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The EHRA White Book 2012

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

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



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Acknowledgments

EHRA would like to express its appreciation to BIOTRONIK SE & Co. KG for their support of this book.

Preface – The EHRA White Book 2012: fifth 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 54 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 exists. 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. Consequently, the EHRA White Book should 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 largest number to date.

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 54 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 Sandy Hathaway, Arnika Kiel and Robert Wüstenberg. To all of them goes our deepest gratitude and appreciation.

Prof. Angelo Auricchio, EHRA President (2011-2013)

Prof. Karl-Heinz Kuck, EHRA President-Elect

Prof. Robert Hatala, Chairman of the EHRA National Societies Committee

Prof. Fernando Arribas, EHRA White Book 2012 Coordinator,

Member of the EHRA National Societies Committee

Table of Contents

1. List of Authors	7
2. Scope and Methodology	13
3. ESC Countries Overview	17
Albania	19
Algeria	21
Armenia	23
Austria	33
Azerbaijan	43
Belarus	53
Belgium	63
Bosnia & Herzegovina	73
Bulgaria	83
Croatia	93
Cyprus	103
Czech Republic	113
Denmark	123
Egypt	133
Estonia	143
Finland	153
France	163
Georgia	173
Germany	183
Greece	193
Hungary	203
Iceland	213
Ireland	223
Israel	233
Italy	243
Kosovo	253
Latvia	255

Lebanon	265
Libya	267
Lithuania	269
Luxembourg	279
Macedonia FYR	289
Malta	299
Montenegro	309
Morocco	319
Netherlands	329
Norway	339
Poland	349
Portugal	359
Republic of Moldova	369
Romania	371
Russian Federation	381
San Marino	391
Serbia	401
Slovakia	411
Slovenia	421
Spain	431
Sweden	441
Switzerland	451
Syria	461
Tunisia	463
Turkey	473
Ukraine	475
United Kingdom	485

4. Sources	495
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5. Appendix – EHRA Certification	505
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1. List of Authors



1. List of Authors

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:

Armenia

Svetlana Grigoryan	Ashot Hovhannesian
--------------------	--------------------

Austria

Gabriele Jakl	Clemens Steinwender	General Hospital Linz
---------------	---------------------	-----------------------

Azerbaijan

Farid Aliyev	Zakyeva Ulviya
--------------	----------------

Belarus

Alexandr Chasnoits

Belgium

Georges H. Mairesse

Bosnia and Herzegovina

Boris M. Goronja	Prof. Kacila	Prof. Nurkic
Dr. Uncanin	Prof. Fazlibegovic	Dr. Delic and Prof. Maric

Bulgaria

Svetoslav lovev

Croatia

Robert Bernat

Cyprus

Panayiotis Avraamides

Czech Republic

Jan Bytesnik	Milos Taborsky	Robert Cihak
--------------	----------------	--------------

Denmark

Helen Høgh Petersen

Egypt

Wagdy Galal	Mervat AboulMaaty	Mohammed Hassan Khalil
Khairy Abdel Dayem		

Estonia

Jüri Voitk

Finland

Antti Hedman

France

Jean-Claude Deharo

Georgia

Giorgi Papiashvili

Germany

Carsten W. Israel

Greece

Michail Efraimidis

Hungary

László Gellér

Iceland

David O. Arnar	Gizur Gottskalksson
----------------	---------------------

Ireland

David Keane	Siobhann Jennings	Regina Black
-------------	-------------------	--------------

Israel

Mahmoud Suleiman	All members of the IW/GPE	Michael Glikson
------------------	---------------------------	-----------------

Italy

Maria Grazia Bongiorno	Maurizio Landolina
------------------------	--------------------

Latvia

Oskars Kalejs	Maija Vikmane
---------------	---------------

Lithuania

Audrius Aidielis	Germanas Marinskis
------------------	--------------------

Luxembourg

Camille Pesch	Carlo Dimmer	Laurent Groben
---------------	--------------	----------------

