yes	5%
Other: Nurse practitioners	Yes	5%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	30	28
Total ICD units implanted	2.577	2.669
Thereof, Single chamber	not available	not available
Thereof, Dual chamber	not available	not available
First implants	2.007	2.040
Replacements	570	629

Specialist performing implants		
Cardiologists	Yes	90%
Surgeons	Yes	5%
Other: Nurse practitioners	Yes	5%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	not available
Total loop recorders implanted	not available	not available

Specialist performing implants		
Cardiologists	Yes	95%
Surgeons	No	0%
Other: Nurse practitioners	Yes	5%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	not available	not available
Total lead extraction procedures	not available	not available



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	95%
Surgeons	Yes	5%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
		Official name
ICD	Yes	Dutch ICD and Pacemaker Registry (DIPR)
Pacing	Yes	Dutch ICD and Pacemaker Registry (DIPR)
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>Yes</b>
-------------------------------------------------------------------------------------	------------

Official name: Dutch ICD and Pacemaker Registry (DIPR)

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	15	16
Number of ablations performed	not available	6.386
Mean number of ablations per centre	not available	425
Number of AF ablations	not available	2.611
Number of ablation centres (> 50 AF ablations)	not available	13
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	12

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>
---------------------------------------------------------------------------------	-----------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	2
Lack of trained personnel	<input type="checkbox"/>	<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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

## 13. Sources

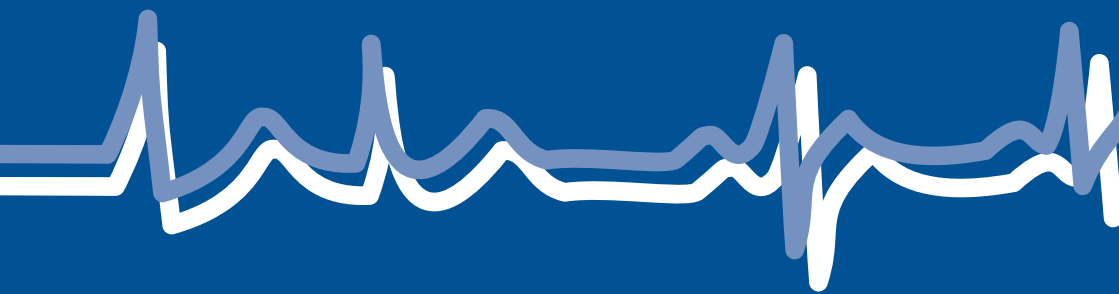
### Name of National Cardiac Society, National Working Group or arrhythmia body

- Netherlands Heart Rhythm Association

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

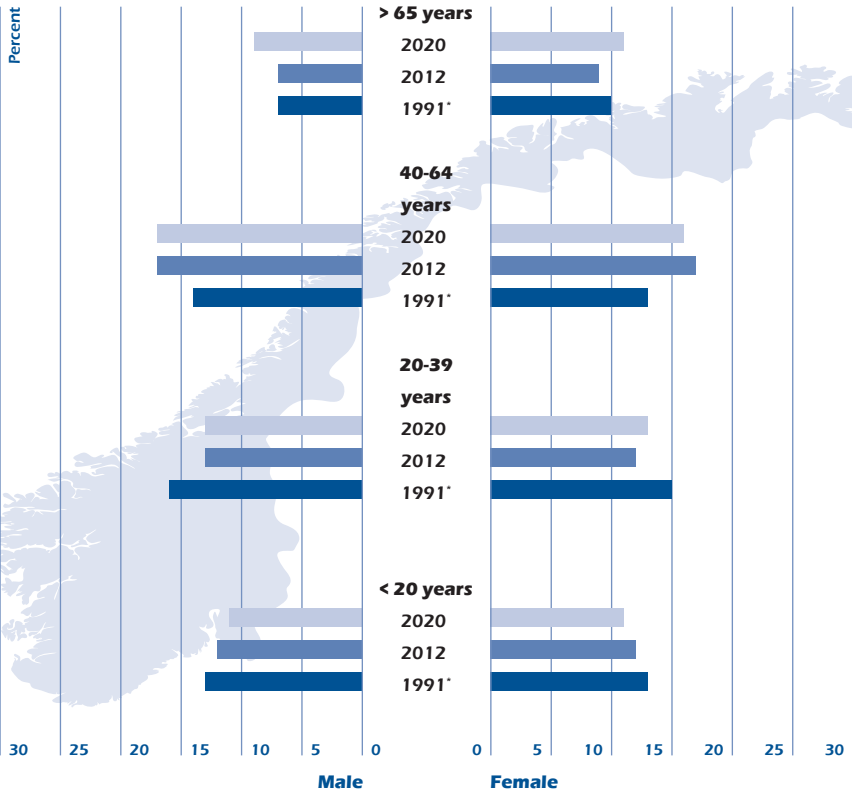
- EHRA White Book 2012
- National institute of Statistics
- Dutch ICD and Pacemaker Registry (DIPR)
- Netherlands Heart Rhythm Association (NHRA)

# NORWAY



# 1. Statistics

## Age pyramid for Norway



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	1,3	2010
Beds (per 100.000 population)	329,6	2010
Density of physicians (per 1.000 population)	4,1	2010
Density of nurses (per 1.000 population)	14,9	2010

<b>Demographic information</b>		
Population	5.000.000	2012
Population annual growth rate (%)	0,3	2012
Life expectancy at birth	80	2012
Death rate (per 1.000 population)	8,3	2011
Live births (per 1.000 population)	12,2	2011

<b>Economic information</b>		

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	31%

## 3. Healthcare System

National Health System. Public health care is basically free and is supported by the Government through the tax income scheme.

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

Requirements: The health care system in Norway ensures free basic medical services to all citizens and those registered as residents or working in Norway.

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2011	2012
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	3%	3%

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 (eg. 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 (eg. 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 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"/>

<b>Specialist required for</b>		Specialist
Catheter ablation	Yes	
ICD or pacemaker implants	Yes	

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

**Required period of training to perform implantations** **No** **0 years**

**Suggested period of training to perform implantations** **No** **0 years**

<b>Training centres availability</b>	
Pacemaker	5
ICD implantation	5
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** **84%**

**Percentage of academic centres among all practicing implanting devices centres** **22%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	23	23
Total Pacemaker units implanted	3.169	3.456
Thereof, New implants	2.500	2.678
Thereof, Replacements	669	778

<b>Specialist performing implants</b>		
Cardiologists	Yes	99%
Surgeons	Yes	1%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	9	9
Total CRT units implanted	412	383
Thereof, CRT pacemaker	183	145
Thereof, CRT ICD	229	238

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	9	11
Total ICD units implanted	863	994
Thereof, Single chamber	142	153
Thereof, Dual chamber	465	537
First implants	613	748
Replacements	250	246

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	20	not available
Total loop recorders implanted	227	194

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	3	3
Total lead extraction procedures	not available	179



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	Yes	Norwegian Pacemaker- and ICD-registry
Pacing	Yes	Norwegian Pacemaker- and ICD-registry
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	4	5
Number of ablations performed	2.284	2.648
Mean number of ablations per centre	571	not available
Number of AF ablations	1.137	1.244
Number of ablation centres (> 50 AF ablations)	3	4
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	1

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	5
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	3
Low awareness of guidelines	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	4

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

## 13. Sources

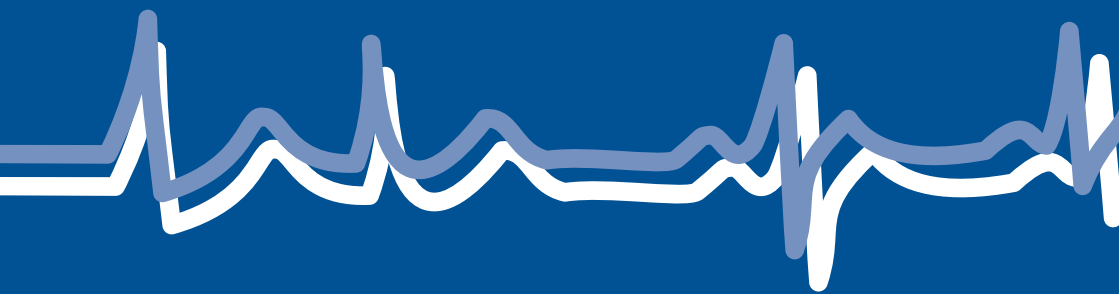
### Name of National Cardiac Society, National Working Group or arrhythmia body

- Norwegian Society of Cardiology, the EP working group of Norway

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

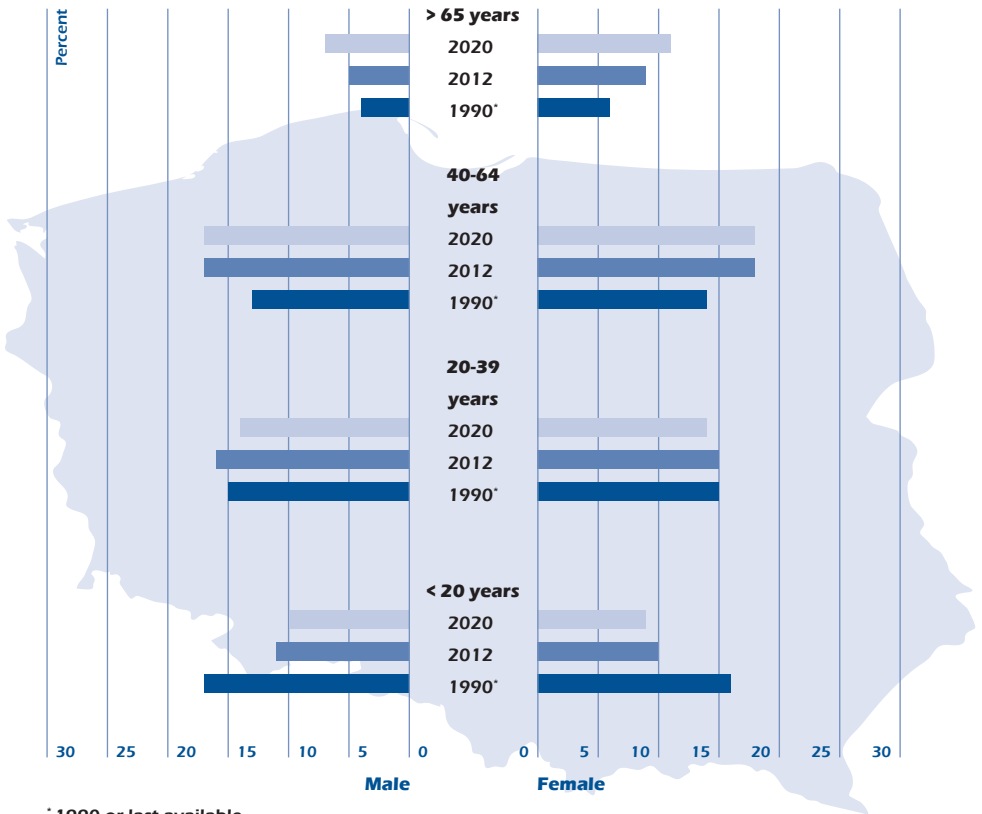
- EHRA White Book 2012
- Ministry of Health
- Norwegian Pacemaker- and ICD-registry
- Survey from the Norwegian Society of Cardiology

# POLAND



# 1. Statistics

## Age pyramid for Poland



\* 1990 or last available





<b>Healthcare data</b>		
Hospitals (per 100.000 population)	2,5	2010
Beds (per 100.000 population)	652,9	2010
Density of physicians (per 1.000 population)	2,2	2010
Density of nurses (per 1.000 population)	5,8	2010

<b>Demographic information</b>		
Population	38.415.284	2012
Population annual growth rate (%)	-0,1	2012
Life expectancy at birth	76	2012
Death rate (per 1.000 population)	9,8	2010
Live births (per 1.000 population)	10,1	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	470,35	2012*
Gross domestic product per capita (U.S dollar-units)	12.302,37	2012*
Total expenditure on health as % of GDP	7,5	2010
General government expenditure on health as % of total expenditure on health	72,3	2009
Private expenditure on health as % of total expenditure on health	27,7	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	46%*	45%

\* 2009

## 3. Healthcare System

Poland has the health care system (National Health Fund), based on general health insurance (on compulsory basis), private insurance is available, patient's co-payment for medicines and private consultations, and private hospital admissions.

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

Requirements: Obligatory insurance fee is paid as a part of tax from personal salaries or paid separately by person (employed on contract, self-employment, etc.)

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	99%*	95%
Uninsured citizens	1%*	5%

\* Estimation

Distribution of insurance modality		
	2011	2012
Public insurance company	65%	71%
Private insurance company	1%	1%
Private co-payment	34%	28%

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

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

Comments: There is a possibility to perform procedures in private centers paid by patient directly, but it is very uncommon. Private centers have contracts with the National Health Fund and all procedures are reimbursed.



### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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"/>

Comments: Depends on the way of employment. Some physicians have contracts and are paid by procedure, the others are time contracts so they are paid for time spend in hospital

Reimbursement system based on DRG

### 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 are waiting lists for the procedures. Implantations of pacemakers, ICD – secondary prevention are performed almost without delay for other queueing lasts weeks to month

## 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"/>	1. Obligatory, required to practice as physician: Licence for physician's practice - imposed by the Polish Chamber of Physicians 2. Not required: Certyfikat Indywidualny Operatora Elektroterapii (Individual Certificate for Operator in Electrotherapy) - under process of approval by the Board of the Polish cardiac Society
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. Obligatory, required to practice as physician: Licence of physician's practice - imposed by the Polish Chamber of Physicians 2. Not required: Certyfikat Indywidualny Operatora Elektrofizjologii (Individual Certificate for Operator in Electrophysiology) - under process of approval by the Board of the Polish cardiac Society
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"/>

Comments: Our individual certification system is based on procedure requirements of EHRA certification, there will be no exam. We are going to accept EHRA's accreditation as equivalent to the national (planned) accreditation by the Polish Cardiac Society.

**Specialist required for**

		Specialist
Catheter ablation	Yes	Cardiologist performing ablations must be employed by the center
ICD or pacemaker implants	Yes	Cardiologist performing device implantation must be employed by the center

**Official national competency guidelines for electrophysiological studies or catheter ablation****No****Required period of training to perform implantations****No****0 years****Suggested period of training to perform implantations****Yes****1 year (according to the new programme for the specialization in cardiology)****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)****12****Percentage of academic centres among all practicing EP centres****20%****Percentage of academic centres among all practicing implanting devices centres****9,2%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	not available	132
Total Pacemaker units implanted	27.294	27.498
Thereof, New implants	not available	21.978
Thereof, Replacements	not available	5.520

<b>Specialist performing implants</b>		
Cardiologists	Yes	99%
Surgeons	Yes	0,5%
Other: Pediatricians, Pediatric Cardiac Surgeons, Anesthesiologists	Yes	0,5%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	not available	21
Total CRT units implanted	2.539	2.788
Thereof, CRT pacemaker	387	388
Thereof, CRT ICD	2.152	2.400

<b>Specialist performing implants</b>		
Cardiologists	Yes	96%
Surgeons	Yes	3%
Other: Pediatricians, Pediatric Cardiac Surgeons	Yes	1%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	111
Total ICD units implanted	6.042	7.006
Thereof, Single chamber	not available	4.484
Thereof, Dual chamber	not available	2.522
First implants	not available	6.095
Replacements	not available	911

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	0,5%
Other: Pediatricians, Pediatric Cardiac Surgeons	Yes	0,5%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	9
Total loop recorders implanted	not available	25

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	7	10
Total lead extraction procedures	not available	520



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	80%
Surgeons	Yes	20%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	Yes	Polish ICD Registry (Temporarily hold)
Pacing	Yes	Electrotherapy (Temporarily hold)
Electrophysiology	Yes	Polish Multicenter AF Ablation Registry (Temporarily hold)

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

<b>Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions</b>	<b>Yes</b>

Official name: Urząd Rejestracji Produktów Medycznych - Warsaw

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	not available	73
Number of ablations performed	8.220	8.806
Mean number of ablations per centre	not available	not available
Number of AF ablations	not available	1700
Number of ablation centres (> 50 AF ablations)	not available	15
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	8

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No
European	Yes

Necessity of guideline translation to national language	Yes

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	5
Low awareness of guidelines	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	3

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

### Other obstacles to guideline implementation

Lack of operators is only related to EP ablations

## 13. Sources

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

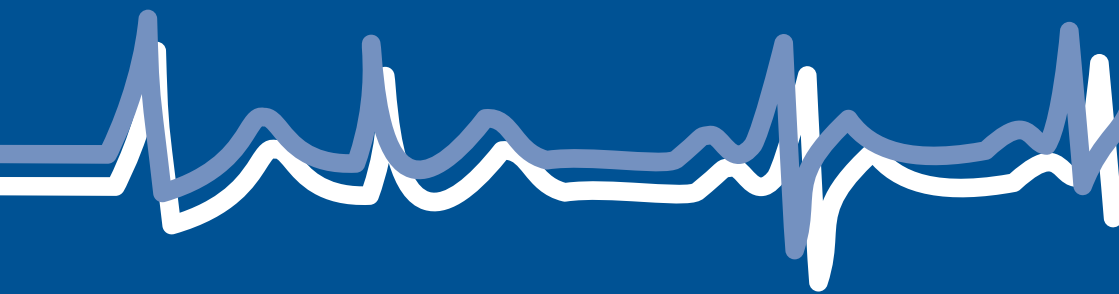
· Working Group on Heart Rhythm of the Polish Cardiac Society

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

- EHRA White Book 2012
- Ministry of Health
- Main Statistical Office
- National Consultant in Cardiology
- Professional associations (WG on Heart Rhythm of the Polish Cardiac Society)
- Sales data
- Estimation
- National Health Fund
- Other

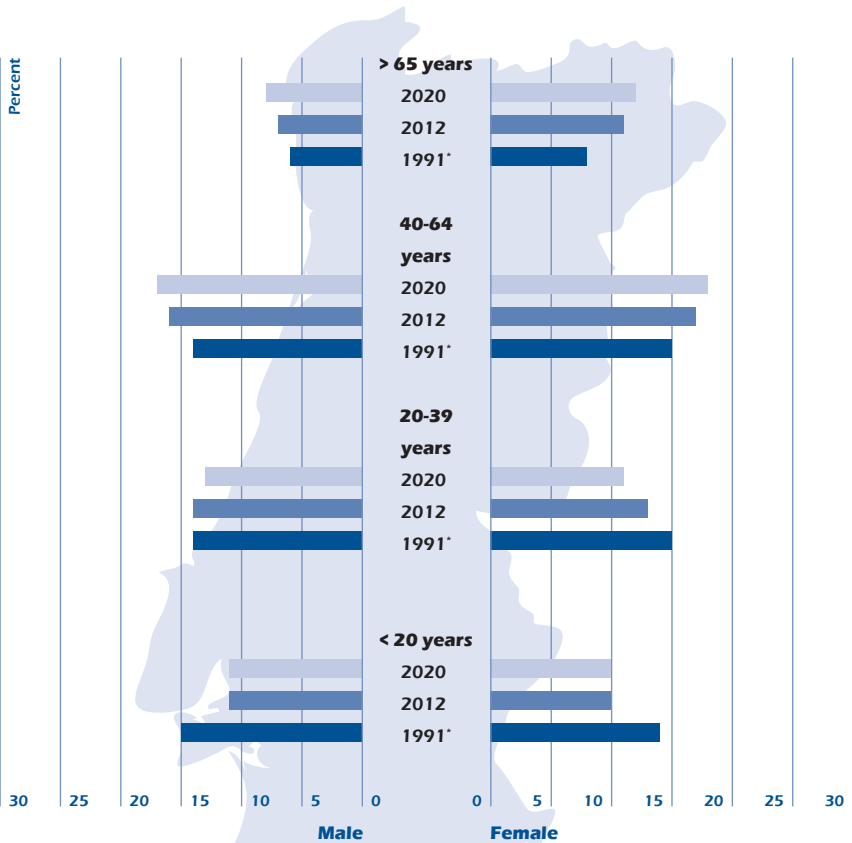


# PORTUGAL



# 1. Statistics

## Age pyramid for Portugal



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	2,2	2010
Beds (per 100.000 population)	336,7	2010
Density of physicians (per 1.000 population)	3,8	2010
Density of nurses (per 1.000 population)	5,9	2010

<b>Demographic information</b>		
Population	10.781.459	2012
Population annual growth rate (%)	0,2	2012
Life expectancy at birth	79	2012
Death rate (per 1.000 population)	9,8	2011
Live births (per 1.000 population)	9,2	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	210,62	2012*
Gross domestic product per capita (U.S dollar-units)	19.768,20	2012*
Total expenditure on health as % of GDP	11,0	2010
General government expenditure on health as % of total expenditure on health	67,8	2009
Private expenditure on health as % of total expenditure on health	32,2	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	55%	31%

## 3. Healthcare System

In Portugal we have a National Health System (called SNS), that covers 100% of the population, funded almost exclusively by national taxation; private insurance companies and some public health subsystems (eg: for public sector employees) offer complementary healthcare coverage.

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

Requirements: No requirements. With some exceptions, citizens have to pay a small fee (moderator tax) to access the public healthcare system

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	17%	100%
Uninsured citizens	not available	0%

Distribution of insurance modality		
	2011	2012
Public insurance company	85%	80%
Private insurance company	0%	0%
Private co-payment	15%	20%

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

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

Comments: only in the private sector



### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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"/>

Comments: In each public hospital there is usually an annually predetermined budget for devices and ablation; the extent that this reflects on actual restriction on treatment numbers varies between different hospitals.