Macedonia FYR

: Nikola Gjorgov

Malta

M. Sammut	T. Tilney
-----------	-----------

1. List of Authors

Montenegro

Ljilja Music

Morocco

Abdelali Salima Filiale de rythmologie de la SMC

Netherlands

Enno T. van de Velde Serge. A. I. P. Trines

Norway

Erik Kongsgaard Eivind S. Platou

Poland

Przemyslaw Mitkowski Grzegorz Opolski

Portugal

Carlos Morais Francisco Madeira Mario Oliveira
Vitor Martins

Romania

Dan Dobreanu Radu Vatasescu Gheorghe Dan
Mihaela Grecu Alexandru Deutsch

Russian Federation

Amiran Revishvili

San Marino

Liano Marinelli Marina Foscoli

Serbia

Goran Milasinovic

Slovakia

Robert Hatala Gabriel Kaliská

Slovenia

Peter Rakovec

Spain

Ignacio Fernandez Lozano

Sweden

Johan Brandt

Switzerland

Christian Sticherling Jürg Fuhrer Istvan Babota

Tunisia

Habib Haouala

Rafik Chattaoui

Abdedayem Haggui

Ukraine

Oleg S. Sychoy

Antonuk-Kysil V.

Bondarchuk S.

Borodai A.

Bugaev M.

Burkovskii A.

Doronin A.

Ermuraki S.

Gritsai A.

Haritonchik D.

Isakevich R.

Karpenko J.

Klantsa A.

Komiaty V.

Kravchuk B.

Kravchenko T.

Kushnir N.

Kuznetsov A.

Marcienko I.

Matlah A.

Matviichuk A.

Melnichuk M.

Notova G.

Nikitan S.

Oleinik V.

Pohilko S.

Posudevskii S.

Pravosudovich S.

Tkachuk L.

Sadovoi V.

Sarazhin K.

Popov S.

Pilipchuk V.

Urkol G.

Vegulyar S.

Volkov D.

Zubenko K.

United Kingdom

David Cunningham

Stephen Furniss

2. Scope and Methodology



2. Scope and Methodology

The EHRA White Book 2012 is the fifth 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 2012 EHRA White Book edition follows similar methodology of the 2008, 2009, 2010 and 2011 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 for the year 2010 were prefilled in the questionnaire. 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 2012 until May 2012.

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

3. ESC Countries Overview





ALBANIA

Pending data submission.





ALGERIA

Pending data submission.

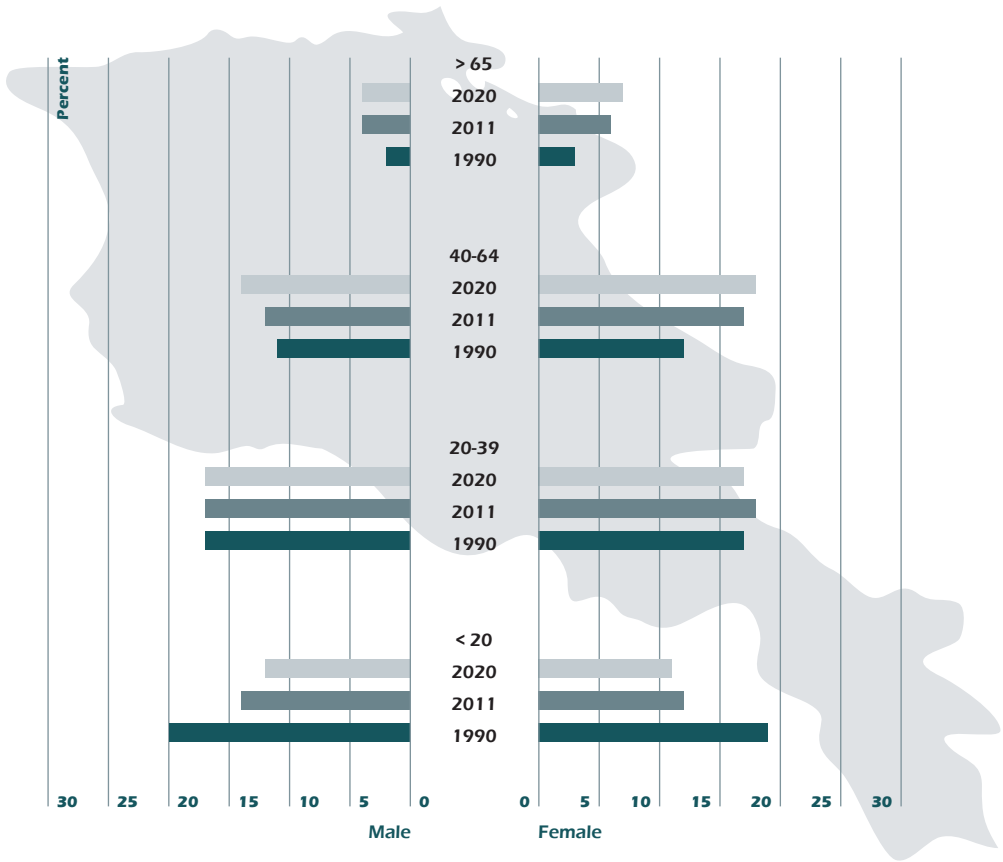


ARMENIA



1. Statistics

Age pyramid for Armenia





Healthcare data		
Hospitals (per 100.000 population)	3,9	2009
Beds (per 100.000 population)	372,0	2009
Density of physicians (per 1.000 population)	3,5	2009
Density of nurses (per 1.000 population)	4,1	2009

Demographic information		
Population	2.967.975	2011
Population annual growth rate (%)	0,1	2011
Life expectancy at birth	73	2011
Death rate (per 1.000 population)	5,4	1981
Live births (per 1.000 population)	13,8	2010

Economic information		
Gross domestic product (U.S dollar-billions)	10,16*	2011
Gross domestic product per capita (U.S dollar-units)	3.047,99*	2011
Total expenditure on health as % of GDP	4,7	2009
General government expenditure on health as % of total expenditure on health	44,5	2008
Private expenditure on health as % of total expenditure on health	55,5	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	49%
2011	not available

3. Healthcare System

The Armenian healthcare system contains of two parts: state and private health system. Medical care is financed by state in some: 1) children 0-7 years old, 2) some emergency medical care (co-payment) 3) risk groups (very few, covers only 300 EURO). Unfortunately, this NHS funds does not cover any kind of heart rhythm management for children or adults, including device implantation or ablations for life threatening arrhythmias.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	5%	7%
Uninsured citizens	95%	93%

Distribution of insurance modality		
	2010	2011
Public insurance company	95%	85%
Private insurance company	5%	15%
Private co-payment	20%	40%
There are no public insurance companies.		

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

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

Full payment is necessary, by patient or by private insurance company.



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	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
Internal loop recorders	☒	☐	☐	☒	☐	☐
ICD primary prevention	☒	☐	☐	☒	☐	☐
ICD secondary prevention	☒	☐	☐	☒	☐	☐
CRT devices	☒	☐	☐	☒	☐	☐
Ablation	☒	☐	☐	☒	☐	☐

Treatment availability

No restrictions	☒
No restrictions, but the indications have to follow the ESC guidelines	☒
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒

Specialty required for catheter ablation	No
---	-----------

Specialty required for ICD or pacemaker implants	No
---	-----------

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

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

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

Number of medical faculties	3
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	50%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	3	2
Total Pacemaker units implanted	383	396
Thereof, New implants	307	317
Thereof, Replacements	76	79

Specialty performing implants	
Cardiologists	97%
Surgeons	3%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	2	2
Total CRT units implanted	7	8
Thereof, CRT pacemaker	0	0
Thereof, CRT ICD	7	8

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2010	2011
Implanting centres	2	2
Total ICD units implanted	34	36
Thereof, Single chamber	4	5
Thereof, Dual chamber	30	31
First implants	18	22
Replacements	16	14

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2010	2011
Implanting centres	2	2
Total loop recorders implanted	0	0

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	0	2011	0

Specialty performing extractions	
Cardiologists	0%
Surgeons	0%
Mixed team of cardiologist and surgeons	100%



10. Device specific

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

As it is too expensive and patient have to pay himself. Sometime it is even easier just to implant a pacemaker at once.