## 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"/>	College of Cardiology of the Portuguese Medical association, subspecialty in cardiac Electrophysiology
Allied professionals	<input type="checkbox"/>	<input checked="" 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 Cardiologist, preferentially with the subspecialty in Cardiac Electrophysiology
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****0 years****Suggested period of training to perform implantations****Yes****2 years****Training centres availability**

Pacemaker	12
ICD implantation	5
CRT implantation	5
Electrophysiological studies and catheter ablation	5
Atrial fibrillation ablation	3

**Number of universities (Schools of Medicine)****9****Percentage of academic centres among all practicing EP centres****28%****Percentage of academic centres among all practicing implanting devices centres****20%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	43	42
Total Pacemaker units implanted	6.400	8.890
Thereof, New implants	5.100	6.792
Thereof, Replacements	1.300	2.098

<b>Specialist performing implants</b>		
Cardiologists	Yes	99%
Surgeons	Yes	1%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	27	27
Total CRT units implanted	500	564
Thereof, CRT pacemaker	100	189
Thereof, CRT ICD	339	375

<b>Specialist performing implants</b>		
Cardiologists	Yes	95%
Surgeons	Yes	5%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	22	24
Total ICD units implanted	1.017	990
Thereof, Single chamber	not available	not available
Thereof, Dual chamber	not available	not available
First implants	815	669
Replacements	202	321

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	12	23
Total loop recorders implanted	60	182

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	6	7
Total lead extraction procedures	not available	not available





<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	30%
Surgeons	Yes	70%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
	Official name	
ICD	Yes	APAPE National Registry
Pacing	Yes	APAPE National Registry
Electrophysiology	Yes	APAPE National Registry

<b>Availability of a national quality insurance system or complication registry</b>	<b>Yes</b>
-------------------------------------------------------------------------------------	------------

Official name: INFARMED

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

Official name: INFARMED

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	18	18
Number of ablations performed	2.013	2.010
Mean number of ablations per centre	not available	112
Number of AF ablations	467	523
Number of ablation centres (> 50 AF ablations)	6	3
Number of ablation centres (> 10 VT ablations on structural heart diseases)	6	2

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	Yes

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	5

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

### Other obstacles to guideline implementation

Limited financial resources are currently the main obstacle to guideline implementation

## 13. Sources

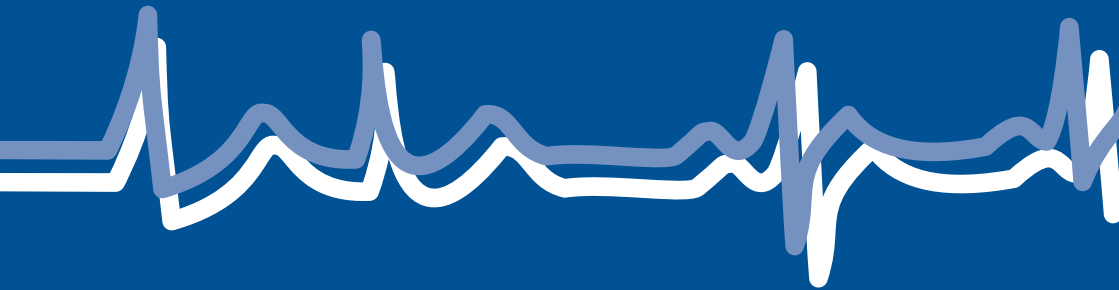
### Name of National Cardiac Society, National Working Group or arrhythmia body

· APAPE

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

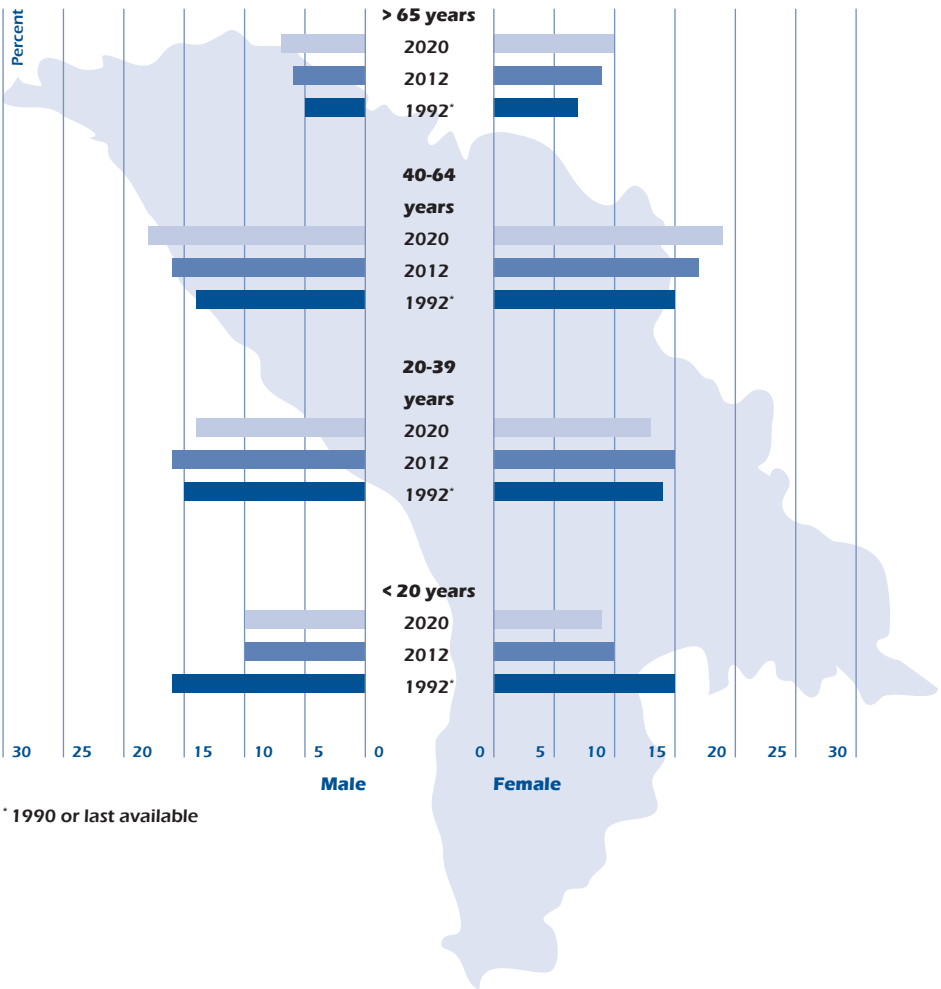
- EHRA White Book 2012
- Official statistics from National Institute of Statistics and Health Ministry and private institution statistics (PORDATA)
- Official statistics (Health Ministry, National Institute of Statistics)
- Estimation of insurance companies association
- Estimation
- Survey from professional association
- Sales data
- Portuguese national registry

# ROMANIA



# 1. Statistics

## Age pyramid for Romania





#### Healthcare data

Hospitals (per 100.000 population)	2,6	2010
Beds (per 100.000 population)	628,7	2010
Density of physicians (per 1.000 population)	2,4	2010
Density of nurses (per 1.000 population)	5,4	2010

#### Demographic information

Population	21.848.504	2012
Population annual growth rate (%)	-0,3	2012
Life expectancy at birth	74	2012
Death rate (per 1.000 population)	12,1	2010
Live births (per 1.000 population)	9,9	2010

#### Economic information

Gross domestic product (U.S dollar-billions)	171,40	2012*
Gross domestic product per capita (U.S dollar-units)	8.029,01	2012*
Total expenditure on health as % of GDP	5,6	2010
General government expenditure on health as % of total expenditure on health	79,0	2009
Private expenditure on health as % of total expenditure on health	21,0	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	43%	not available

## 3. Healthcare System

National Health System, almost entirely public.

Basic insurance availability	Yes
Requirements: employee or direct payment	

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2011	2012
Public insurance company	57%	96%
Private insurance company	14%	2%
Private co-payment	24%	2%

Possibility to subscribing to private health insurance plans	Yes

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

Comments: Very limited number of ICDs and CRTs provided by public funds (100%), all the rest entirely private.



### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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: EPs payed as general cardiologists

### 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 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"/>

<b>Specialist required for</b>		
		Specialist
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist and sometimes surgeon

<b>Official national competency guidelines for electrophysiological studies or catheter ablation</b>	<b>No</b>
------------------------------------------------------------------------------------------------------	-----------

<b>Required period of training to perform implantations</b>	<b>No</b>	<b>0 years</b>
-------------------------------------------------------------	-----------	----------------

<b>Suggested period of training to perform implantations</b>	<b>No</b>	<b>0 years</b>
--------------------------------------------------------------	-----------	----------------

<b>Training centres availability</b>	
Pacemaker	7
ICD implantation	7
CRT implantation	4
Electrophysiological studies and catheter ablation	6
Atrial fibrillation ablation	1

<b>Number of universities (Schools of Medicine)</b>	<b>not available</b>
-----------------------------------------------------	----------------------

<b>Percentage of academic centres among all practicing EP centres</b>	<b>100%</b>
-----------------------------------------------------------------------	-------------

<b>Percentage of academic centres among all practicing implanting devices centres</b>	<b>95%</b>
---------------------------------------------------------------------------------------	------------





## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	21	21
Total Pacemaker units implanted	3.051	3.150
Thereof, New implants	not available	3.100
Thereof, Replacements	not available	500

<b>Specialist performing implants</b>		
Cardiologists	Yes	99%
Surgeons	Yes	1%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	14	15
Total CRT units implanted	220	163
Thereof, CRT pacemaker	159	15
Thereof, CRT ICD	61	15

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	19	17
Total ICD units implanted	167	178
Thereof, Single chamber	133	17
Thereof, Dual chamber	34	16
First implants	not available	150
Replacements	not available	28

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	2	3
Total loop recorders implanted	5	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		
	2011	2012
Hospitals performed lead extractions	2	1
Total lead extraction procedures	not available	5



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

Reasons:

<b>National registry for</b>		
		Official name
ICD	Yes	Supported by W/G of Arrhythmias, not mandatory, incomplete data
Pacing	Yes	Supported by W/G of Arrhythmias, not mandatory, incomplete data
Electrophysiology	Yes	Supported by W/G of Arrhythmias, not mandatory, incomplete data

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	14	13
Number of ablations performed	1.104	1.100
Mean number of ablations per centre	79	85
Number of AF ablations	67	83
Number of ablation centres (> 50 AF ablations)	1	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	0

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	5
Low awareness of guidelines	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	4

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

## 13. Sources

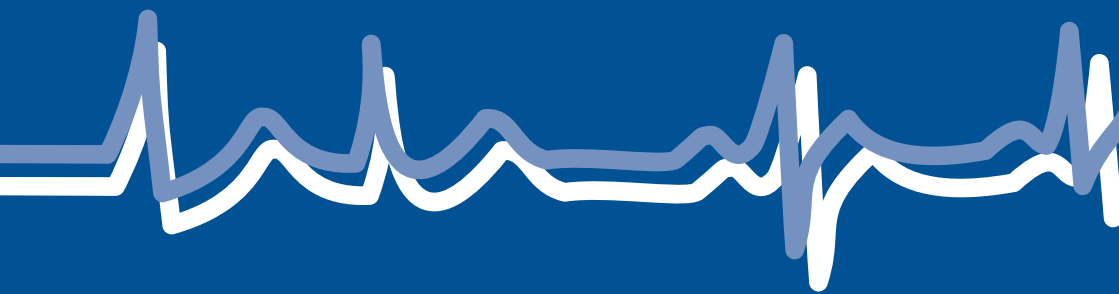
### Name of National Cardiac Society, National Working Group or arrhythmia body

- Working Group on Arrhythmia, Romanian Society of Cardiology

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

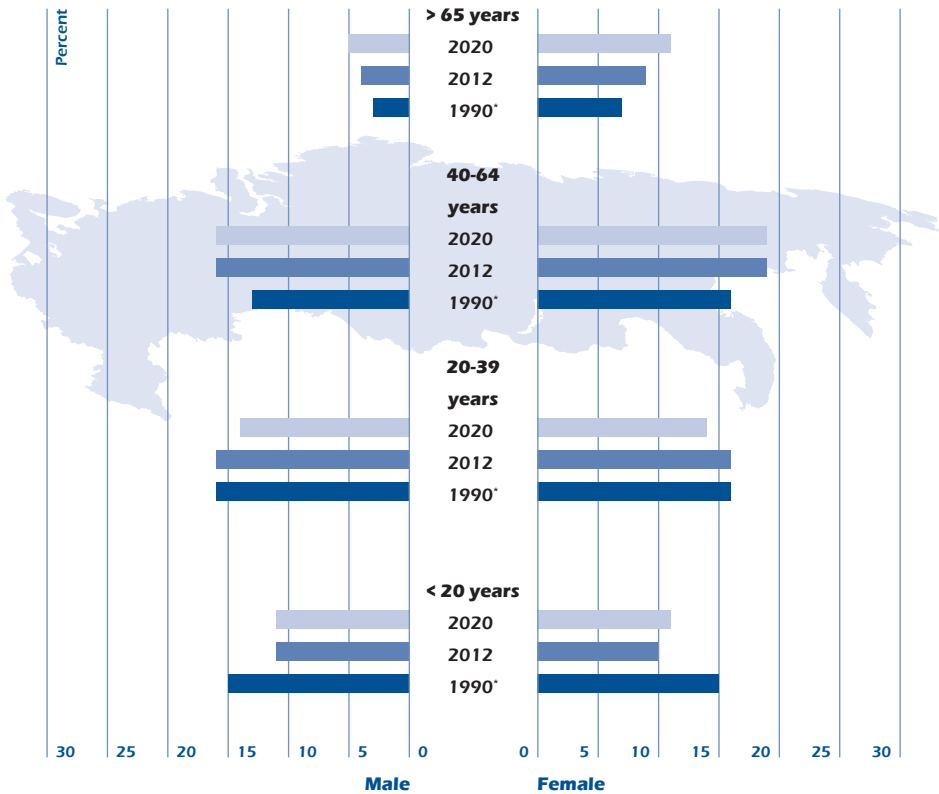
- EHRA White Book 2012
- Estimation
- National Registry
- National Registry, WG of Arrhythmias, not mandatory, incomplete data

# **RUSSIAN FEDERATION**



# 1. Statistics

## Age pyramid for Russian Federation



\* 1990 or last available



<b>Healthcare data</b>		
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)	8,1	2006

<b>Demographic information</b>		
Population	142.517.670	2012
Population annual growth rate (%)	0,0	2012
Life expectancy at birth	70	2012
Death rate (per 1.000 population)	14,2	2010
Live births (per 1.000 population)	12,3	2010

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	1.953,56	2012*
Gross domestic product per capita (U.S dollar-units)	13.764,78	2012*
Total expenditure on health as % of GDP	7,1	2010
General government expenditure on health as % of total expenditure on health	63,4	2009
Private expenditure on health as % of total expenditure on health	36,6	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	55,5%

## 3. Healthcare System

National and Private healthcare systems

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2011	2012
Public insurance company	90%	85%
Private insurance company	7%	10%
Private co-payment	3%	5%

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

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

Comments: only in the private sector





### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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 type="checkbox"/>	<input checked="" 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"/>
Body issuing the guidelines: not available	

## 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"/>	Bakoulev Center, Moscow
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bakoulev Center, Moscow
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"/>	Bakoulev Center, Moscow

**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, surgeon
ICD or pacemaker implants	Yes	Cardiologist, surgeon

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

Russian Society of Arrhythmology (RSCA)

**Required period of training to perform implantations** **Yes**      **3 years****Suggested period of training to perform implantations** **Yes**      **3 years****Training centres availability**

Pacemaker	<b>10</b>
ICD implantation	<b>7</b>
CRT implantation	<b>7</b>
Electrophysiological studies and catheter ablation	<b>11</b>
Atrial fibrillation ablation	<b>5</b>

**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

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	108	140
Total Pacemaker units implanted	30.006	30.218
Thereof, New implants	24.510	25.526
Thereof, Replacements	5.496	4.692

<b>Specialist performing implants</b>		
Cardiologists	Yes	50%
Surgeons	Yes	50%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	41	42
Total CRT units implanted	793	911
Thereof, CRT pacemaker	365	370
Thereof, CRT ICD	428	541

<b>Specialist performing implants</b>		
Cardiologists	Yes	40%
Surgeons	Yes	60%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	57	57
Total ICD units implanted	1.355	1.580
Thereof, Single chamber	428	434
Thereof, Dual chamber	380	558
First implants	480	1.326
Replacements	201	254

Specialist performing implants		
Cardiologists	Yes	40%
Surgeons	Yes	60%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	not available
Total loop recorders implanted	not available	not available

Specialist performing implants		
Cardiologists	No	0%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	not available	not available
Total lead extraction procedures	not available	not available



<b>Specialist performing lead extractions</b>		
Cardiologists	No	0%
Surgeons	No	0%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
	Official name	
ICD	Yes	RSCA
Pacing	Yes	RSCA
Electrophysiology	Yes	RSCA

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

Official name: Bakoulev Center, Moscow

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	71	71
Number of ablations performed	16.380	17.130
Mean number of ablations per centre	230	240
Number of AF ablations	3.727	3.905
Number of ablation centres (> 50 AF ablations)	50	50
Number of ablation centres (> 10 VT ablations on structural heart diseases)	52	52

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	No answer
European	No answer

Necessity of guideline translation to national language	No
---------------------------------------------------------	----

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

1 = no obstacle

5 = great obstacle

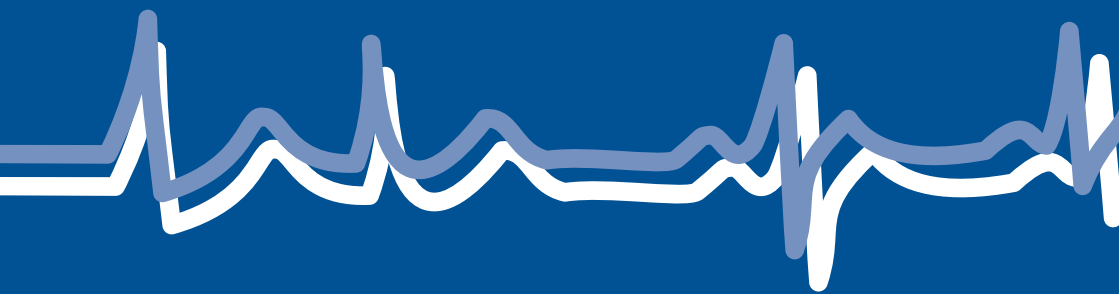
\* (1 = top; 6 = lowest)

## 13. Sources

Name of National Cardiac Society, National Working Group or arrhythmia body
· Russian Society of Arrhythmology (RSCA)

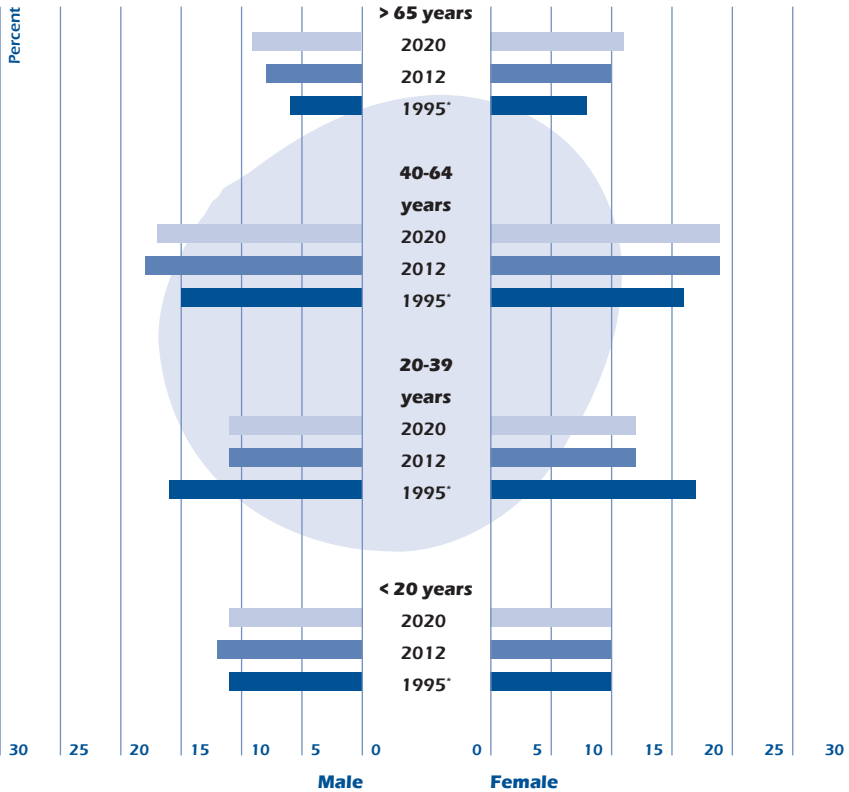
All sources that were used to fill out the questionnaire for the EHRA White Book 2013
· EHRA White Book 2012
· Survey from professional association (RSCA)
· Official statistics
· Estimation
· National Ministry of Health, RSCA

# SAN MARINO



# 1. Statistics

## Age pyramid for San Marino



\* 1990 or last available





<b>Healthcare data</b>		
Hospitals (per 100.000 population)	1,0	1950
Beds (per 100.000 population)	352,8	2011
Density of physicians (per 1.000 population)	4,8	2011
Density of nurses (per 1.000 population)	8,2	2011

<b>Demographic information</b>		
Population	32.140	2012
Population annual growth rate (%)	1,0	2012
Life expectancy at birth	83	2012
Death rate (per 1.000 population)	7,3	2005
Live births (per 1.000 population)	10,2	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	1.85	2012*
Gross domestic product per capita (U.S dollar-units)	not available	not available
Total expenditure on health as % of GDP	7.1	2010
General government expenditure on health as % of total expenditure on health	85.2	2009
Private expenditure on health as % of total expenditure on health	14.6	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	35%

## 3. Healthcare System

The National Health System in the Republic of San Marino: every citizen in the Republic of San Marino is provided with health care system which covers all expenses related to medical care. The system does not provide support for dental care for citizens from 18 to 65 years old.

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	not available	0%
Uninsured citizens	not available	100%

Distribution of insurance modality		
	2011	2012
Public insurance company	100%	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 (eg. 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 (eg. 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 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"/>

<b>Specialist required for</b>		
		Specialist
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist

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

Cardiologist

**Required period of training to perform implantations** **Yes** **5 years**

**Suggested period of training to perform implantations** **Yes** **5 years**

**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)** **0**

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

**Percentage of academic centres among all practicing implanting devices centres** **0%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	1	1
Total Pacemaker units implanted	16	26
Thereof, New implants	12	15
Thereof, Replacements	4	11

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	1	1
Total CRT units implanted	3	2
Thereof, CRT pacemaker	0	1
Thereof, CRT ICD	3	1

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	1	1
Total ICD units implanted	19	13
Thereof, Single chamber	3	1
Thereof, Dual chamber	3	4
First implants	9	5
Replacements	10	8

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	1	1
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		
	2011	2012
Hospitals performed lead extractions	0	0
Total lead extraction procedures	not available	0



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	Yes	ICD database
Pacing	Yes	PM database
Electrophysiology	Yes	General database

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

<b>Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions</b>	<b>Yes</b>

Official name: State Hospital UOC Cardiology

## 11. Interventional electrophysiology

	2011	2012
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 ablation centres (> 10 VT ablations on structural heart diseases)	0	0

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	No

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

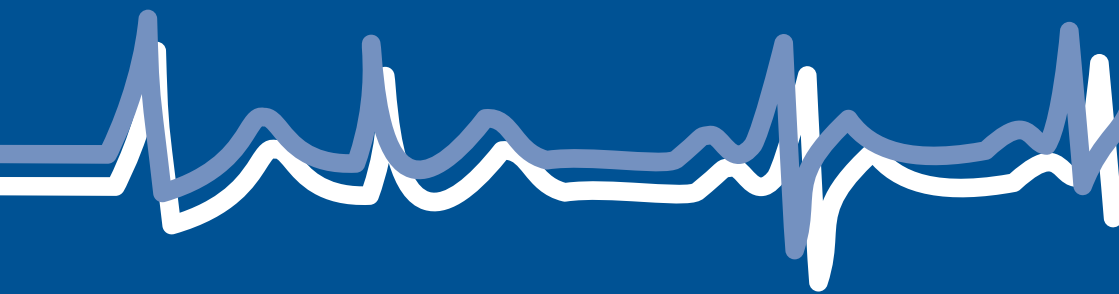
- San Marino Society of Cardiology

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

- EHRA White Book 2012
- Survey from sanitary surveillance
- National Health System
- National Health System
- Ministry of Institute
- Cardiovascular database
- Official registry of Cardiology Unit
- Estimation
- PM database
- CRT database
- ICD database
- Loop recorder database
- General database

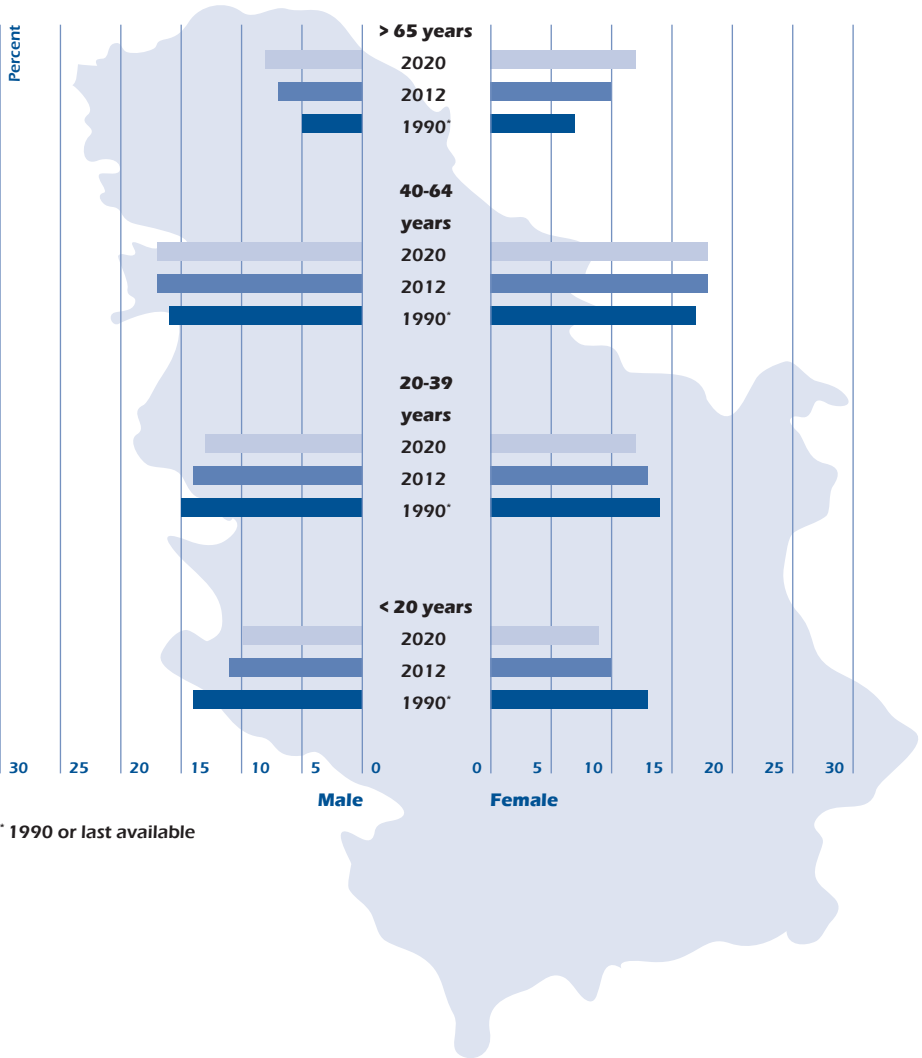


# SERBIA



# 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	2011
Density of nurses (per 1.000 population)	6.3	2011

#### Demographic information

Population	7.276.604	2012
Population annual growth rate (%)	-0,5	2012
Life expectancy at birth	75	2012
Death rate (per 1.000 population)	14,2	2011
Live births (per 1.000 population)	9,0	2011

#### Economic information

Gross domestic product (U.S dollar-billions)	37,20	2012*
Gross domestic product per capita (U.S dollar-units)	4.916,76	2012*
Total expenditure on health as % of GDP	10,4	2010
General government expenditure on health as % of total expenditure on health	61,9	2009
Private expenditure on health as % of total expenditure on health	38,1	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	56%	56%

## 3. Healthcare System

The National Healthcare system in Serbia is provided through an established network of health centers and primary care health stations. As a secondary and tertiary care, general hospitals, university clinical centers and specialized institutions are providing services. The private Healthcare is not incorporated into the national Healthcare system.

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

Requirements: Permanent and temporary work, members of the family of permanent or temporary workers, persons on state pension.

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2011	2012
Public insurance company	100%	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

Comments: No co-payment for any procedure or implanted device, but it is mandatory 5% of implant cost, if not over 200 Euros (200 E is max.)



### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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: No reimbursement at all					State Insurance Fund is giving the money per implant and per procedure to every and each 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: Budget limit is the main obstacle, although ESC guidelines are appreciated

## 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"/>	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 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 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
ICD or pacemaker implants	Yes	Cardiologist-EP

**Official national competency guidelines for electrophysiological studies or catheter ablation****No****Required period of training to perform implantations****Yes** 6 months for pacemaker implantation and follow up, 12 months for ICD and CRT implantation and follow up**Suggested period of training to perform implantations****Yes** **6 months****Training centres availability**

Pacemaker	5
ICD implantation	4
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****100%****Percentage of academic centres among all practicing implanting devices centres****60%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	18	17
Total Pacemaker units implanted	3.277	3.139
Thereof, New implants	2.766	2.926
Thereof, Replacements	491	213

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	6	6
Total CRT units implanted	293	303
Thereof, CRT pacemaker	226	238
Thereof, CRT ICD	67	65

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	8	10
Total ICD units implanted	322	277
Thereof, Single chamber	64	222
Thereof, Dual chamber	258	55
First implants	not available	270
Replacements	not available	7

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	11	11
Total loop recorders implanted	24	16

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	5	5
Total lead extraction procedures	not available	53





<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	90%
Surgeons	Yes	10%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
		Official name
ICD	Yes	National referral pacemaker center - registry
Pacing	Yes	National referral pacemaker center - registry
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>Yes</b>
-------------------------------------------------------------------------------------	------------

Official name: Ministry of health

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

Official name: Ministry of health

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	3	3
Number of ablations performed	911	965
Mean number of ablations per centre	300	300
Number of AF ablations	55	105
Number of ablation centres (> 50 AF ablations)	1	1
Number of ablation centres (> 10 VT ablations on structural heart diseases)	2	2

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	5
Lack of operators	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

### Other obstacles to guideline implementation

State centralized supply

## 13. Sources

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

· WG on Cardiac pacing, Serbian society of Cardiology

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

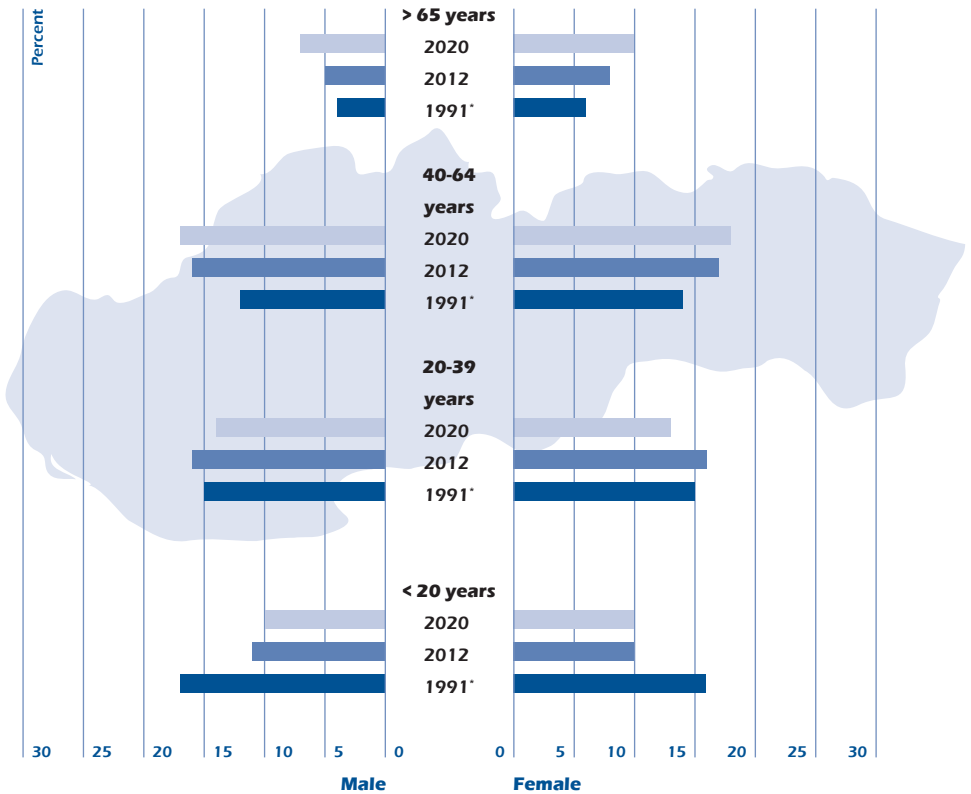
- EHRA White Book 2012
- National institute for statistics in medicine „Jovan Jovanovic Batut“
- National referral pacemaker center - registry
- Survey - National referral pacemaker center
- National referral pacemaker center
- Ministry of health

# SLOVAKIA



# 1. Statistics

## Age pyramid for Slovakia



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	2,5	2010
Beds (per 100.000 population)	641,7	2010
Density of physicians (per 1.000 population)	3,0	2007
Density of nurses (per 1.000 population)	6,4	2010

<b>Demographic information</b>		
Population	5.483.088	2012
Population annual growth rate (%)	0,1	2012
Life expectancy at birth	76	2012
Death rate (per 1.000 population)	9,8	2010
Live births (per 1.000 population)	11,1	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	91,19	2012*
Gross domestic product per capita (U.S dollar-units)	16.726,42	2012*
Total expenditure on health as % of GDP	8,8	2010
General government expenditure on health as % of total expenditure on health	65,7	2009
Private expenditure on health as % of total expenditure on health	34,3	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	53%	53%

## 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.

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

Requirements: citizenship or permanent residence, no further requirements, health insurance coverage is mandatory, for the unemployed population the coverage is guaranteed by the constitution and paid by the government

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2011	2012

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 (eg. 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 (eg. 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 budget plus strict adherence to guidelines of the Slovak Heart Rhythm Association / Slovak Society of Cardiology from 2007: Hatala, R., Kaliská, G., Margitfalvi, P., Stancák, B.: ODPORÚČANIA PRE IMPLANTÁCIE ICD (IMPLANTOVATELNÝCH KARDIOVERTEROV – DEFIBRILÁTOROV) V PODMIENKACH KLINICKEJ PRAXE V SLOVENSKEJ REPUBLIKE. Kardiol.prax 2007, vol. 5, 3, S1:1-7

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"/>
Body issuing the 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ministry of Health
Invasive electrophysiology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ministry of Health
Allied professionals	<input type="checkbox"/>	<input checked="" 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 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
ICD or pacemaker implants	Yes	Cardiologist or surgeon

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

**Required period of training to perform implantations** **No** **0 years**

**Suggested period of training to perform implantations** **No** **0 years**

**Training centres availability**

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

**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** **85%**





## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	13	13
Total Pacemaker units implanted	3.382	3.111
Thereof, New implants	2.905	2.579
Thereof, Replacements	477	532

<b>Specialist performing implants</b>		
Cardiologists	Yes	74%
Surgeons	Yes	26%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	4	4
Total CRT units implanted	329	332
Thereof, CRT pacemaker	78	70
Thereof, CRT ICD	251	262

<b>Specialist performing implants</b>		
Cardiologists	Yes	99%
Surgeons	Yes	1%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	4	4
Total ICD units implanted	545	577
Thereof, Single chamber	438	455
Thereof, Dual chamber	107	122
First implants	502	500
Replacements	43	77

Specialist performing implants		
Cardiologists	Yes	89%
Surgeons	Yes	11%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	4	6
Total loop recorders implanted	not available	89

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	3	3
Total lead extraction procedures	not available	136



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	90%
Surgeons	Yes	10%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
		Official name
ICD	Yes	SLOVIMPULZ
Pacing	Yes	SLOVIMPULZ
Electrophysiology	Yes	SLOVABLO

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	4	3
Number of ablations performed	972	922
Mean number of ablations per centre	243	307
Number of AF ablations	94	101
Number of ablation centres (> 50 AF ablations)	1	1
Number of ablation centres (> 10 VT ablations on structural heart diseases)	3	1

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	No
European	Yes

Necessity of guideline translation to national language	Yes

Obstacles to guideline implementation	Ranking of importance <sup>*</sup>						
	1	2	3	4	5	6	
Lack of centres	<input type="checkbox"/>	<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 checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	6
Lack of trained personnel	<input type="checkbox"/>	<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 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

## 13. Sources

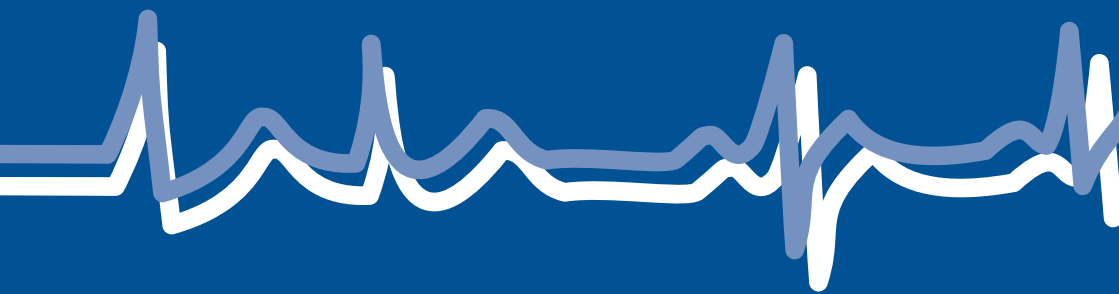
### Name of National Cardiac Society, National Working Group or arrhythmia body

- Slovak Heart Rhythm Association (Slovenska asociacia srdcovych arytmií)

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

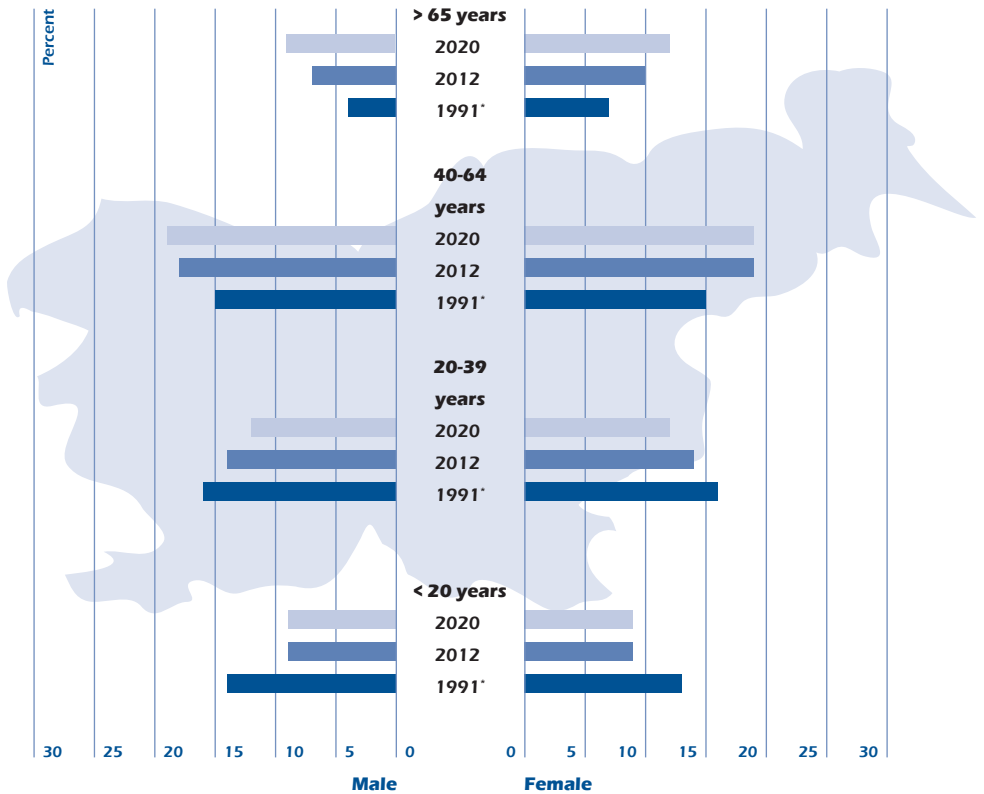
- EHRA White Book 2012
- Official statistics
- Slovak Heart Rhythm Association
- Official statistic - Ministries of Education and Health
- Ministries of Education and Health
- National electronic online PM / ICD registry managed by the Slovak Heart Rhythm Association
- National electronic online catheter ablation registry managed by the Slovak Heart Rhythm Association
- Sales data
- Survey

# SLOVENIA



# 1. Statistics

## Age pyramid for Slovenia



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	1,4	2011
Beds (per 100.000 population)	457,1	2010
Density of physicians (per 1.000 population)	2,4	2010
Density of nurses (per 1.000 population)	8,2	2010

<b>Demographic information</b>		
Population	1.996.617	2012
Population annual growth rate (%)	-0,2	2012
Life expectancy at birth	78	2012
Death rate (per 1.000 population)	9,1	2010
Live births (per 1.000 population)	10,6	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	45,42	2012*
Gross domestic product per capita (U.S dollar-units)	22.460,94	2012*
Total expenditure on health as % of GDP	9,4	2010
General government expenditure on health as % of total expenditure on health	73,4	2009
Private expenditure on health as % of total expenditure on health	26,6	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	not available

## 3. Healthcare System

Health care services in Slovenia are financed mainly by contributions to compulsory health insurance, premiums for voluntary health insurance (VHI) and through taxes. Although entitlement to health care services is universal in Slovenia, access to some health care services is limited due to lack of providers or long waiting times. Health care services at the primary level are provided mainly by state-owned primary health care institutions as well as by independent general practitioners (GPs). Providers of primary health care act as gatekeepers for specialist services.