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

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

	2010	2011
Number of ablation centres	1	2
Number of ablations performed	49	98
Mean number of ablations per centre	not available	49
Number of AF ablations	2	2
Number of ablation centres (> 50 AF ablations)	0	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	2

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

12. Guidelines

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

Necessity of guideline translation to national language	Yes
---	-----

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☐	☐	☒	☐	☐
Lack of reimbursement, limited financial resources	☐	☒	☐	☐	☐
Lack of referral	☒	☐	☐	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☐	☐	☐	☐	☒

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

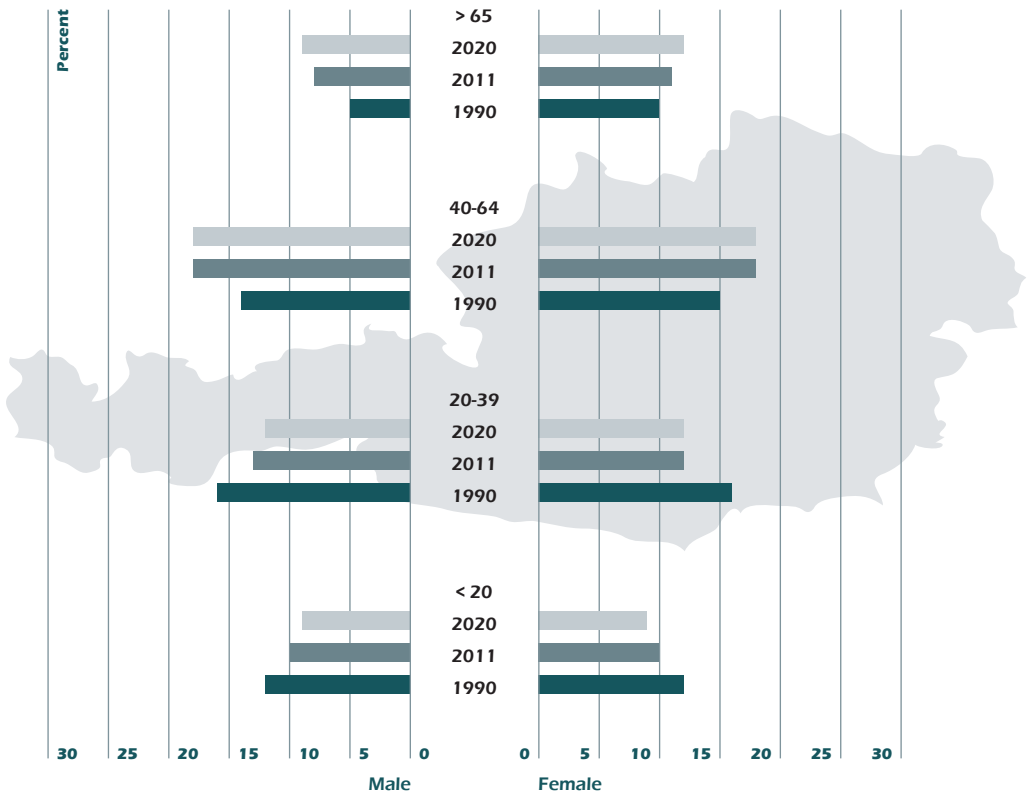
Please, find all sources at the end of the EHRA White Book 2012.

AUSTRIA



1. Statistics

Age pyramid for Austria



Healthcare data		
Hospitals (per 100.000 population)	3,2	2009
Beds (per 100.000 population)	766,1	2009
Density of physicians (per 1.000 population)	4,8	2010
Density of nurses (per 1.000 population)	7,6	2009

Demographic information		
Population	8.217.280	2011
Population annual growth rate (%)	0,0	2011
Life expectancy at birth	80	2011
Death rate (per 1.000 population)	13,4	1970
Live births (per 1.000 population)	9,4	2010

Economic information		
Gross domestic product (U.S dollar-billions)	425,09*	2011
Gross domestic product per capita (U.S dollar-units)	50.504,01*	2011
Total expenditure on health as % of GDP	11,0	2009
General government expenditure on health as % of total expenditure on health	73,7	2008
Private expenditure on health as % of total expenditure on health	20,9	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	43%