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	not available	99%
Uninsured citizens	not available	1%

Distribution of insurance modality		
	2011	2012
Public insurance company	not available	85%
Private insurance company	not available	13%
Private co-payment	not available	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 (eg. 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 (eg. 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 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"/>

<b>Specialist required for</b>		
		Specialist
Catheter ablation	Yes	Internal medicine or cardiology and vascular medicine
ICD or pacemaker implants	Yes	Surgeon, cardiologist, internist

<b>Official national competency guidelines for electrophysiological studies or catheter ablation</b>	<b>No</b>
------------------------------------------------------------------------------------------------------	-----------

<b>Required period of training to perform implantations</b>	<b>No</b>	<b>0 years</b>
-------------------------------------------------------------	-----------	----------------

<b>Suggested period of training to perform implantations</b>	<b>No</b>	<b>0 years</b>
--------------------------------------------------------------	-----------	----------------

<b>Training centres availability</b>	
Pacemaker	2
ICD implantation	2
CRT implantation	2
Electrophysiological studies and catheter ablation	2
Atrial fibrillation ablation	2

<b>Number of universities (Schools of Medicine)</b>	<b>2</b>
-----------------------------------------------------	----------

<b>Percentage of academic centres among all practicing EP centres</b>	<b>100%</b>
-----------------------------------------------------------------------	-------------

<b>Percentage of academic centres among all practicing implanting devices centres</b>	<b>33%</b>
---------------------------------------------------------------------------------------	------------



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	5	6
Total Pacemaker units implanted	1.295	1.333
Thereof, New implants	1.023	1.030
Thereof, Replacements	272	303

<b>Specialist performing implants</b>		
Cardiologists	Yes	10%
Surgeons	Yes	90%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	2	2
Total CRT units implanted	90	139
Thereof, CRT pacemaker	35	63
Thereof, CRT ICD	55	76

<b>Specialist performing implants</b>		
Cardiologists	Yes	95%
Surgeons	Yes	5%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	2	3
Total ICD units implanted	144	122
Thereof, Single chamber	105	103
Thereof, Dual chamber	39	19
First implants	not available	0
Replacements	not available	0

Specialist performing implants		
Cardiologists	Yes	14%
Surgeons	Yes	86%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	2	4
Total loop recorders implanted	22	26

Specialist performing implants		
Cardiologists	Yes	50%
Surgeons	Yes	50%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	not available	2
Total lead extraction procedures	not available	not available



<b>Specialist performing lead extractions</b>		
Cardiologists	No	not available
Surgeons	Yes	not available

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		Official name
ICD	Yes	Working Group at the Slovenian Society of Cardiology
Pacing	Yes	Working Group at the Slovenian Society of Cardiology
Electrophysiology	Yes	Working Group at the Slovenian Society of Cardiology

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	2	2
Number of ablations performed	324	272
Mean number of ablations per centre	162	136
Number of AF ablations	118	109
Number of ablation centres (> 50 AF ablations)	1	1
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	1

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No answer
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	5

1 = no obstacle

5 = great obstacle

\* (1 = top; 6 = lowest)

## 13. Sources

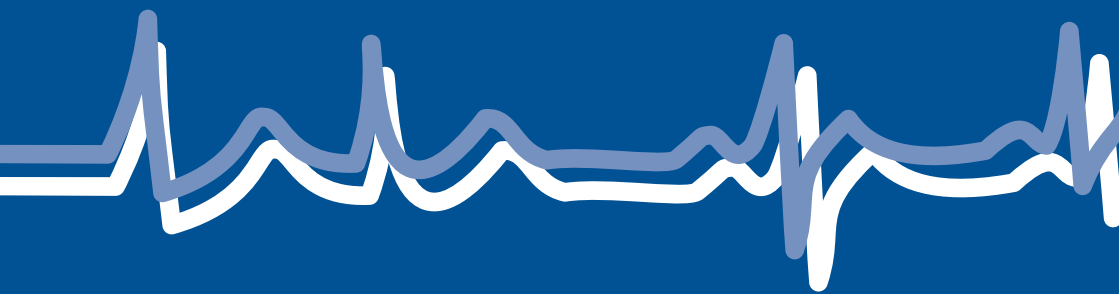
### Name of National Cardiac Society, National Working Group or arrhythmia body

- Slovenian Society of Cardiology, Working Group on Arrhythmias

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

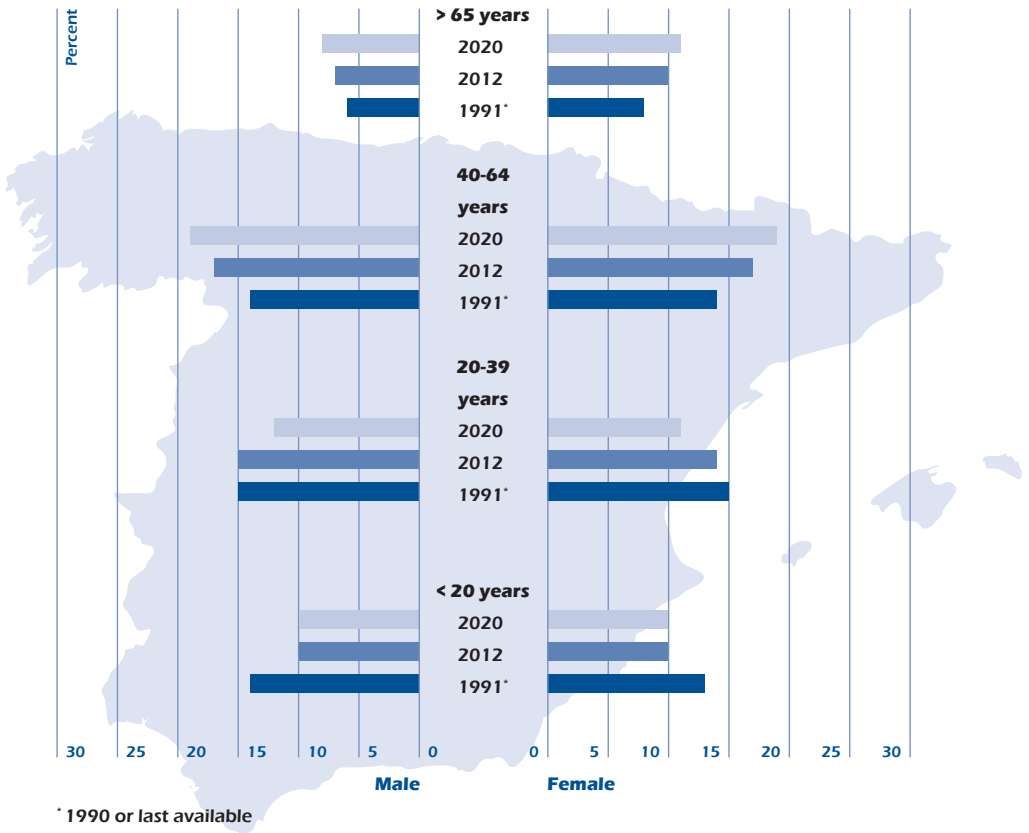
- EHRA White Book 2012
- Survey from professional association
- Estimation
- Working Group at the Slovenian Society of Cardiology

# SPAIN



# 1. Statistics

## Age pyramid for Spain







#### Healthcare data

Hospitals (per 100.000 population)	1,7	2010
Beds (per 100.000 population)	315,7	2010
Density of physicians (per 1.000 population)	4,0	2011
Density of nurses (per 1.000 population)	5,0	2010

#### Demographic information

Population	47.042.984	2012
Population annual growth rate (%)	0,6	2012
Life expectancy at birth	81	2012
Death rate (per 1.000 population)	8,3	2010
Live births (per 1.000 population)	10,6	2010

#### Economic information

Gross domestic product (U.S dollar-billions)	1.340,27	2012*
Gross domestic product per capita (U.S dollar-units)	28.976,21	2012*
Total expenditure on health as % of GDP	9,5	2010
General government expenditure on health as % of total expenditure on health	73,6	2009
Private expenditure on health as % of total expenditure on health	26,4	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	31,5%	37,3%

## 3. Healthcare System

Spanish healthcare system 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	Yes
Requirements: To be registered as a residents	

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	99%
Uninsured citizens	0%	1%

Distribution of insurance modality		
	2011	2012
Public insurance company	95%	99%
Private insurance company	15%	15%
Private co-payment	15%	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: No in public system, in which devices are delivered without additional costs. In private insurance it varies from company to company depending on the level of insurance. In the vast majority of cases patients have to pay the cost of the device, but neither the cost of hospitalization nor medical fees, whereas in some, devices are covered.



### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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"/>

Comments: These restrictions vary from hospital to hospital in public system.

## 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"/>	Accreditación en estimulación cardiaca (Accreditation in Cardiac Stimulation)
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Accreditación de la Formación Específica y Excelencia para la Práctica de Electrofisiología Clínica Cardiaca (Accreditation in Cardiac Electrophysiology)
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"/>	Accreditación de Centros de Formación Específica y Excelencia para la Práctica de Electrofisiología Cardiaca Intervencionista (Accreditation of Centers for specific training and excellence in Cardiac Electrophysiology)

**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: Our National Society has its own certification system, with exam in spanish and specific requirements in terms of having been trained in an Accredited Center. We encourage spanish arrhythmologists to participate in EHRA certification but it does not replace national accreditationl system

**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**

Guidelines of the Spanish Society of Cardiology on Requirements and Equipment in Electrophysiology. Brugada J, Alzueta FJ, Asso A, Farré J, Olalla JJ, Tercedor L. Rev Esp Cardiol 2001; 54: 887-891

**Required period of training to perform implantations****No****0 years****Suggested period of training to perform implantations****No****0 years****Training centres availability**

Pacemaker	8
ICD implantation	0
CRT implantation	0
Electrophysiological studies and catheter ablation	21
Atrial fibrillation ablation	21

**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 20%**

## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	180	220
Total Pacemaker units implanted	34.299	34.710
Thereof, New implants	not available	25.339
Thereof, Replacements	not available	9.371

<b>Specialist performing implants</b>		
Cardiologists	Yes	65%
Surgeons	Yes	30%
Other:	Yes	5%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	100	125
Total CRT units implanted	2.606	2.490
Thereof, CRT pacemaker	726	709
Thereof, CRT ICD	1.880	1.781

<b>Specialist performing implants</b>		
Cardiologists	Yes	98%
Surgeons	Yes	2%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	167	161
Total ICD units implanted	3.481	3.434
Thereof, Single chamber	2.499	2.424
Thereof, Dual chamber	982	1.011
First implants	2.443	2.619
Replacements	1.038	815

Specialist performing implants		
Cardiologists	Yes	8,9%
Surgeons	Yes	1,17%
Other: Intensive care specialists	Yes	2%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	146	140
Total loop recorders implanted	1.756	1.724

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	No	1%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	16	16
Total lead extraction procedures	not available	not available



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	5%
Surgeons	Yes	95%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

### **National registry for**

		<b>Official name</b>
ICD	Yes	Spanish Implantable Cardioverter-Defibrillator Registry. Eighth Official Report of the Spanish Society of Cardiology Working Group on Implantable Cardioverter-Defibrillators (2011). Alzueta J, Fernandez JM. Rev Esp Cardiol. 2012;65(11):1019–1029.
Pacing	Yes	Spanish Pacemaker Registry. Ninth Official Report of the Spanish Society of Cardiology Working Group on Cardiac Pacing (2011). Coma Samartin R, Sancho-Tello de Carranza MJ, Ruiz Mateas F, Leal del Ojo Gonzalez J, Fidalgo Andresa ML. Rev Esp Cardiol. 2012;65(12):1117–1132.
Electrophysiology	Yes	Spanish Catheter Ablation Registry. 11th Official Report of the Spanish Society of Cardiology Working Group on Electrophysiology and Arrhythmias (2011). Diaz-Infante E, Macias Gallego A, Ferrero de Loma-Osorio A. Rev Esp Cardiol. 2012;65(10):928–936.

<b>Availability of a national quality insurance system or complication registry</b>	<b>Yes</b>
-------------------------------------------------------------------------------------	------------

Official name: Spanish Catheter Ablation Registry. 11th Official Report of the Spanish Society of Cardiology Working Group on Electrophysiology and Arrhythmias (2011). Diaz-Infante E, Macias Gallego A, Ferrero de Loma-Osorio A. Rev Esp Cardiol. 2012;65(10):928–936. [Updated with preliminary data on 2012]

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

Official name: Sección de Electrofisiología y Arritmias de la Sociedad Española de Cardiología (Arrhythmias Working Group of Spanish Society of Cardiology)

## 11. Interventional electrophysiology

	<b>2011</b>	<b>2012</b>
Number of ablation centres	60	74
Number of ablations performed	8.812	9.662
Mean number of ablations per centre	161	146
Number of AF ablations	1.445	1.535
Number of ablation centres (> 50 AF ablations)	5	8
Number of ablation centres (> 10 VT ablations on structural heart diseases)	12	20

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 12. Guidelines

<b>Guidelines adhered to ICD implants and pacemaker implants</b>	
National	No answer
U.S.	No answer
European	No answer

<b>Necessity of guideline translation to national language</b>	<b>No</b>
----------------------------------------------------------------	-----------

<b>Obstacles to guideline implementation</b>	<b>Ranking of importance<sup>*</sup></b>						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	4
Low awareness of guidelines	<input type="checkbox"/>	<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"/>	<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**

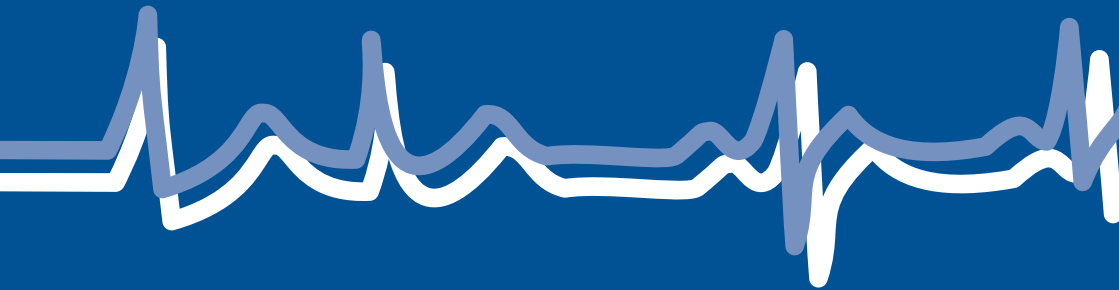
- Seccion de Electrofisiologia y Arritmias de la Sociedad Española de Cardiología (Working Group of Arrhythmias of Spanish Society of Cardiology)

### **All sources that were used to fill out the questionnaire for the EHRA White Book 2013**

- EHRA White Book 2012
- Ministry of health
- List of currently accredited centers for training in EP
- Ministry of education
- Spanish Catheter Ablation Registry. 11th Official Report of the Spanish Society of Cardiology Working Group on Electrophysiology and Arrhythmias (2011). Diaz-Infante E, Macias Gallego A, Ferrero de Loma-Osorio A. Rev Esp Cardiol. 2012;65(10):928–936. (Updated with preliminary data on 2012)
- Spanish Pacemaker Registry. Ninth Official Report of the Spanish Society of Cardiology Working Group on Cardiac Pacing (2011). Coma Samartin R, Sancho-Tello de Carranza MJ, Ruiz Mateas F, Leal del Ojo Gonzalez J, Fidalgo Andresa ML. Rev Esp Cardiol. 2012;65(12):1117–1132. (Updated)
- Estimation
- Spanish Implantable Cardioverter-Defibrillator Registry. Eighth Official Report of the Spanish Society of Cardiology Working Group on Implantable Cardioverter-Defibrillators (2011). Alzueta J, Fernandez JM. Rev Esp Cardiol. 2012;65(11):1019–1029. (Updated).
- Spanish Pacemaker Registry. Ninth Official Report of the Spanish Society of Cardiology Working Group on Cardiac Pacing (2011). Coma Samartin R, Sancho-Tello de Carranza MJ, Ruiz Mateas F, Leal del Ojo Gonzalez J, Fidalgo Andresa ML. Rev Esp Cardiol. 2012;65(12):1117–1132. (Updated)
- Sales data

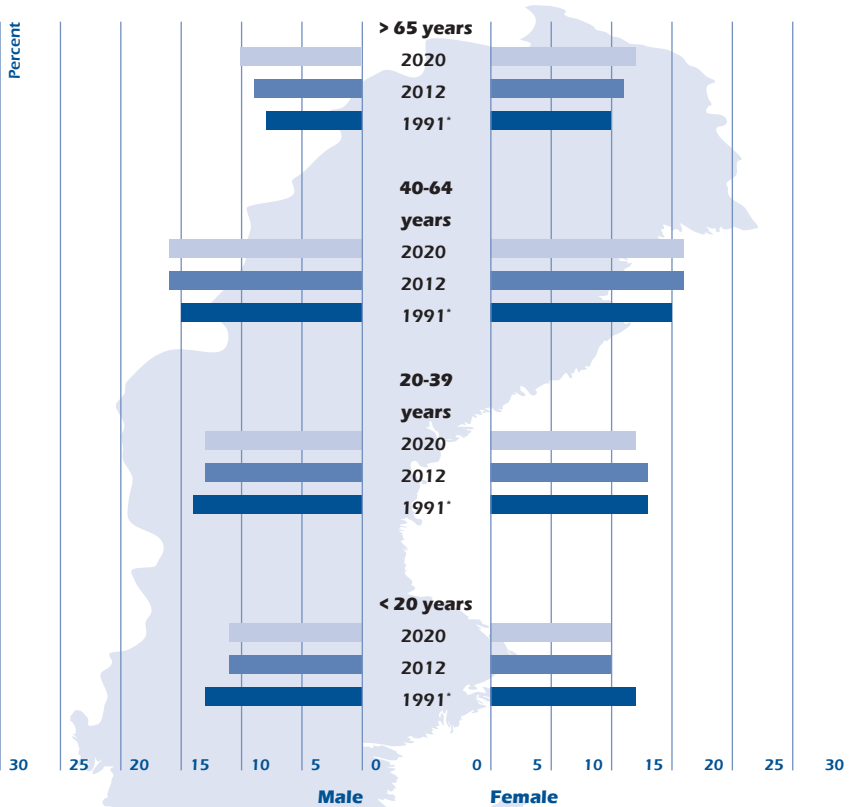


# SWEDEN



# 1. Statistics

## Age pyramid for Sweden



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	0,9	2003
Beds (per 100.000 population)	272,6	2010
Density of physicians (per 1.000 population)	3,8	2009
Density of nurses (per 1.000 population)	not available	not available

<b>Demographic information</b>		
Population	9.103.788	2012
Population annual growth rate (%)	0,2	2012
Life expectancy at birth	81	2012
Death rate (per 1.000 population)	9,7	2010
Live births (per 1.000 population)	11,8	2011

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	520,26	2012*
Gross domestic product per capita (U.S dollar-units)	54.879,37	2012*
Total expenditure on health as % of GDP	9,6	2010
General government expenditure on health as % of total expenditure on health	81,5	2009
Private expenditure on health as % of total expenditure on health	18,5	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	39%

## 3. Healthcare System

Sweden's healthcare system is compulsory and tax based. It is region based, but publicly operated. There are three levels of organisations: national, regional and local. The National sets the fundamental objectives and assures it runs efficiently, the regional level provides and finances the health services and the local level (290 municipalities) is responsible for delivering and financing social welfare services. (website National Board of Health and Welfare)

Basic insurance availability	Yes
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Requirements: Swedish citizen ship. It is a public insurance.

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2011	2012
Public insurance company	100%	95%
Private insurance company	5%	0%
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

Comments: Co-payment if private hospital other than what the home hospital refer patient to.

### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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: This is the case for public hospitals

The hospital that is responsible for the Swedish device registry receives reimbursement from device 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 checked="" type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Body issuing the guidelines: National Board of Health and Welfare

Comments: There are no restrictions in practice since no authority checks for adherence to 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"/>

Comments: There is not even an official exam for becoming a specialist in cardiology. There is one voluntarily.

### Specialist required for

		Specialist
Catheter ablation	Yes	No formal requirements but cardiologists and clinical physiologists are the only ones performing ablation procedures.
ICD or pacemaker implants	Yes	No formal requirements but cardiologists, surgeons, anesthesiologists and clinical physiologists are the only ones performing device implantations.

### Official national competency guidelines for electrophysiological studies or catheter ablation

No

Required period of training to perform implantations **No** **0 years**

Suggested period of training to perform implantations **No answer** **0 years**

### Training centres availability

Pacemaker	7
ICD implantation	7
CRT implantation	7
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 **25%**



## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	43	43
Total Pacemaker units implanted	not available	9.476
Thereof, New implants	not available	6.687
Thereof, Replacements	not available	2.789

<b>Specialist performing implants</b>		
Cardiologists	Yes	95%
Surgeons	Yes	4%
Other: Anesthesiologists	Yes	1%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	not available	33
Total CRT units implanted	not available	443
Thereof, CRT pacemaker	not available	214
Thereof, CRT ICD	not available	229

<b>Specialist performing implants</b>		
Cardiologists	Yes	not available
Surgeons	Yes	not available
Other: Anesthesiologists	Yes	not available

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	35
Total ICD units implanted	not available	1.758
Thereof, Single chamber	not available	348
Thereof, Dual chamber	not available	1.410
First implants	not available	1.301
Replacements	not available	457

Specialist performing implants		
Cardiologists	Yes	not available
Surgeons	Yes	not available
Other: Anesthesiologists	Yes	not available

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	45
Total loop recorders implanted	not available	649

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		
	2011	2012
Hospitals performed lead extractions	2	3
Total lead extraction procedures	not available	198





<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	80%
Surgeons	Yes	20%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>
-----------------------------------------------------	------------

<b>National registry for</b>		
		Official name
ICD	Yes	Swedish Pacemaker and ICD registry
Pacing	Yes	Swedish Pacemaker and ICD registry
Electrophysiology	Yes	National quality registry for catheter ablation

<b>Availability of a national quality insurance system or complication registry</b>	<b>Yes</b>
-------------------------------------------------------------------------------------	------------

Official name: National quality registry for catheter ablation

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

Official name: Medical product agency. Companies are obliged to report to this institution but they do not coordinate or guide the recalls to each implanting centre.

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	10	10
Number of ablations performed	4.089	4.351
Mean number of ablations per centre	409	435
Number of AF ablations	1.428	1.617
Number of ablation centres (> 50 AF ablations)	not available	9
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	7

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	Yes
European	Yes

Necessity of guideline translation to national language	No
---------------------------------------------------------	----

Obstacles to guideline implementation	Ranking of importance <sup>*</sup>						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	3
Lack of referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	5
Low awareness of guidelines	<input type="checkbox"/>	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1

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

### Other obstacles to guideline implementation

1) Guidelines produced by the National Board of Health and Welfare include cost effectiveness evaluations and priority scores, set centrally by other experts than those experts in arrhythmia related issues defining the content of the guidelines. 2) Guidelines produced by the National Board of Health are usually not updated on an annual basis and therefore delayed a couple of years in relation to international guidelines

## 13. Sources

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

• Swedish Society of Cardiology Swedish Society of Cardiology's HeartRhythmGroup – HRG

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

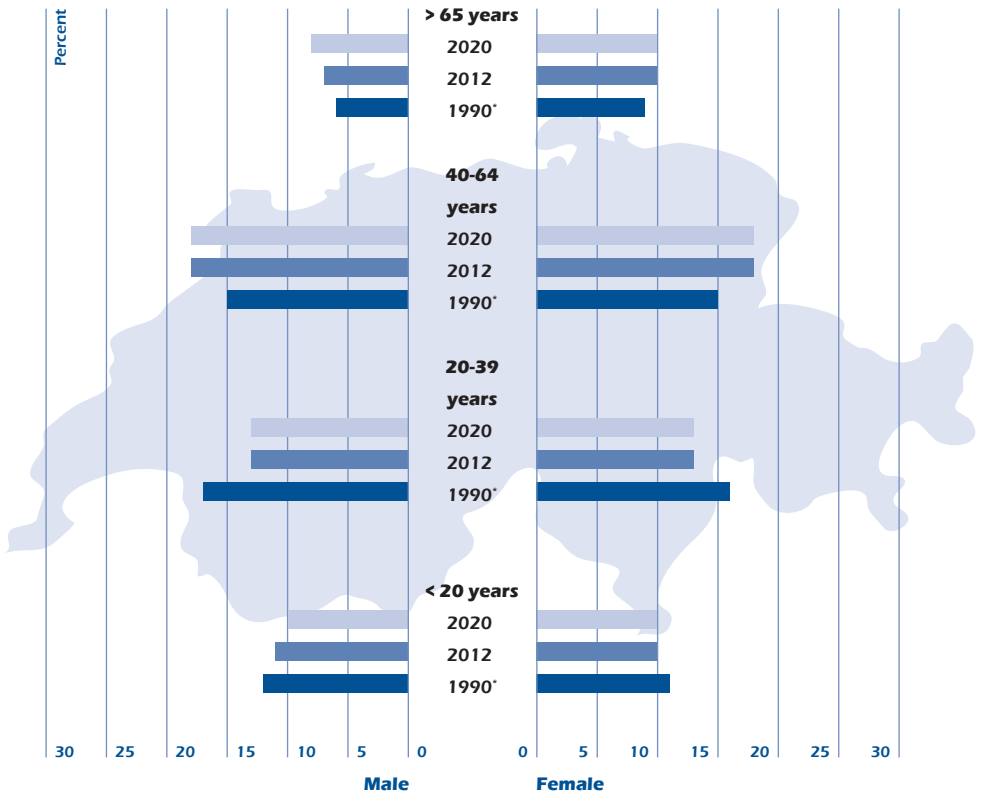
- EHRA White Book 2012
- National Board of Health and Welfare
- Registry for catheter ablation and devices
- Estimations
- Contact with centres
- Knowledge
- Reports from centres implanting

# SWITZERLAND



# 1. Statistics

## Age pyramid for Switzerland



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	3,8	2010
Beds (per 100.000 population)	496,5	2010
Density of physicians (per 1.000 population)	3,8	2010
Density of nurses (per 1.000 population)	16,3	2010

<b>Demographic information</b>		
Population	7.925.517	2012
Population annual growth rate (%)	1,0	2012
Life expectancy at birth	82	2012
Death rate (per 1.000 population)	8,0	2010
Live births (per 1.000 population)	10,3	2010

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	622,86	2012*
Gross domestic product per capita (U.S dollar-units)	77.840,15	2012*
Total expenditure on health as % of GDP	11,5	2010
General government expenditure on health as % of total expenditure on health	59,7	2009
Private expenditure on health as % of total expenditure on health	40,3	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	35,5%	35%

## 3. Healthcare System

The healthcare system in Switzerland is based on a compulsory general insurance for all citizens. There are complementary private insurances which the citizens are free to choose. Compared to other countries, the financial contribution of the citizens to the health care system is relatively high.

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

Requirements: Basic insurance coverage is mandatory. The system is run on a per capita insurance system. Citizens, whose income are below a certain limit or who are unemployed, can apply for subsidies for themselves and their families on a municipal level.

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2011	2012

Public insurance company	72%	70%
Private insurance company	0%	0%
Private co-payment	28%	30%

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 (eg. 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 (eg. 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: In an ambulatory setting physicians receive a per process reimbursement (TARMED system). In the hospital setting, the hospital receives reimbursement according to the DRG system. In privately insured patient a fee for the physician will be charged.					In 2012, Switzerland introduced the DRG-reimbursement system (diagnosis related groups). Every case done in a hospital receives a specific cost weight which will be multiplied with the respective base rate.			

### 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"/>

Body issuing the guidelines: There are no restrictions. However, the Swiss Working group on cardiac pacing and electrophysiology issued minimal requirements for the respective EP procedures.

Comments: Guidelines issued by the Swiss Working group on cardiac pacing and electrophysiology can be viewed at <http://pacemaker.ch/de/richtlinien/default.asp>.

## 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"/>	No specific certification. The working group published minimum requirements that should be fulfilled for execution of the above operations. Members voluntarily claim that they meet these requirements on the publicly accessible website <a href="http://www.pacemaker.ch">www.pacemaker.ch</a>
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 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"/>

Comments: The Guidelines 2011 of the Swiss Working Group for Pacing and Electrophysiology accepted by the Swiss Society of Cardiology advise EHRA certification (passing the EHRA exam).

**Specialist required for**

	Specialist	
Catheter ablation	Yes	Cardiologist
ICD or pacemaker implants	Yes	Cardiologist, Cardiothoracic Surgeon

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

Arbeitsgruppe Herzschrittmacher und Elektrophysiologie der Schweizerischen Gesellschaft für Kardiologie Guidelines 2011 on the treatment by cardiac pacing, defibrillation and percutaneous catheter ablation Cardiovascular Medicine 2011;14(3):86–91; online: <http://pacemaker.ch/de/richtlinien/default.asp>

**Required period of training to perform implantations****No****0 years****Suggested period of training to perform implantations****Yes****At least 1 year****Training centres availability**

Pacemaker	10
ICD implantation	5
CRT implantation	5
Electrophysiological studies and catheter ablation	5
Atrial fibrillation ablation	5

**Number of universities (Schools of Medicine)****5****Percentage of academic centres among all practicing EP centres****25%**



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

## 5. Pacemakers

### Pacemaker units implanted and number of implanting centres

	2011	2012
Implanting centres	76	74
Total Pacemaker units implanted	6.044	5.965
Thereof, New implants	4.458	4.417
Thereof, Replacements	1.586	1.548

### Specialist performing implants

Cardiologists	Yes	90%
Surgeons	Yes	10%

## 6. Cardiac resynchronization therapy devices

### CRT units implanted and number of implanting centres

	2011	2012
Implanting centres	28	34
Total CRT units implanted	567	520
Thereof, CRT pacemaker	238	160
Thereof, CRT ICD	329	360

### Specialist performing implants

Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	37	41
Total ICD units implanted	1.088	1.549
Thereof, Single chamber	not available	397
Thereof, Dual chamber	not available	358
First implants	668*	1.115
Replacements	420	434

\*1 chamber 320, 2 chamber 298

Specialist performing implants		
Cardiologists	Yes	95%
Surgeons	Yes	5%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	74
Total loop recorders implanted	350	327

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	10	10
Total lead extraction procedures	not available	not available



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	50%
Surgeons	Yes	50%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>Yes</b>

<b>National registry for</b>		
		<b>Official name</b>
ICD	Yes	CHPACE WEB <a href="https://www.arrythmia.ch">https://www.arrythmia.ch</a> Annual statistics <a href="http://www.pacemaker.ch">www.pacemaker.ch</a>
Pacing	Yes	CHPACE WEB <a href="https://www.arrythmia.ch">https://www.arrythmia.ch</a> Annual statistics <a href="http://www.pacemaker.ch">www.pacemaker.ch</a>
Electrophysiology	Yes	CHPACE WEB <a href="https://www.arrythmia.ch">https://www.arrythmia.ch</a> Annual statistics <a href="http://www.pacemaker.ch">www.pacemaker.ch</a>

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	21	21
Number of ablations performed	4.679	4.743
Mean number of ablations per centre	223	190
Number of AF ablations	1.595	1.532
Number of ablation centres (> 50 AF ablations)	10	10
Number of ablation centres (> 10 VT ablations on structural heart diseases)	6	11

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	No
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance <sup>*</sup>						
	1	2	3	4	5	6	
Lack of centres	<input checked="" type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	6
Lack of referral	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	1
Low awareness of guidelines	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	4

1 = no obstacle

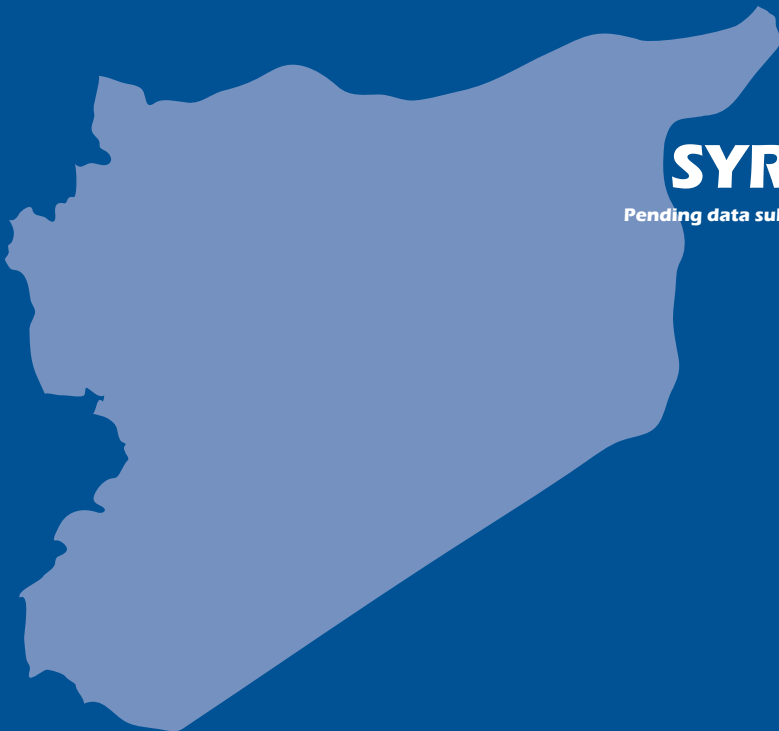
5 = great obstacle

\* (1 = top; 6 = lowest)

## 13. Sources

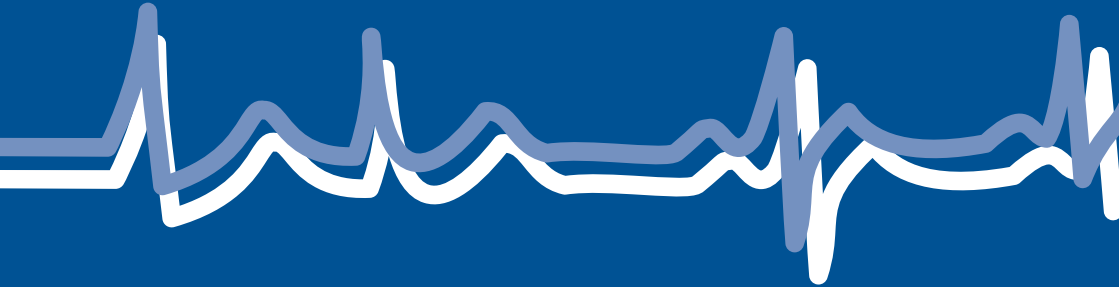
Name of National Cardiac Society, National Working Group or arrhythmia body

All sources that were used to fill out the questionnaire for the EHRA White Book 2013
<ul style="list-style-type: none"> <li>• EHRA White Book 2012</li> <li>• Gesundheitstatistik 2012</li> <li>• Bundesamt für Statistik, ISBN:978-3-303-14178-6</li> <li>• www.santesuisse.ch</li> <li>• Annual statistics www.pacemaker.ch</li> <li>• CHPACE WEB <a href="https://www.arrythmia.ch">https://www.arrythmia.ch</a></li> <li>• <a href="http://pacemaker.ch/de/statistik/default.asp">http://pacemaker.ch/de/statistik/default.asp</a></li> <li>• Estimation</li> <li>• Bundesamt für Gesundheit (BAG)</li> </ul>



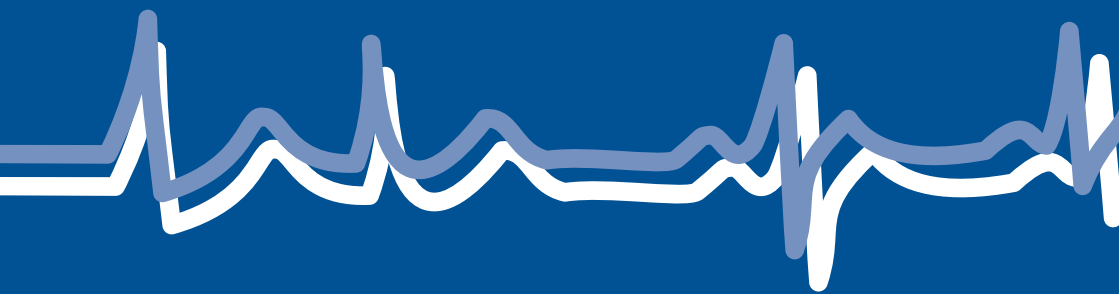
# SYRIA

Pending data submission.



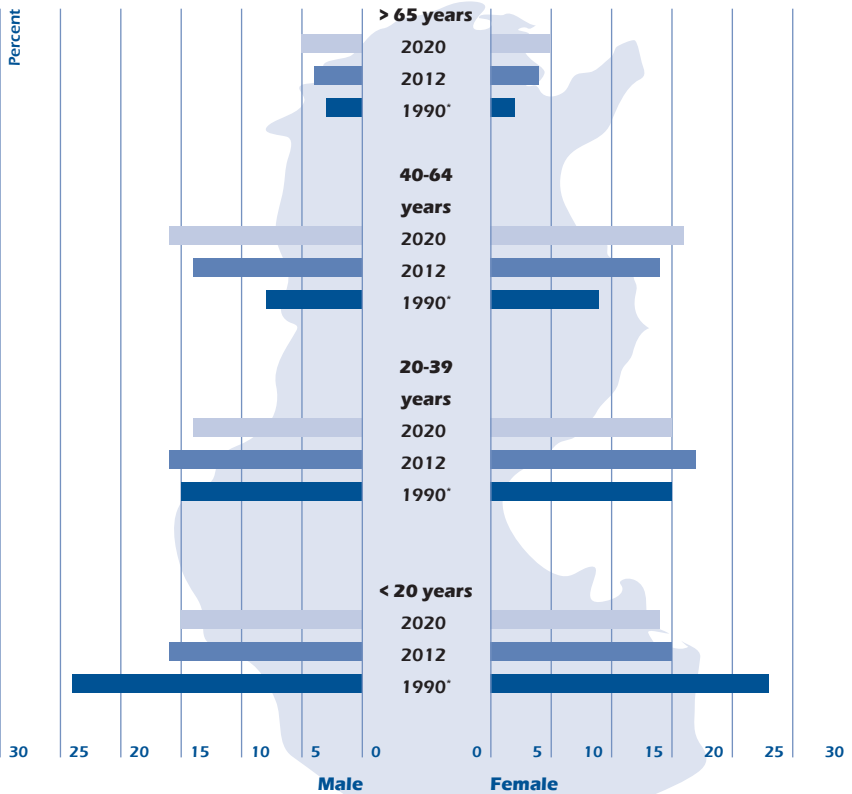


# TUNISIA



# 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	10.732.900	2012
Population annual growth rate (%)	1,0	2012
Life expectancy at birth	75	2012
Death rate (per 1.000 population)	not available	not available
Live births (per 1.000 population)	not available	not available

#### Economic information


## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	23%

## 3. Healthcare System

National health system.

Basic insurance availability		Yes
Requirements: Insurance for every working individual.		

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	93%	80%
Uninsured citizens	7%	20%

Distribution of insurance modality		
	2011	2012
Public insurance company	93%	80%
Private insurance company	not available	15%
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 (eg. 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 (eg. 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 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"/>

Comments: Reimbursement only in private practice.

Public insurance provide 100% reimbursement.

### 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 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"/>

<b>Specialist required for</b>		
		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** **0 years**

**Suggested period of training to perform implantations** **No** **0 years**

<b>Training centres availability</b>	
Pacemaker	10
ICD implantation	10
CRT implantation	10
Electrophysiological studies and catheter ablation	6
Atrial fibrillation ablation	2

**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

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	19	10
Total Pacemaker units implanted	1.650	2.500
Thereof, New implants	not available	1.900
Thereof, Replacements	not available	600

<b>Specialist performing implants</b>		
Cardiologists	Yes	98%
Surgeons	Yes	2%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	8	5
Total CRT units implanted	80	250
Thereof, CRT pacemaker	50	150
Thereof, CRT ICD	30	100

<b>Specialist performing implants</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	8	not available
Total ICD units implanted	90	100
Thereof, Single chamber	30	50
Thereof, Dual chamber	30	50
First implants	not available	90
Replacements	not available	10

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	2
Total loop recorders implanted	not available	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		
	2011	2012
Hospitals performed lead extractions	1	2
Total lead extraction procedures	not available	70



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	100%
Surgeons	No	0%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>No</b>
-----------------------------------------------------	-----------

Reasons: We don't have the the logistic for that.

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	10	5
Number of ablations performed	600	500
Mean number of ablations per centre	60	100
Number of AF ablations	20	30
Number of ablation centres (> 50 AF ablations)	0	2
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	1

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>
---------------------------------------------------------------------------------	-----------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	No
U.S.	No
European	Yes

Necessity of guideline translation to national language	No

Obstacles to guideline implementation	Ranking of importance*						
	1	2	3	4	5	6	
Lack of centres	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	5
Low awareness of guidelines	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	2

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

### Other obstacles to guideline implementation

Financial

## 13. Sources

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

· Tunisian society of cardiology and cardiovascular surgery

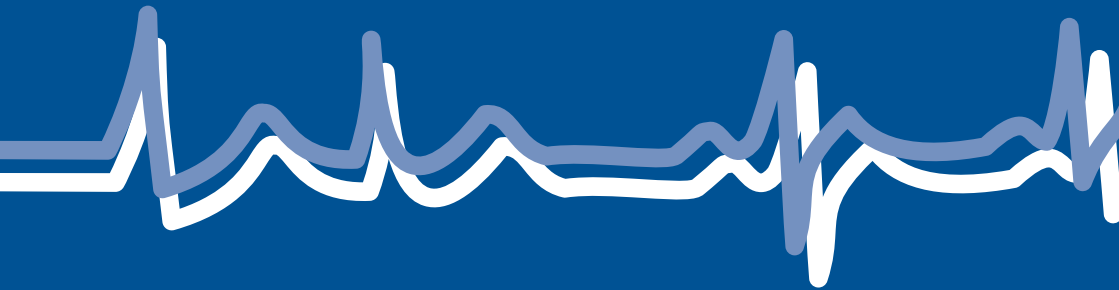
### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

- EHRA White Book 2012
- National public registry
- National insurance administration
- Health Ministry
- Pace Maker industry local source
- Registry
- Local industry
- Sample short survey
- Ministry, Sales data



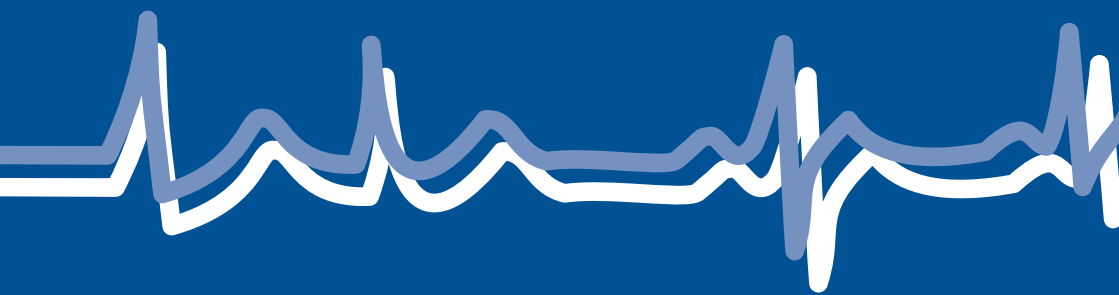
# TURKEY

Pending data submission.



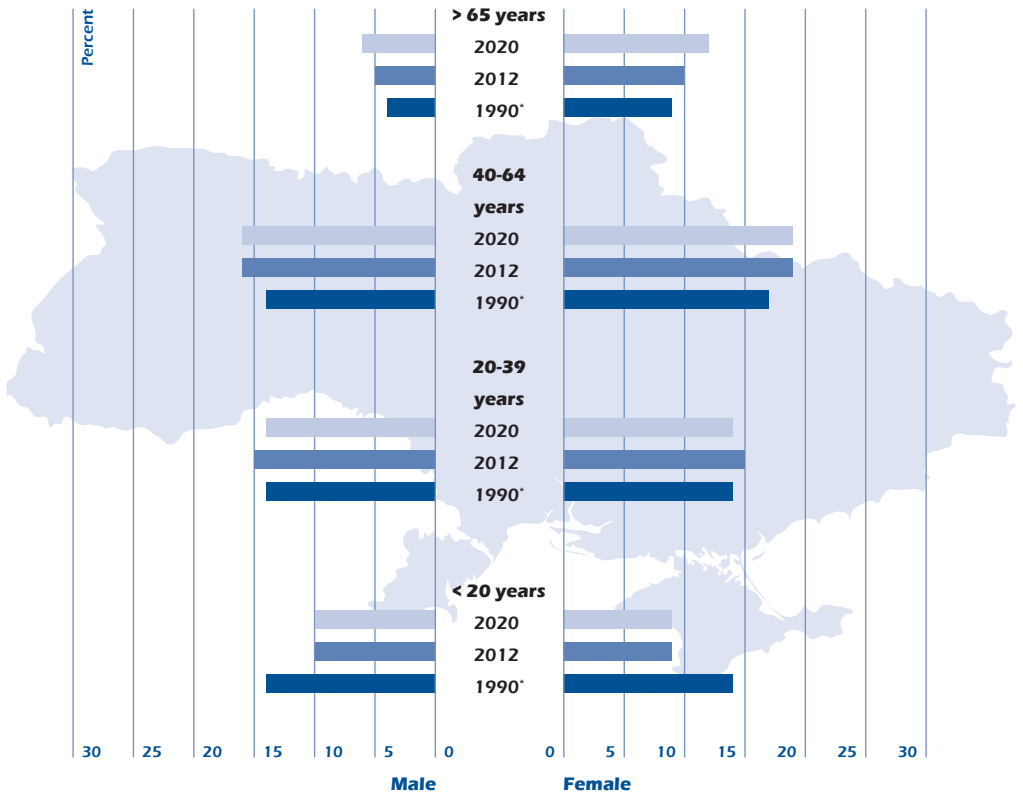


# UKRAINE



# 1. Statistics

## Age pyramid for Ukraine



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	5,4	2009
Beds (per 100.000 population)	865,8	2009
Density of physicians (per 1.000 population)	3,5	2011
Density of nurses (per 1.000 population)	6,4	2011

<b>Demographic information</b>		
Population	45.416.589*	2012
Population annual growth rate (%)	-0,6	2012
Life expectancy at birth	69	2012
Death rate (per 1.000 population)	14,6	2011
Live births (per 1.000 population)	11,0	2011

\* State Statistic Service of Ukraine

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	180,17	2012*
Gross domestic product per capita (U.S dollar-units)	3.971,20	2012*
Total expenditure on health as % of GDP	7,7	2010
General government expenditure on health as % of total expenditure on health	55,0	2009
Private expenditure on health as % of total expenditure on health	45,0	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	66,6%	65,8%

## 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 and emergency) help, stationary (general profile and specialized) help.

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2011	2012
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 expences from own budget.