3. Healthcare System

The Austrian Health System is organised by statutory health insurance. It covers about 95% of the population on a mandatory basis and about 2% on a voluntary basis. There are 26 statutory health insurance funds organised in the Federation of Austrian Social Security Institutions. These funds do not compete with each other since the membership is mandatory and based on occupation or place of residence. The Federal Ministry of Health and Women is the main policy maker in health care and is responsible of supervising the statutory health insurance funds. (Source: Highlights on Health in Austria, WHO 2004)

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	97,6%	96,9%
Uninsured citizens	2,4%	3,1%

Distribution of insurance modality		
	2010	2011
Public insurance company	80-85%	83%
Private insurance company	15-20%	17%
Private co-payment	0%	0%

Possibility of subscribing to private health insurance plans	Yes
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Co-payment necessary for the following therapy	
ICD devices	☐
Pacemakers	☐
Ablation	☐

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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☒
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒

Specialty required for catheter ablation	Yes
Mostly cardiologists (EP doctors), few surgeons	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist, surgeon	

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	No
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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 medical faculties	4
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Percentage of academic facilities among practicing EP and implant centres	6,5%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	61		61
Total Pacemaker units implanted	7.712		7.810
Thereof, New implants	not available		not available
Thereof, Replacements	not available		not available

Specialty performing implants	
Cardiologists	30-50%
Surgeons	50-70%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	30		30
Total CRT units implanted	1.003		958
Thereof, CRT pacemaker	307		300
Thereof, CRT ICD	696		658

Specialty performing implants	
Cardiologists	30%
Surgeons	70%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	30		30
Total ICD units implanted	1.268		1.805
Thereof, Single chamber	759		1.159
Thereof, Dual chamber	509		646
First implants	not available		not available
Replacements	not available		not available

Specialty performing implants	
Cardiologists	30%
Surgeons	70%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	40*		40
Total loop recorders implanted	300*		400

* Estimation, company data and personal communication

Specialty performing implants	
Cardiologists	50%
Surgeons	50%

9. Lead extractions

Centres perform lead extractions			
2010	4	2011	4

Specialty performing extractions	
Cardiologists	0%
Surgeons	75%
Mixed team of cardiologists and surgeons	25%



10. Device specific

Availability of remote monitoring of devices	Yes
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National registry for	
ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* In preparation (ÖBIG); ** Austrian PM Registry; *** National Ablation Registry

Availability of a national quality insurance system or complication registry	Yes
In preparation (BIQG)	

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
GÖG, ÖBIG, BMGFJ (Ministry of Health)	

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	18	18
Number of ablations performed	1.800*	1.805**
Mean number of ablations per centre	120	130***
Number of AF ablations	450*	510**
Number of ablation centres (> 50 AF ablations)	4	4
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	2

* Approximately, data from registry not available now; ** Austrian ablation registry and questionnaire (non-reporting centres: 2); ***Austrian ablation registry

Availability of a national registry for interventional electrophysiology	Yes
Austrian ablation registry	

12. Guidelines

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

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	5
Lack of reimbursement, limited financial resources	☐	☐	☒	☐	☐	1
Lack of referral	☐	☒	☐	☐	☐	2
Lack of trained personnel	☒	☐	☐	☐	☐	4
Low awareness of guidelines	☐	☒	☐	☐	☐	3
Lack of operators	☒	☐	☐	☐	☐	6