**Reimbursement availability for physicians and hospitals**

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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 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 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**      **0 years**

**Suggested period of training to perform implantations** **No answer**      **0 years**

**Training centres availability**

Pacemaker	6
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** **11,4%**

**Percentage of academic centres among all practicing implanting devices centres** **11,4%**





## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	36	36
Total Pacemaker units implanted	5.064	5.491
Thereof, New implants	4.325	4.630
Thereof, Replacements	739	861

<b>Specialist performing implants</b>		
Cardiologists	Yes	8,3%
Surgeons	Yes	91,7%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	8	11
Total CRT units implanted	54	57
Thereof, CRT pacemaker	49	39
Thereof, CRT ICD	6	18

<b>Specialist performing implants</b>		
Cardiologists	No	0%
Surgeons	Yes	100%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	8	9
Total ICD units implanted	45	52
Thereof, Single chamber	43	not available
Thereof, Dual chamber	2	not available
First implants	44	47
Replacements	1	5

Specialist performing implants		
Cardiologists	No	0%
Surgeons	Yes	100%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	2	3
Total loop recorders implanted	15	8

Specialist performing implants		
Cardiologists	No	0%
Surgeons	Yes	100%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	10	9
Total lead extraction procedures	not available	30



<b>Specialist performing lead extractions</b>		
Cardiologists	No	0%
Surgeons	Yes	100%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>	<b>No</b>
-----------------------------------------------------	-----------

Reasons: This is available only in a few private centres due to restricted budget.

<b>National registry for</b>		
		Official name
ICD	No	
Pacing	No	
Electrophysiology	No	

<b>Availability of a national quality insurance system or complication registry</b>	<b>No</b>
-------------------------------------------------------------------------------------	-----------

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

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	13	13
Number of ablations performed	2.139	2.489
Mean number of ablations per centre	164,5	153,2
Number of AF ablations	513	614
Number of ablation centres (> 50 AF ablations)	4	5
Number of ablation centres (> 10 VT ablations on structural heart diseases)	2	2

<b>Availability of a national registry for interventional electrophysiology</b>	<b>No</b>
---------------------------------------------------------------------------------	-----------

## 12. Guidelines

Guidelines adhered to ICD implants and pacemaker implants	
National	Yes
U.S.	No
European	Yes

Necessity of guideline translation to national language	Yes

Obstacles to guideline implementation	Ranking of importance <sup>*</sup>						
	1	2	3	4	5	6	
Lack of centres	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	1
Lack of referral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3
Lack of trained personnel	<input type="checkbox"/>	<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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Lack of operators	<input type="checkbox"/>	<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)

### Other obstacles to guideline implementation

Absence of specialization on invasive arrhythmology

## 13. Sources

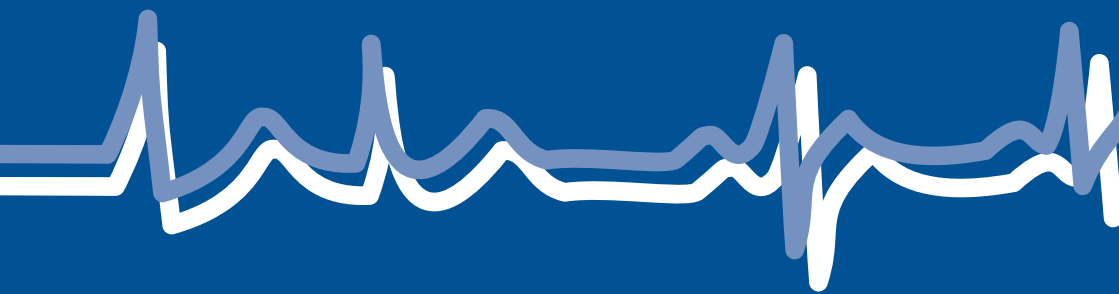
### Name of National Cardiac Society, National Working Group or arrhythmia body

• Association of Arrhythmologists of Ukraine

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

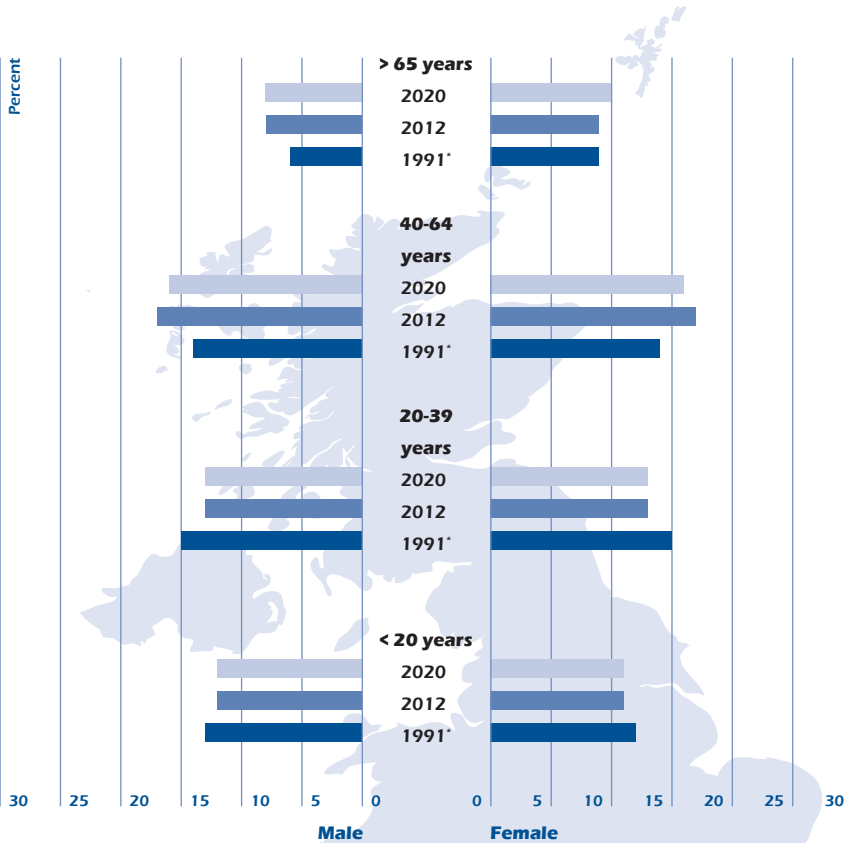
- EHRA White Book 2012
- State Statistic Service of Ukraine: [www.ukrstat.gov.ua](http://www.ukrstat.gov.ua)
- Sychov O.S., Borodai A.A.
- Official site of the Ministry of Public Health of Ukraine : [www.moz.gov.ua/ua/portal/mtbr\\_eduinstitutions/](http://www.moz.gov.ua/ua/portal/mtbr_eduinstitutions/)
- Pravosudovich S., Maksimenko S., Kravchuk B., Zalevskii V., Stychinskii A., Bugaev M., Kravchenko T., Vegulyar S., Gritsai A., Burkovskii S., Haritonchik D., Sadovoi V., Posudevskii S., Karpenko J., Volkov D., Melnitchuk M., Klantsa A., Sarazhin K., Sakevich R., Pohilko S., Komiaty V., Ermuraki S., Biskub I., Notova G., Oleinik V., Bondarchuk S., Protsik V., Marcienko I., Zubenko K., Kachan E., Tkachuk L., Kushnir N., Matlah A., Doronin A., Nikitan S., Popov S., Pilipchuk V., Urkol G., Lisohub S., Matviichuk A., Malyarchuk R., Goryachii A.
- Report for Association of Arrhythmologists of Ukraine
- Survey of specialized medical help for patients with cardiac arrhythmias - state of the problem. The scientific session of the NSS "The M.D. Strazhesko Institute of Cardiology" of NAMS of Ukraine, 05.03.2013
- The scientific session of the NSS "The M.D. Strazhesko Institute of Cardiology" of NAMS of Ukraine, 05.03.2013

# UNITED KINGDOM



# 1. Statistics

## Age pyramid for United Kingdom



\* 1990 or last available



<b>Healthcare data</b>		
Hospitals (per 100.000 population)	not available	not available
Beds (per 100.000 population)	295,6	2010
Density of physicians (per 1.000 population)	2,8	2011
Density of nurses (per 1.000 population)	9,5	2011

<b>Demographic information</b>		
Population	63.047.162	2012
Population annual growth rate (%)	0,6	2012
Life expectancy at birth	80	2012
Death rate (per 1.000 population)	9,0	2010
Live births (per 1.000 population)	13,0	2010

<b>Economic information</b>		
Gross domestic product (U.S dollar-billions)	2.433,78	2012*
Gross domestic product per capita (U.S dollar-units)	38.591,46	2012*
Total expenditure on health as % of GDP	9,6	2010
General government expenditure on health as % of total expenditure on health	84,0	2009
Private expenditure on health as % of total expenditure on health	15,9	2009

\* IMF estimative

## 2. Country

Proportion of deaths resulting from cardiovascular disease		
	2011	2012
	not available	40,9%

## 3. Healthcare System

National Health Service funded by central government.

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

Percentage of insured and uninsured citizens		
	2011	2012
Insured citizens	10%	11,7%
Uninsured citizens	90%	88,3%

Distribution of insurance modality		
	2011	2012
Public insurance company	90%	11,7%
Private insurance company	88,3%	10%
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: Only in the private sector.





### Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. 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 (eg. 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: Physicians (within the national health service) are salaried rather than reimbursed on a fee-for-service basis.

Nationally agreed tariffs for all 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 checked="" type="checkbox"/>
Restricted to certain number of treatments/budget	<input type="checkbox"/>
Not funded	<input type="checkbox"/>
No answer	<input type="checkbox"/>

Body issuing the guidelines: NICE. NHS Commissioning Board

Comments: NICE guidelines are broadly similar to international guidelines though there are important differences (e.g. ICDs for primary prevention in nonischemic cardiomyopathy). NICE guidelines on defibrillators are due to be completely revised in 2013

## 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"/>	Certificate of completion of specialist training in Device therapy and/or EP (CCST - issued by the Specialist Training Authority) and device therapy is now required for appointment to new consultant posts. Accreditation by professional society (e.g. Heart Rhythm UK/EHRA exam) is the rule but not a legal requirement.
Invasive electrophysiology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Certificate of completion of specialist training in Device therapy and/or EP (CCST - issued by the Specialist Training Authority) and device therapy is now required for appointment to new consultant posts. Accreditation by professional society (e.g. Heart Rhythm UK/EHRA exam) is the rule but not a legal requirement.
Allied professionals	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Heart Rhythm UK Accreditation for allied professionals. EHRA or IBHRE accreditation are also generally accepted.
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	Certification of Completion of Specialist Training (issued by the Specialist Training Authority) is required for new appointees since ~1997
ICD or pacemaker implants	Yes	Certification of Completion of Specialist Training (issued by the Specialist Training Authority) is required for new appointees. Small numbers of pacemakers are implanted by other consultants (all certified general cardiologists) but this is becoming less frequent.

### Official national competency guidelines for electrophysiological studies or catheter ablation

Yes

Heart Rhythm UK

### Required period of training to perform implantations

**Yes** Specialty training is a 6-7 year process of which ~2 are spent in internal medicine and 5 are spent in cardiology. The final two years are spent in subspecialty training (EP/ Devices). Trainees generally start implanting during their general cardiology years and progress to complex devices etc during the subspecialty years.

### Suggested period of training to perform implantations

**Yes** Specialty training is a 6-7 year process of which ~2 are spent in internal medicine and 5 are spent in cardiology. The final two years are spent in subspecialty training (EP/ Devices). Trainees generally start implanting during their general cardiology years and progress to complex devices etc during the subspecialty years.

### 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)

33



<b>Percentage of academic centres among all practicing EP centres</b>	<b>58%</b>
-----------------------------------------------------------------------	------------

<b>Percentage of academic centres among all practicing implanting devices centres</b>	<b>15%</b>
---------------------------------------------------------------------------------------	------------

## 5. Pacemakers

<b>Pacemaker units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	207	205
Total Pacemaker units implanted	38.239	38.770
Thereof, New implants	29.482	32.120
Thereof, Replacements	8.757	6.650

<b>Specialist performing implants</b>		
Cardiologists	Yes	99%
Surgeons	Yes	1%

## 6. Cardiac resynchronization therapy devices

<b>CRT units implanted and number of implanting centres</b>		
	2011	2012
Implanting centres	123	114
Total CRT units implanted	6.595	6.965
Thereof, CRT pacemaker	2.864	4.015
Thereof, CRT ICD	3.731	2.950

<b>Specialist performing implants</b>		
Cardiologists	Yes	98%
Surgeons	Yes	2%

## 7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2011	2012
Implanting centres	123	114
Total ICD units implanted	5.404	5.762
Thereof, Single chamber	1.783	1.310
Thereof, Dual chamber	3.621	4.452
First implants	4.403	4.788
Replacements	1.001	974

Specialist performing implants		
Cardiologists	Yes	99%
Surgeons	Yes	1%

## 8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2011	2012
Implanting centres	not available	not available
Total loop recorders implanted	5.000*	not available

\* Estimation

Specialist performing implants		
Cardiologists	Yes	100%
Surgeons	No	0%

## 9. Lead extractions

Lead extractions procedures and and number of centers that performed lead extractions		
	2011	2012
Hospitals performed lead extractions	not available	not available
Total lead extraction procedures	not available	not available



<b>Specialist performing lead extractions</b>		
Cardiologists	Yes	95%
Surgeons	Yes	5%

## 10. Device specific

<b>Availability of remote monitoring of devices</b>		Yes
-----------------------------------------------------	--	-----

<b>National registry for</b>		
		Official name
ICD	Yes	Cardiac Rhythm Management national database (previously NPDB database) hosted by National Institute for Cardiovascular Outcome Research (previously Central Cardiac Audit Database).
Pacing	Yes	Cardiac Rhythm Management national database (previously NPDB database) hosted by National Institute for Cardiovascular Outcome Research (previously Central Cardiac Audit Database).
Electrophysiology	Yes	Cardiac Rhythm Management national database (previously NPDB database) hosted by National Institute for Cardiovascular Outcome Research (previously Central Cardiac Audit Database).

<b>Availability of a national quality insurance system or complication registry</b>		Yes
-------------------------------------------------------------------------------------	--	-----

Official name: Cardiac Rhythm Management national database (previously NPDB database) hosted by National Institute for Cardiovascular Outcome Research (previously Central Cardiac Audit Database).

<b>Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions</b>		Yes
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Official name: Guidance on recalls is issued by the Medicines and Healthcare products Regulatory Authority. Procedures including lead extraction are recorded by the Cardiac Rhythm Management national database.

## 11. Interventional electrophysiology

	2011	2012
Number of ablation centres	49	48
Number of ablations performed	15078	16030
Mean number of ablations per centre	314	308
Number of AF ablations	4654	5064
Number of ablation centres (> 50 AF ablations)	28	26
Number of ablation centres (> 10 VT ablations on structural heart diseases)	17	24

<b>Availability of a national registry for interventional electrophysiology</b>	<b>Yes</b>
---------------------------------------------------------------------------------	------------

## 12. Guidelines

### Guidelines adhered to ICD implants and pacemaker implants

National	Yes
U.S.	No answer
European	No answer

### Necessity of guideline translation to national language

**No**

### Obstacles to guideline implementation

**Ranking of importance\***

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

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

### Other obstacles to guideline implementation

The incentive of fee-for service is absent in the UK national health service. The private sector is very small for devices, as most of the insured 10% of the population are of working age and not in need of device therapy.

## 13. Sources

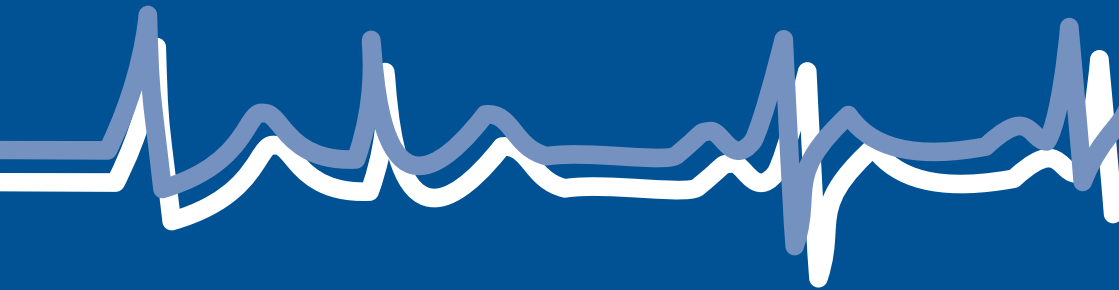
### Name of National Cardiac Society, National Working Group or arrhythmia body

• Heart Rhythm UK NB for legal reasons, this name will change during 2013, probably to British Heart Rhythm Society

### All sources that were used to fill out the questionnaire for the EHRA White Book 2013

- EHRA White Book 2012
- Office for National Statistics.
- Laing and Buisson (Healthcare Analysis company).
- NHS England.
- Central cardiac Audit Database.
- CCAD National Database for cardiac Rhythm Management. Implant totals for ENGLAND and WALES only – population 56.17 million. No data currently available for SCOTLAND or N IRELAND.
- Estimation supported by national database
- Cardiac Rhythm Management national database.
- Data from Heart Rhythm UK device and ablation databases [Cardiac Rhythm Management national database] NICE guidelines Department of Health sources (including MHRA)

# 5. Appendix



## 5. Appendix



### EHRA Certification

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The EHRA offers the first European certification of professional excellence, in three areas:

- Invasive Cardiac Electrophysiology
- Cardiac Pacing & ICDs
- Allied Professionals

The EHRA is pleased to publish the list, starting from 2006, 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.

## Invasive Cardiac Electrophysiology

### EHRA EP Certified professionals

ALCALDE RODRIGUEZ	Oscar	Spain	2012
ALZAND	B	Netherlands	2012
ANDERSON	Mark H	United Kingdom	2011
ANGUERA CAMOS	Ignacio	Spain	2009
ARBELO LAINEZ	Elena	Spain	2009
ARCOCHA TORRES	Maria Fe	Spain	2012
ARMENTA PASTOR	Juan Fernandez	Spain	2012
ATTA	Salah Eldin Sayed	Saudi Arabia	2011
AVELLA	Andrea	Italy	2009
AYALA PAREDES	Felix	Canada	2009
BARRERA CORDERO	Alberto	Spain	2006
BAYRAK	Duhan Fatih	Belgium	2012
BELOTTI	Giuseppina	Italy	2008
BENCSEK	Gabor	Hungary	2009
BERRUEZO SANCHEZ	Antonio	Spain	2010
BERTOMEU-GONZALEZ	Vicente	Spain	2012
BRUGADA TERRADELLAS	Josep	Spain	2009
BUERKLE	Gerd	Austria	2011
BUN	Sok-Sithikun	France	2012
BURRI	Haran	Switzerland	2008
CALVO GALIANO	Naiara	Spain	2012



## **EHRA Certification**

### **EHRA EP Certified professionals**

<b>CANO PEREZ</b>	Oscar	Spain	2011
<b>CASTRO URDA</b>	Victor	Spain	2012
<b>CATANCHIN</b>	Andrei	Australia	2012
<b>COZAR LEON</b>	Rocio	Spain	2012
<b>DATINO</b>	Tomas	Spain	2012
<b>DAVOODI</b>	Gholamreza	Iran	2008
<b>DE FILIPPO</b>	Paolo	Italy	2012
<b>DE GROOT</b>	Joris R	Netherlands	2012
<b>DEUTSCH</b>	Alexandru	Romania	2012
<b>DJAJADISASTRA</b>	Achmad Iskandar	Germany	2012
<b>DURAY</b>	Gabor Zoltan	Germany	2008
<b>DYRDA</b>	Katia	Canada	2012
<b>EISENBERGER</b>	Martin	Belgium	2012
<b>ESTEVAO MATIELLO</b>	Maria Elisa	Spain	2011
<b>FERNANDEZ LOZANO</b>	Ignacio	Spain	2006
<b>FONTENLA</b>	Adolfo	Spain	2012
<b>FORCLAZ</b>	Andrei	Switzerland	2012
<b>FRANCK</b>	Harald	Germany	2011
<b>GALLARDO LOBO</b>	Rodrigo	Spain	2012
<b>GARCIA MORAN</b>	Emilio	Spain	2007
<b>GLOWNIAK</b>	Andrzej	Poland	2012
<b>GONZALEZ-ENRIQUEZ</b>	Susana	Spain	2012
<b>GONZALEZ VASSEROT</b>	Maria del Mar	Spain	2009
<b>GRECU</b>	Mihaela	Romania	2007
<b>GUGUCHEV</b>	Pavel	USA	2010
<b>HEMELS</b>	Martin	Netherlands	2012
<b>HERCZKU</b>	Csaba	Hungary	2012
<b>HERNANDEZ-MADRID</b>	Antonio	Spain	2009
<b>HERREROS GUILARTE</b>	Benito	Spain	2006
<b>HLIVAK</b>	Peter	Slovakia	2012
<b>HUYBRECHTS</b>	Wim	Belgium	2009
<b>IVO PETRUS TRINES</b>	Serge Alexander	Netherlands	2008
<b>JANDA</b>	Igor	Germany	2012
<b>JANSEN</b>	Ward	Netherlands	2010
<b>JASTRZEBSKI</b>	Marek	Poland	2008

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### EHRA Certification

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## Invasive Cardiac Electrophysiology

### EHRA EP Certified professionals

JILEK	Clemens	Germany	2012
JOHAR	Sofian	United Kingdom	2012
JONES	David Gareth	United Kingdom	2012
KARDOS	Attila	Hungary	2012
KEMME	Michiel	Netherlands	2009
KILISZEK	Marek	Poland	2010
KUHNE	Michael	Switzerland	2012
LAURENZI	Francesco	Italy	2009
LERCHER	Peter	Austria	2012
LETSAS	Konstantinos	Greece	2009
LUBINSKI	Andrzej	Poland	2007
LUEDORFF	Guido	Germany	2012
MADRID	Antonio	Spain	2009
MARINI	Massimiliano	Italy	2011
MARTINEK	Martin	Austria	2010
MARTINEZ ALDAY	Jesus	Spain	2006
MARTINEZ SANDE	Jose Luis	Spain	2012
MATIA FRANCES	Roberto	Spain	2011
MAZUR	Alexander	Italy	2006
MORENO PLANAS	Javier	Spain	2006
MOYA I. MITJANS	Angel	Spain	2006
MUELLER	Stephan Andreas	Switzerland	2012
NAGEH-ARMANIOS	Maged	USA	2012
NAVARRETE CASAS	Antonio Javier	USA	2008
ORMAETXE MERODIO	José Miguel	Spain	2006
OSCA ASENSI	Joaquin	Spain	2010
PAPIASHVILI	Giorgi	Georgia	2009
PASTOR FUENTES	Augustin	Spain	2006
PEINADO	Rafael	Spain	2007
PEREZ CASTELLANO	Nicasio	Spain	2006
PEREZ DIEZ	Diego	Spain	2012
PEREZ VILLACASTIN	Julian	Spain	2006
POZZETTI	Daniela	Italy	2007
PUCHOL	Alberto	Hungary	2012
REBELLATO	Luca	Italy	2012

## EHRA Certification

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### EHRA EP Certified professionals

RORDORF	Roberto	Italy	2012
ROTEN	Laurent	Switzerland	2009
SABATE DE LA CRUZ	Xavier	Spain	2007
SALGUERO BODES	Rafael	Spain	2009
SAMO AYOU	Romeo	Sweden	2011
SAUSE	Armin	Germany	2009
SCHIMPF	Rainer	Germany	2012
SCHOONDERWOERD	Bas	Netherlands	2012
SEGURA VILLALOBOS	Federico	Spain	2012
SEOW	Swee-Chong	Singapore	2007
SMIT	Jaap Jan	Netherlands	2009
STEFFEL	Jan	Switzerland	2012
STUEHLINGER	Markus	Austria	2010
SZABO	Albin Arpad	Hungary	2012
SZEPLAKI	Gabor	Hungary	2012
TEIJEIRA FERNANDEZ	Elvis	United Kingdom	2012
TOQUERO RAMOS	Jorgue	Spain	2006
TRAYKOV	Vassil B	Hungary	2011
TRINES	Serge Alexander Ivo Petrus	Netherlands	2008
TZEIS	Stylios	Greece	2010
UCER	Ekrem	Germany	2012
VAN CASTEREN	Lieve	Belgium	2012
VATASESCU	Radu-Gabriel	Romania	2009
VITALE	Raffaele	Italy	2012
VOSS	Frederik	Germany	2009
VUKAJLOVIC	Dejan	Serbia	2009
WINTER	Siegmund	Austria	2012
ZOPPO	Franco	Italy	2008
ZUCHELLI	Giulio	Italy	2012

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### EHRA Certification

## Invasive Cardiac Electrophysiology

### EP Certification candidates successful to exam

ABEDIN	Zainul	USA	2007
ACENA RAMOS	Marta	Spain	2011
AL BUNNI	Muhamad	Italy	2007
ALCALDE	Oscar	Spain	2010
ALIYEV	Farid	Turkey	2010
ALZAND	B.	Netherlands	2012
AMET	Denis	France	2011
ANDERSON	Mark H	United Kingdom	2010
ANGUERA CAMOS	Ignacio	Spain	2008
ANNE	Wim	Belgium	2010
ARBELO LAINEZ	Elena	Spain	2007
ARCOCHA TORRES	Maria Fe	Spain	2009
ARIAS PALOMARES	Miguel Angel	Spain	2010
ARMENTA PASTOR	Juan Fernandez	Spain	2011
ATTA	Salah Eldin Sayed	Saudi Arabia	2010
AVELLA	Andrea	Italy	2007
AYALA PAREDES	Felix	Canada	2007
BALTA	Osman	Germany	2010
BARRERA CORDERO	Alberto	Spain	2005
BARRY	James	United Kingdom	2012
BAYRAK	Duhan Fatih	Belgium	2011
BEAUPORT	Joelle	Germany	2012
BEDNAREK	Jacek	Poland	2011
BELOTTI	Giuseppina	Italy	2006
BENCSEK	Gabor	Hungary	2009
BERRUEZO SANCHEZ	Antonio	Spain	2006
BERTERO	Giovanni	Italy	2012
BERTOMEU-GONZALEZ	Vicente	Spain	2010
BLAAUW	Yuri	Netherlands	2011
BOHORA	Shomu	India	2012
BONANNO	Carlo	Italy	2011
BOULLIN	Julian Paul	United Kingdom	2010
BROUZET	Thomas	Spain	2012
BRUGADA TERRADELLAS	Josep	Spain	2007
BUERKLE	Gerd	Austria	2008

## EHRA Certification

### EP Certification candidates successful to exam

BUN	Sok-Sithikun	France	2012
BURRI	Haran	Switzerland	2007
CALVO CUERVO	David	Spain	2010
CALVO GALIANO	Naiara	Spain	2011
CAMPOS GARCIA	Bieito	Spain	2010
CANO PEREZ	Oscar	Spain	2009
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
COZAR LEON	Rocio	Spain	2011
DATINO	Tomas	Spain	2011
DAVOODI	Gholamreza	Iran	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
DEUTSCH	Alexandru	Romania	2009
DICHTL	Wolfgang	Austria	2011
DI CORI	Andrea	Italy	2012
DINOV	Borislav	Germany	2012
DJAJADISASTRA	Achmad Iskandar	Germany	2011
DOMINGUEZ MAFE	Eloy	Spain	2012
DURAY	Gabor Zoltan	Germany	2008
DUTHOIT	Guillaume	France	2010
DYRDA	Katia	Canada	2010
EISENBERGER	Martin	Belgium	2008
EIZMENDI GOICOECHEA	Maria de Iciar	Spain	2011
ELDER	Douglas	United Kingdom	2010

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### EHRA Certification

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## Invasive Cardiac Electrophysiology

### EP Certification candidates successful to exam

EL KADRI	Moutaz	United Kingdom	2012
ESTEVAO MATIELLO	Maria Elisa	Spain	2007
FERNANDEZ LOZANO	Ignacio	Spain	2005
FERNANDEZ PASTOR	Julia	Spain	2012
FILGUEIRAS RAMA	David	Spain	2012
FONTENLA	Adolfo	Spain	2010
FORCLAZ	Andrei	Switzerland	2009
FRANCK	Harald	Germany	2010
GALLARDO LOBO	Rodrigo	Spain	2009
GARCIA MORAN	Emilio	Spain	2005
GAWRYSIAK	Marcin	Poland	2009
GLOWNIAK	Andrzej	Poland	2009
GONZALEZ-ENRIQUEZ	Susana	Spain	2008
GONZALEZ FERRER	Juan Jose	Spain	2012
GONZALEZ VASSEROT	Maria del Mar	Spain	2007
GOPALAMURUGAN	A B	United Kingdom	2011
GRANIER	Mathieu	France	2011
GRECU	Mihaela	Romania	2006
GUGUCHEV	Pavel	USA	2010
GUY-MOYAT	Benoit	France	2010
HEMELS	Martin	Netherlands	2011
HENDRICKS	Neil	South Africa	2012
HERCZKU	Csaba	Hungary	2009
HERNANDEZ-MADRID	Antonio	Spain	2005
HERREROS GUILARTE	Benito	Spain	2005
HLIVÁK	Peter	Slovakia	2010
HOBBS	William	United Kingdom	2007
HOFFMANN	Andrzej	Poland	2012
HOGLUND	Niklas	Sweden	2008
HOOFT VAN HUYSDUYNEN	Bart	Netherlands	2011
HORDYNSKI	Grzegorz	Poland	2012
HUYBRECHTS	Wim	Belgium	2008
IORGULESCU	Corneliu-Nicolae	Romania	2012
INFUSINO	Tommaso	Italy	2011
IVO PETRUS TRINES	Serge Alexander	Netherlands	2005

**EP Certification candidates successful to exam**

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
JOHAR	Sofian	United Kingdom	2009
JONES	David Gareth	United Kingdom	2009
JOST	Colin	Germany	2012
KACZMAREK	Krzysztof	Portugal	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
KONSTANTINIDOU	Melanie	Germany	2011
KOOPMAN	Pieter	Belgium	2011
KOSTOPOULOU	Anna	Greece	2012
KUHNE	Michael	Switzerland	2011
LALLEMAND	Benedicte	France	2012
LANG	Christopher	United Kingdom	2012
LAURENZI	Francesco	Italy	2008
LE POLAIN DE WAROUX	Jean-Benoit	Belgium	2012
LERCHER	Peter	Austria	2010
LETSAS	Konstantinos	Greece	2008
LUBINSKI	Andrzej	Poland	2005
LUEDORFF	Guido	Germany	2012
MADRAZO DELGADO	Ines	Spain	2012
MADRID	Antonio	Spain	2008
MAKOWSKI	Karol	Portugal	2010
MARINI	Massimiliano	Italy	2010
MARTINEK	Martin	Austria	2008
MARTINEZ ALDAY	Jesus	Spain	2005
MARTINEZ SANDE	Jose Luis	Spain	2009

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### EHRA Certification

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## Invasive Cardiac Electrophysiology

### EP Certification candidates successful to exam

MASSIN	Francois	Spain	2009
MATIA FRANCES	Roberto	Spain	2009
MAZUR	Alexander	Italy	2005
MCCREADY	James	United Kingdom	2010
MEYER	Christian	Germany	2011
MORENO PLANAS	Javier	Spain	2005
MOYA I. MITJANS	Angel	Spain	2005
MORENO REVIRIEGO	Sara	Spain	2011
MUELLER	Stephan Andreas	Switzerland	2011
MUELLER	Dirk	Germany	2008
MUNDEL	Markus	Germany	2011
NAGEH-ARMANIOS	Maged	USA	2010
NAVARRETE CASAS	Antonio Javier	USA	2007
NAVVARO	Javier	Spain	2012
NENTWICH	Karin	Germany	2012
ORMAETXE MERODIO	José Miguel	Spain	2005
OSCA ASENSI	Joaquin	Spain	2006
PACHON	Marta	Spain	2011
PAISEY	John	United Kingdom	2008
PAPIASHVILI	Giorgi	Georgia	2007
PASTOR FUENTES	Augustin	Spain	2005
PAURIAH	Maheshwar	United Kingdom	2012
PEINADO	Rafael	Spain	2005
PELAEZ GONZALEZ	Antonio	Spain	2012
PEREZ CASTELLANO	Nicasio	Spain	2005
PEREZ VILLACASTIN	Julian	Spain	2005
PEREZ	Armando	Spain	2010
PEREZ ALVAREZ	Luisa	Spain	2011
PEREZ DIEZ	Diego	Spain	2010
PISON	Laurent	Netherlands	2010
POOSAPADDI RAJA	Bhima Shankar	India	2012
POZZETTI	Daniela	Italy	2007
PUCHOL	Alberto	Hungary	2009
RAMANNA	Hemanth	Netherlands	2008
REBELLATO	Luca	Italy	2009



**EP Certification candidates successful to exam**

RICCIARDI	Danilo	Belgium	2012
RIVAS	Nuria	Spain	2010
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
SALGUERO BODES	Rafael	Spain	2007
SAMMUT	Mark Adrian	Malta	2012
SAMO AYOU	Romeo	Sweden	2010
SANDILANDS	A	United Kingdom	2010
SAUSE	Armin	Germany	2008
SCHIMPF	Rainer	Germany	2012
SCHOENBAUER	Robert	Austria	2011
SCHOONDERWOERD	Bas	Netherlands	2008
SEGRETI	Luca	Italy	2010
SEGURA VILLALOBOS	Federico	Spain	2011
SEILER	Jens	Switzerland	2010
SEOW	Swee-Chong	Singapore	2007
SGARITO	Giuseppe	Italy	2012
SIELSKI	Slawomir	Poland	2007
SILISTE	Calin	Italy	2011
SKODA	Jan	Czech Republic	2008
SMIT	Jaap Jan	Netherlands	2008
SPADACINI	Gianmario	Italy	2006
STANLEY	Anthony	South Africa	2012
STEFFEL	Jan	Switzerland	2012
STOECKEL	Holger	Switzerland	2012
STUEHLINGER	Markus	Austria	2010
SUMAN HORDUNA	Irina	United Kingdom	2008
SZABO	Albin Arpad	Hungary	2010

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### EHRA Certification

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## Invasive Cardiac Electrophysiology

### EP Certification candidates successful to exam

SZEPLAKI	Gabor	Hungary	2011
TEJEIRA FERNANDEZ	Elvis	United Kingdom	2012
TOQUERO RAMOS	Jorgue	Spain	2005
TOMAN	Ondrej	Czech Republic	2012
TOMLINSON	D	United Kingdom	2008
TORCIVIA	Riccardo	Italy	2012
TRAYKOV	Vassil B	Hungary	2010
TREGUER	Frederic	France	2009
TRINES	Serge Alexander Ivo Petrus	Netherlands	2006
TUTDIBI	Osman	Germany	2012
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 HEUVERSWYN	Frederic	Belgium	2012
VAN OOSTROM	Antoine	Netherlands	2012
VATASESCU	Radu-Gabriel	Romania	2007
VEGA OLVERA	Mercedes	Spain	2012
VENABLES	P A	United Kingdom	2010
VILLUENDAS SABATE	Roger	Spain	2010
VITALE	Raffaele	Italy	2009
VOCKE	Wolfgang	Germany	2010
VOSS	Frederik	Germany	2008
VUKAJLOVIC	Dejan	Serbia	2009
WESTRA	Sjoerd	Netherlands	2012
WIJCHERS	Sip	Belgium	2012
WINTER	Siegmund	Austria	2010
ZELJKO	Hrvojka Marija	Croatia	2012
ZELLERHOFF	Stephan	Germany	2011
ZHELYAKOV	Eugeny	Russian Federation	2012
ZOPPO	Franco	Italy	2006
ZUCCHELLI	Giulio	Italy	2008

## Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

### CP Certified professionals

ACEÑA RAMOS	Marta	Spain	2012
ALCALDE RODRIGUEZ	Oscar	Spain	2012
AL BUNNI	Muhamad	Italy	2007
ALZAND	Bakr	Netherlands	2012
ALZAND	B.S.N.	Netherlands	2012
ANNE	Wim	Belgium	2011
APOSTOLOPOULOS	Theodoros	Greece	2007
AVELLA	Andrea	Italy	2006
AYALA PAREDES	Felix Alejandro	Canada	2009
BACCHIONI	Giuseppe	Italy	2012
BAHGAT	Amr Kamal	Egypt	2012
BAYRAK	Duhan Fatih	Belgium	2012
BELOTTI	Giusepina	Italy	2006
BENCSEK	Gabor	Hungary	2009
BERTOMEU-GONZALEZ	Vicente	Spain	2012
BIJSTERVELD	Nick	Netherlands	2012
BISSINGER	Andrzej	Poland	2007
BLAAUW	Yuri	Netherlands	2012
BOHM	Adam	Hungary	2009
BOOS	Christopher	United Kingdom	2009
BORGER VAN DER BURG	Alida Elisabeth	Netherlands	2009
BORRELLI	Alessio	Italy	2012
BOUWELS	Leon H.R.	Netherlands	2009
BREULS	Nico	Netherlands	2010
BROERS	Bernard	Netherlands	2010
BUERKLE	Gerd	Austria	2012
BURRI	Haran	Switzerland	2006
CALZOLARI	Vittorio	Italy	2007
CARAVATI	Fabrizio	Italy	2012
CROSATO	Martino	Italy	2009
CURNIS	Antonio	Italy	2007
DAVOODI	Gholamreza	Iran	2006
DE DOELDER	Marieke	Netherlands	2012
DE GROOT	Joris R	Netherlands	2011
DE JONG	Jonas	Netherlands	2012

## 5. Appendix



### EHRA Certification

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## Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

### CP Certified professionals

DE LA FUENTE	Sam	Spain	2011
DICHTL	Wolfgang	Austria	2012
DILAVERIS	Polychronis	Greece	2007
DURAY	Gabor Zoltan	Germany	2009
DYRDA	Katia	Canada	2012
EHRlich	Joachim	Germany	2012
EISENBERGER	Martin	Belgium	2011
EIVINDSON	Gunvald	Norway	2009
ENGBERS	Jos G	Netherlands	2011
ESCHEN	Ole	Denmark	2012
EVERTZ	Reinder	Spain	2012
FERNANDEZ PASTOR	Julia	Spain	2012
FOLDESI	Csaba Laszlo	Hungary	2012
FOLEY	Paul William Xavier	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	José Ignacio	Spain	2006
GARCIA MORAN	Emilio	Spain	2007
GHANI	Abdul	Netherlands	2012
GIANNOLA	Gabriele	Italy	2012
GJESTVANG	Finn Tore	Norway	2009
GRADAUS	Rainer	Germany	2007
GRECU	Mihaela	Romania	2009
GUGUCHEV	Pavel	USA	2011
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	2006
HJORTSHOJ	Soren	Denmark	2010

## **EHRA Certification**

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### **CP Certified professionals**

<b>HORNSTEN</b>	Jonas	Sweden	2007
<b>HURLIMANN</b>	David	Switzerland	2012
<b>HUYBRECHTS</b>	Wim	Belgium	2010
<b>IOANNIDIS</b>	Panagiotis	Greece	2007
<b>IORGULESCU</b>	Corneliu Nicolae	Romania	2012
<b>JACON</b>	Peggy	France	2012
<b>JAMALYAN</b>	Smbat	Armenia	2011
<b>JANSEN</b>	Annemieke HM	Netherlands	2011
<b>JASTRZEBSKI</b>	Marek	Poland	2007
<b>JILEK</b>	Clemens	Germany	2012
<b>JONES</b>	David Gareth	United Kingdom	2012
<b>KARABINOS</b>	Ilias K	Greece	2009
<b>KEMME</b>	Michiel	Netherlands	2009
<b>KETELS</b>	Stefan	Belgium	2009
<b>KLEIN</b>	Gunnar	Germany	2008
<b>KOEPFLI</b>	Pascal	Switzerland	2010
<b>KOEPF</b>	Ulf	Norway	2009
<b>KORANTZOPOULOS</b>	Panagiotis	Greece	2011
<b>KOSTOPOULOU</b>	Anna	Greece	2012
<b>KOULOURIS</b>	Spyridon	Greece	2010
<b>KOUROUKLIS</b>	Spyridon	Greece	2012
<b>KRAVCHUK</b>	Borys	Ukraine	2012
<b>KRUPA</b>	Wojciech	Poland	2010
<b>LIPCHENCA</b>	Igor Ariel	Israel	2009
<b>LITTERFELDT</b>	Ingrid	Sweden	2011
<b>LUEDORFF</b>	Guido	Germany	2009
<b>MAC GILLAVRY</b>	Melvin	Netherlands	2011
<b>MACIAG</b>	Aleksander	Poland	2009
<b>MADEIRA</b>	Joao	Portugal	2012
<b>MARINI</b>	Massimiliano	Italy	2008
<b>MARTINEK</b>	Martin	Austria	2009
<b>MARTINEZ SANDE</b>	Jose Luis	Spain	2012
<b>MASCIOLI</b>	Giosue	Italy	2007
<b>MASSA</b>	Thomas	Germany	2011
<b>MEINE</b>	Mathias	Netherlands	2010

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## Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

### CP Certified professionals

MERKELY	Bela	Hungary	2007
MICHAELSEN	Jochen	Germany	2011
MITROWSKI	Przemyslaw	Poland	2006
MONNINK	Stefan	Netherlands	2012
MORENO PLANAS	Javier	Spain	2006
MUNDEL	Markus Mathias	Germany	2011
MUNTINGA	Harm-Jans	Netherlands	2012
NEVEN	Kars	Germany	2008
OMAR	Salama	Egypt	2012
OSMAN	Faizel	United Kingdom	2007
PATWALA	Ashish	United Kingdom	2012
PAULUSSEN	Guido	Netherlands	2007
PENA HERNANDEZ	Jose Luis	Spain	2011
PEREZ CASTELLANO	Nicasio	Spain	2006
PEREZ DIEZ	Diego	Spain	2012
PETRACCI	Barbara	Italy	2012
PINDADO RODRIGUEZ	Javier	Spain	2010
PLUTA	Slawomir	Poland	2012
PORRO	Rosa	Spain	2010
POZZETTI	Daniela	Italy	2007
PRZYBYLSKI	Andrzej	Poland	2008
PUCHOL	Alberto	Spain	2012
PUGH	Peter	United Kingdom	2009
PYATT	Jason	United Kingdom	2012
RAO	Archana	United Kingdom	2009
REBELLATO	Luca	Italy	2012
ROTEN	Laurent	Switzerland	2009
ROUKAS	Kriton-Ioannis	Greece	2012
SCHAUMANN	Anselm	Germany	2012
SCHEFFER	Michael G	Netherlands	2011
SCHOONDERWOERD	Bas	Netherlands	2012
SEGURA VILLALOBOS	Federico	Spain	2012
SEOW	Swee-Chong	Singapore	2008
SGARITO	Giuseppe	Italy	2007
SIMEONIDOU	Eftihia	Greece	2007

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### CP Certified professionals

SJOBLOM	Johanna	Sweden	2009
SKIADAS	Ioannis	Greece	2012
SMILDE	Tom	Netherlands	2012
SPIERENBURG	Han	Netherlands	2009
STATESCU	Cristian	Romania	2012
STEFAN	Liliana	Czech Republic	2011
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
TIELEMAN	Robert	Netherlands	2012
TORCIVIA	Riccardo	Italy	2012
TORN	Marieke	Netherlands	2012
TRAYKOV	Vassil B	Bulgaria	2011
TUREL	Baybars	Turkey	2012
TUININGA	Ype	Netherlands	2011
UCER	Ekrem	Germany	2012
VACCARI	Diego	Italy	2007
VALK	Suzanne	Netherlands	2011
VALZANIA	Cinzia	Italy	2011
VAN CASTEREN	Lieve	Belgium	2011
VAN DEN BOS	EwoutJan	Netherlands	2011
VAN DER HEIJDEN	Dirk	Netherlands	2011
VAN DER HEIJDEN	Robert	Netherlands	2011
VAN KRAAIJ	Dave	Netherlands	2010
VAN OOSTROM	Antoine	Netherlands	2012
VAN OPSTAL	Jurren	Netherlands	2009
VAN REIJ	Frank	Netherlands	2012
VAN WOERKENS	Leon	Netherlands	2012
VASILOPOULOS	Charalambos	Greece	2007
VATASESCU	Radu- Gabriel	Romania	2007
VERGARA	Pasquale	Italy	2010
VET	Thijs	Netherlands	2011

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## Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

### CP Certified professionals

VIERGEVER	Eric Paul	Netherlands	2012
VOSS	Frederik	Germany	2009
WESTENDORP	Iris	Netherlands	2009
WESTRA	Sjoerd	Netherlands	2012
WIJCHERS	Sip	Belgium	2012
WILLEMS	Albert	Netherlands	2012
WOLLMANN	Christian	Austria	2012
ZAKY	Hosam	United Arab Emirates	2007
ZALEVSKYI	Valerii	Ukraine	2011
ZERVOPOULOS	George	Greece	2007
ZIMA	Endre	Hungary	2012
ZOPPO	Franco	Italy	2007
ZUCCHELLI	Giulio	Italy	2012

### CP Certification candidates successful to exam

AARDEMA	Margriet W.	Netherlands	2006
ABRAHAM	Pal	Hungary	2011
ACEÑA RAMOS	Marta	Spain	2010
ACOU	Willem-Jan	Belgium	2011
ADDONISIO	Luigi	Italy	2012
AERTS	Arnaud	Netherlands	2009
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	Spain	2009
AL-HASHIMI	Hisham	Netherlands	2011
ALIYEV	Farid	Turkey	2010
ALZAND	B.S.N.	Netherlands	2011
AMET	Denis	France	2011
ANDERSON	Mark H	United Kingdom	2012
ANNE	Wim	Belgium	2008



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### CP Certification candidates successful to exam

APOSTOLOPOULOS	Theodoros	Greece	2006
ARBELO	Elena	Spain	2012
ARIAS PALOMARES	Miguel Angel	Spain	2010
ARNOLD	Alfred E R	Netherlands	2012
ASSELMAN	Maarten	Netherlands	2012
AVELLA	Andrea	Italy	2005
AYALA PAREDES	Felix Alejandro	Canada	2006
BACCHIONI	Giuseppe	Italy	2008
BAHGAT	Amr Kamal	Egypt	2009
BALT	Jippe	Netherlands	2011
BALTA	Osman	Germany	2010
BARKER	Diane	United Kingdom	2011
BARTHEZ	Olivier	France	2009
BAYRAK	Duhan Fatih	Belgium	2011
BEAUPORT	Joelle	Germany	2012
BELOTTI	Giusepina	Italy	2005
BENCSIK	Gabor	Hungary	2008
BERTE	Benjamin	Belgium	2012
BERTOMEU-GONZALEZ	Vicente	Spain	2010
BIJSTERVELD	Nick	Netherlands	2009
BISSINGER	Andrzej	Poland	2006
BLAAUW	Y	Netherlands	2009
BLICHARZ	Jaroslav	Poland	2011
BLOMGREN	Jan	Sweden	2012
BOHM	Adam	Hungary	2008
BONANNO	Carlo	Italy	2012
BOOS	Christopher	United Kingdom	2008
BORGER VAN DER BURG	Alida Elisabeth	Netherlands	2007
BORRELLI	Alessio	Italy	2009
BOS	Hans	Netherlands	2012
BOSKER	Hans	Netherlands	2012
BOUWELS	Leon H.R.	Netherlands	2007
BRAAM	Richard	Netherlands	2010
BREULS	Nico	Netherlands	2009
BROERS	Bernard	Netherlands	2009

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## Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

### CP Certification candidates successful to exam

BUERKLE	Gerd	Austria	2008
BUGA	Laszlo	United Kingdom	2012
BULUT	Suat	Netherlands	2010
BUN	Sok-Sithikun	France	2012
BURRI	Haran	Switzerland	2005
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
CHATTERJEE	Debjit	United Kingdom	2010
CHENEVARD	Remy	Switzerland	2012
CHONG	Daniel	Singapore	2011
CHRISTOPHE	Arnd	Germany	2011
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	2005
DE DOELDER	Marieke	Netherlands	2010
DE GROOT	Cornelis Andreas	Netherlands	2012
DE GROOT	Joris R	Netherlands	2009
DE JONG	Jonas	Netherlands	2009
DE JONG	Jeroen	Netherlands	2006
DE JONG	Richard M	Netherlands	2007
DE LA FUENTE	Sam	Spain	2009
DE LEEUW	Martin	Netherlands	2008
DE MARIA	Elia	Italy	2012
DE MEYER	Grim	Belgium	2010
DEMONIERE	Fabrice	Martinique	2011
DE POTTER	Tom	Belgium	2008
DE RIVA SILVA	Marta	Spain	2011

**CP Certification candidates successful to exam**

DE WAARD	Daan	Netherlands	2007
DE WEERD	Gerjan	Netherlands	2009
DIAB	Ihab Gomaa	United Kingdom	2009
DIAZ BUSCHMANN	Isabel	Spain	2011
DICHTL	Wolfgang	Austria	2010
DI CORI	Andrea	Italy	2012
DIDENKO	Maxim	Roumania	2010
DIIKMAN	Barbara	Netherlands	2012
DILAVERIS	Polychronis	Greece	2006
DINH	Trang	Netherlands	2012
DOMENICHINI	Giulia	Spain	2011
DORMAN	Reinhart	Netherlands	2012
DULBECCO	Massimo	Italy	2010
DURAY	Gabor Zoltan	Germany	2008
DUTHOIT	Guillaume	France	2010
DYRDA	Katia	Canada	2010
EHRlich	Joachim	Germany	2011
EIJSBOUTS	Sabine	Netherlands	2011
EISENBERGER	Martin	Belgium	2008
EIVINDSON	Gunvald	Norway	2008
ELDER	Douglas	United Kingdom	2010
EL KADRI	Moutaz	United Kingdom	2012
ENGBERS	Jos G	Netherlands	2009
ERCKERT	Martin	Italy	2009
ERIKSEN	Ulrik Hedegaard	Denmark	2011
ERNTELL	Hans	Sweden	2011
ESCHEN	Ole	Denmark	2009
ESMAIL	Shani	United Kingdom	2011
EVERTZ	Reinder	Spain	2012
FACCHIN	Domenico	Italy	2010
FEDORCO	Marian	Czech Republic	2011
FERNANDEZ PASTOR	Julia	Spain	2011
FIROUZI	Mehran	Netherlands	2011
FLEVARI	Panayota	Greece	2008
FOLDESI	Csaba Laszlo	Hungary	2009

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## Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

### CP Certification candidates successful to exam

FOLEY	Paul William Xavier	United Kingdom	2009
FOLKERINGA	Richard	Netherlands	2007
FONTENLA	Adolfo	Spain	2010
FRANCA PEREIRA	Roberto	USA	2007
FRANCK	Harald	Germany	2010
FRANCOIS	Bart	Belgium	2011
FRYKMANN	Viveka	Sweden	2007
FUNK	Sabine	Switzerland	2010
GABRIEL	Mario	Netherlands	2011
GALLARDO LOBO	Rodrigo	Spain	2009
GANIERE	Vincent	Switzerland	2010
GARCIA BOLAO	José Ignacio	Spain	2005
GARCIA MORAN	Emilio	Spain	2005
GARWEG	Christophe	Belgium	2011
GEBETSBERGER	Franz	Austria	2008
GERRITSEN	Jean Georges	Netherlands	2005
GHANI	Abdul	Netherlands	2012
GIANNOLA	Gabriele	Italy	2008
GIL	Ricardo	Portugal	2010
GIL ORTEGA	Ignacio	Spain	2011
GJESTVANG	Finn Tore	Norway	2008
GONZALEZ-ENRIQUEZ	Susana	Spain	2008
GONZALEZ FERRER	Juan Jose	Spain	2012
GORLO	Adam	Poland	2012
GRADAUS	Rainer	Germany	2006
GRAUSS	Robert Willem	Netherlands	2012
GRECU	Mihaela	Romania	2006
GRIECO	Domenico	Italy	2012
GUGUCHEV	Pavel	USA	2010
GUTLEBEN	Klaus Juergen	Germany	2011
HAMEL	JohnJohn	Switzerland	2010
HAMRAOUI	Karim	Netherlands	2010
HARTOG	Johannes	Netherlands	2011
HASSAN	Ahmed Abdulwadoud	Netherlands	2012
HAUER	Herbert	Netherlands	2009

**CP Certification candidates successful to exam**

HAWKINS	Nathaniel Mark	United Kingdom	2012
HAYAT	Sajad	United Kingdom	2012
HAYES	Chris	United Kingdom	2009
HAZELEGER	Ronald	Netherlands	2010
HEIB	KlausDieter	Germany	2009
HEMELS	Martin	Netherlands	2009
HERREROS GUILARTE	Benito	Spain	2005
HERCZKU	Csaba	Hungary	2009
HJORTSHOJ	Soren	Denmark	2008
HOBBS	Julian	United Kingdom	2010
HOEKSTRA	Eduard Henk	Netherlands	2011
HOOFT VAN HUYSDUYNEN	Bart	Netherlands	2010
HORDYNSKI	Grzegorz	Poland	2011
HORNSTEN	Jonas	Sweden	2007
HUIJSKES	Raymond	Netherlands	2012
HURLIMANN	David	Switzerland	2009
HUYBRECHTS	Wim	Belgium	2008
IOANNIDIS	Panagiotis	Greece	2006
IORGULESCU	Corneliu Nicolae	Romania	2008
JACON	Peggy	France	2010
JAMALYAN	Smbat	Armenia	2010
JANSEN	Ward	Netherlands	2010
JANSEN	Annemieke HM	Netherlands	2008
JANSENS	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
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

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## Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

### CP Certification candidates successful to exam

KARABINOS	Ilias K	Greece	2007
KATSIKAS	Christos	Greece	2012
KEMME	Michiel	Netherlands	2007
KETELS	Stefan	Belgium	2007
KJELLMAN	Bjorn	Sweden	2007
KLEIN	Norbert	Germany	2011
KLEIN	Gunnar	Germany	2007
KNOPS	Reinoud	Netherlands	2008
KOEPFLI	Pascal	Switzerland	2007
KOEPP	Ulf	Norway	2008
KOLB	Christophe	Germany	2010
KOMANOVA	Erika	Slovak Republic	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
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
KUIJPER	Aaf	Netherlands	2011
LANGERAK	Susan	Netherlands	2012
LERCHER	Peter	Austria	2010
LERNER	Martin Robert	Sweden	2010
LEWANDOWSKI	Michael	Poland	2012
LIEUW-A-FA	Mariska	Netherlands	2009
LINDE	Antonio	Spain	2012
LINDELL	Peter	Sweden	2007
LINDGREEN	Ulf	Denmark	2008

**CP Certification candidates successful to exam**

LIPCHENCA	Igor Ariel	Israel	2008
LIPOLDOVA	Jolana	Czech Republic	2009
LIPTON	Jonathan	Netherlands	2012
LITTERFELDT	Ingrid	Sweden	2008
LUBBERTVERBERKMOES	Addy	Netherlands	2010
LUEDORFF	Guido	Germany	2008
LUERMANS	Justin	Netherlands	2012
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
MARICONTI	Barbara	Italy	2008
MARINI	Massimiliano	Italy	2007
MARTINEK	Martin	Austria	2008
MARTINEZ SANDE	Jose Luis	Spain	2009
MASCIOLI	Giosue	Italy	2006
MASSA	Thomas	Germany	2008
MAZZUCCO	Raffaele	Italy	2009
MEILTZ	Alexandre	Switzerland	2009
MEINE	Mathias	Netherlands	2007
MELANDER	Kjell	Sweden	2008
MELMAN	Paul G	Netherlands	2011
MERKELY	Bela	Hungary	2007
MICHAELSEN	Jochen	Germany	2010
MIHALCZ	Attila	Austria	2011
MITROWSKI	Przemyslaw	Poland	2005
MLCOCHOVA	Hanka	Czech Republic	2009
MOLHOEK	Sander G	Netherlands	2008
MONNARD	Simon	Switzerland	2011
MONNINK	Stefan	Netherlands	2011

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## Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

### CP Certification candidates successful to exam

MORENO	Jose	Spain	2012
MORENO PLANAS	Javier	Spain	2005
MORTSELL	David	Sweden	2012
MORTTADA	Ayman	Egypt	2012
MUELLER	Stephan Andreas	Switzerland	2011
MUELLER	Dirk	Germany	2008
MUNDEL	Markus Mathias	Germany	2008
MUNTEAN	Bogdan	Germany	2011
MUNTINGA	Harm-Jans	Netherlands	2009
NAGARAJAN	Darbhamulla	United Kingdom	2007
NAGEH-ARMANIOS	Maged	USA	2011
NENTWICH	Karin	Germany	2012
NERI	Gianfilippo	Italy	2007
NEVEN	Kars	Germany	2007
NG	Sunanto	Netherlands	2011
NICASTIA	Deborah	Netherlands	2009
NICOLAIDES	Eleftherios	United Kingdom	2007
NOTI	Fabian	Switzerland	2012
NOVAK	Jan	Switzerland	2011
NOVIKOV	Dmitry	Russian Federation	2012
ODLAND	Hans Henrik	Norway	2009
OIKARINEN	Lasse	Finland	2008
OMAR	Salama	Saudi Arabia	2010
OOMEN	Ad	Netherlands	2011
OREZIAK	Artur	Poland	2011
OSMAN	Faizel	United Kingdom	2006
OSTROWSKA	Bozena	Sweden	2007
OUSS	Alexandre	Netherlands	2012
PACHON IGLESIAS	Marta	Spain	2012
PAISEY	John	United Kingdom	2008
PARAVOLIDAKIS	Konstantinos	Greece	2008
PASCALE	Patrizio	Switzerland	2009
PATWALA	Ashish	United Kingdom	2010
PAULUSSEN	Guido	Netherlands	2006
PAWLIK	Tomasz	Poland	2012



**CP Certification candidates successful to exam**

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
PERROTTA	Laura	Italy	2012
PETKAR	Sanjiv	United Kingdom	2008
PETRACCI	Barbara	Italy	2009
PETRU	Jan	Czech Republic	2009
PETTIT	Stephen	United Kingdom	2011
PHILBERT	Berit Thornvig	Denmark	2010
PINDADO RODRIGUEZ	Javier	Spain	2009
PLUTA	Slawomir	Poland	2010
PORRO	Rosa	Spain	2009
POZZETTI	Daniela	Italy	2006
PREDOVSKI	Milen	Czech Republic	2011
PRONK	Arjen	Netherlands	2010
PRUSKI	Maciej	Poland	2010
PRZYBYLSKI	Andrzej	Poland	2007
PSYCHARI	Stavroula	Greece	2011
PUCHOL	Alberto	Spain	2009
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
REBELLATO	Luca	Italy	2009
RESTLE	Christian	Germany	2009
RICCIARDI	Danilo	Belgium	2012
RIVAS GANDARA	Nuria	Spain	2010
ROBERT	Jens	Switzerland	2012
ROBLES DE MEDINA	Ramon Mariano	Netherlands	2011
ROCA LUQUE	Ivo	Spain	2011

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## Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

### CP Certification candidates successful to exam

RODRIGUEZ MANERO	Moises	Belgium	2012
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
SCHAUMANN	Anselm	Germany	2009
SCHEFFER	Michael G	Netherlands	2008
SCHOLZ	Brit	Germany	2011
SCHOONDERWOERD	Bas	Netherlands	2008
SCHRAGO	Gregoire	Switzerland	2010
SCHREVE-STEENSMA	Ariadne Midori	Netherlands	2012
SCHUKRO	Christoph	Austria	2011
SCHWAGTEN	Bruno	Belgium	2008
SCIARAFFIA	Elena	Sweden	2011
SEDLACEK	Kamil	Czech Republic	2010
SEGRETI	Luca	Italy	2010
SEGURA VILLALOBOS	Federico	Spain	2011
SEILER	Jens	Switzerland	2011
SENOUF	David	Switzerland	2009
SEOW	Swee-Chong	Singapore	2007
SEPSI	Milan	Czech Republic	2011
SGARITO	Giuseppe	Italy	2006
SIMEONIDOU	Eftihia	Greece	2006
SJOBLOM	Johanna	Sweden	2008
SKIADAS	Ioannis	Greece	2011
SMEELE	Frank	Netherlands	2011
SMEETS	Frans	Netherlands	2011
SMILDE	Tom	Netherlands	2011
SMITS	Jeroen	Netherlands	2012

**CP Certification candidates successful to exam**

SPIERENBURG	Han	Netherlands	2008
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
SWART	Hp	Netherlands	2009
SZAMLEWSKI	Piotr	Sweden	2010
TAHAPARY	Giovanni	Netherlands	2009
TER BEKKE	Rachel	Belgium	2010
TEUBL	Alexander	Austria	2009
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
TRUCCO	Maria Emilce	Spain	2012
TUINENBURG	Anton	Netherlands	2011
TUININGA	Ype	Netherlands	2009
TUREL	Baybars	Turkey	2009
TURK	Ugur Onsel	Turkey	2011
UCER	Ekrem	Germany	2010
URBAN	Lubos	Slovak Republic	2009

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## Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

### CP Certification candidates successful to exam

VACCARI	Diego	Italy	2006
VALK	Suzanne	Netherlands	2010
VALZANIA	Cinzia	Italy	2007
VAN ALEM	Anouk	Netherlands	2010
VAN CASTEREN	Lieve	Belgium	2010
VAN DEN AKKER-BERMAN	Lily	Netherlands	2011
VAN DEN BOS	EwoutJan	Netherlands	2009
VAN DER GALIEN	Albert	Netherlands	2012
VAN DER HEIJDEN	Dirk	Netherlands	2010
VAN DER HEIJDEN	Robert	Netherlands	2010
VAN DER HEIJDEN	Jeroen	Netherlands	2011
VAN DER KLEY	Tim	Netherlands	2011
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 DOORN	Dirk Jan	Netherlands	2011
VAN EMPEL	Vanessa	Netherlands	2010
VAN ES	Robert	Netherlands	2011
VAN GASTEL	Henk Christiaan	Netherlands	2010
VAN GENT	Marco	Netherlands	2012
VAN HAELST	Paul	Netherlands	2012
VAN HERENDAEL	Hugo	Belgium	2009
VAN HEUVERSWIJN	Frederic	Belgium	2011
VAN KRAAIJ	Dave	Netherlands	2009
VAN NOORD	Trudeke	Netherlands	2007
VAN OOSTROM	Antonie	Netherlands	2009
VAN OPSTAL	Jurren	Netherlands	2007
VAN REIJ	Frank	Netherlands	2010
VAN ROOSMALEN	Radboud	Netherlands	2011
VAN SCHAARDENBURGH	Pepijn	Netherlands	2009
VAN SCHAIIKVAN DER WIELEN	Marie-Louise	Netherlands	2009
VAN VLIJES	Bob	Netherlands	2010
VAN WOERKENS	Leon	Netherlands	2011
VASILOPOULOS	Charalambos	Greece	2006

## EHRA Certification

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### CP Certification candidates successful to exam

VATASESCU	Radu- Gabriel	Romania	2006
VENABLES	P A	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	Netherlands	2010
VIJN	Arie Gerhard	Netherlands	2010
VILLUENDAS SABATE	Roger	Spain	2010
VON BARY	Christian	Germany	2011
VOSS	Frederik	Germany	2008
VRAZIC	Hrvoje	Croatia	2011
VRIEND	Joris	Netherlands	2011
WALHOUT	Ronald	Netherlands	2011
WERETKA	Slawomir	Germany	2011
WESTENDORP	Iris	Netherlands	2006
WESTRA	Sjoerd	Netherlands	2009
WHINNETT	Zachary	United Kingdom	2011
WIDDERSHOVEN	Josef Jos	Netherlands	2009
WIJCHERS	Sip	Belgium	2009
WILLEMS	Albert	Netherlands	2009
WINTER	Siegmund	Austria	2010
WOLLMANN	Christian	Austria	2011
YAP	Sing-Chien	Netherlands	2012
ZAJAC	Dariusz	Poland	2012
ZAKY	Hosam	United Arab Emirates	2007
ZALEVSKYI	Valerii	Ukraine	2007
ZERVOPOULOS	George	Greece	2006
ZIMA	Endre	Hungary	2009
ZOPPO	Franco	Italy	2006
ZUCHELLI	Giulio	Italy	2008

## 5. Appendix



### EHRA Certification

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## Allied Professionals

### Certified Allied Professionals

ANTENBRINK	Johannes Fredericus	Netherlands	2011
ARTS	Germaine	Netherlands	2011
BIJVOET	Eleonora	Netherlands	2011
DE KEYZER-VAN MUIJLWIJK	Klara	Netherlands	2012
DE MELKER	Robert	Netherlands	2012
EDENS	Joran	Netherlands	2011
GERCAMA	Ale	Netherlands	2012
GOUGH	Jacqueline	Netherlands	2012
GRAUENKAMP	Caspar	Netherlands	2012
HOP	Henri Marco	Netherlands	2011
KEIJZER	Rens	Netherlands	2012
KOFLER	Ruth	Austria	2012
LA GRAND	Reinalda	Netherlands	2011
LAST	Tim	Netherlands	2012
LINSSEN-ABEN	Maria Helena Hendrica	Netherlands	2011
MUNOZ	Julio	Spain	2011
OOSTERWEGHEL	Jeannette	Netherlands	2012
OVEREEM	Bartjan	Netherlands	2012
PATTERSON-ROTTGERING	Wendy	Netherlands	2012
PEREIRA	Helder	United Kingdom	2012
PIMENTA	Ricardo	Portugal	2012
PISCEDDA	Valerio	Belgium	2011
SCHUMM	Steven	Netherlands	2012
SEFFINGA	Kees	Netherlands	2012
SLIJKERMAN	Myrna	Netherlands	2012
SOARES	Filipe	Germany	2011
SOUGIANNIS	Dimitros	Greece	2012
STOLL	Eric	Netherlands	2012
SVENSSON	Emma	Sweden	2011
UGEN	Ad	Netherlands	2011
UITERWAAL	Hans	Netherlands	2011
VAN DER DRIFT	Mireille	Netherlands	2011
VAN DER KEMP	Peter	Netherlands	2011
VAN DER SMAN	Yoeri Walter	Netherlands	2011
VAN DOORN	Arjan	Netherlands	2011

## **EHRA Certification**

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### **Certified Allied Professionals**

<b>VAN ELS-RUTTEN</b>	<b>Anna</b>	<b>Netherlands</b>	<b>2012</b>
<b>VENANCIO GALVAO</b>	<b>Julia Maria</b>	<b>Netherlands</b>	<b>2012</b>
<b>VILLADEAMIGO</b>	<b>Juan Manuel</b>	<b>Spain</b>	<b>2012</b>
<b>WOLTING</b>	<b>Roelof John</b>	<b>Netherlands</b>	<b>2012</b>
<b>XAVIER</b>	<b>Anna</b>	<b>Portugal</b>	<b>2012</b>













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