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

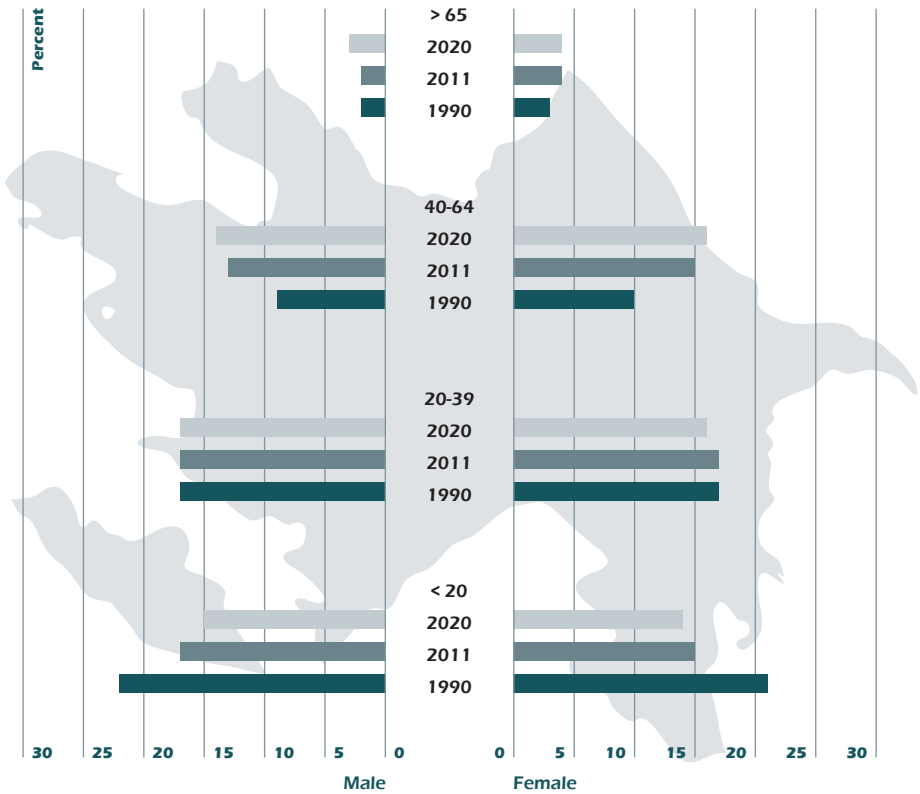
Please, find all sources at the end of the EHRA White Book 2012.

AZERBAIJAN



1. Statistics

Age pyramid for Azerbaijan



Healthcare data		
Hospitals (per 100.000 population)	8,5	2009
Beds (per 100.000 population)	753,7	2009
Density of physicians (per 1.000 population)	3,7	2009
Density of nurses (per 1.000 population)	7,0	2009

Demographic information		
Population	9.397.279	2011
Population annual growth rate (%)	1,0	2011
Life expectancy at birth	71	2011
Death rate (per 1.000 population)	5,9	2007
Live births (per 1.000 population)	18,3	2010

Economic information		
Gross domestic product (U.S dollar-billions)	68,50*	2011
Gross domestic product per capita (U.S dollar-units)	7.509,73*	2011
Total expenditure on health as % of GDP	5,9	2009
General government expenditure on health as % of total expenditure on health	19,3	2008
Private expenditure on health as % of total expenditure on health	80,7	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	not available

3. Healthcare System

General care is free of charge for every citizen of Azerbaijan. But device therapy is not covered by public insurance system (exception is small number of pacemakers implanted in public hospital).

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	not available	100%
Uninsured citizens	not available	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	95%	90%
Private insurance company	5%	10%
Private co-payment	5%	10%

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

Co-payment necessary for the following therapy	
ICD devices	☒
Pacemakers	☒
Ablation	☒
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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☐	☐	☒
CRT devices	☐	☐	☒	☐	☐	☒
Ablation	☐	☐	☒	☐	☐	☒

Treatment availability

No restrictions	☒
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒

Specialty required for catheter ablation	No
---	-----------

Specialty required for ICD or pacemaker implants	No
---	-----------

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

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

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

Number of medical faculties	1
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	not available
--	----------------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	5	5
Total Pacemaker units implanted	not available	141
Thereof, New implants	not available	129
Thereof, Replacements	not available	12

Specialty performing implants	
Cardiologists	90%
Surgeons	10%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	1	2
Total CRT units implanted	16	20
Thereof, CRT pacemaker	5	2
Thereof, CRT ICD	11	18

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	1		2
Total ICD units implanted	15		22
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

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	1		1
Total loop recorders implanted	2		0

Specialty performing implants	
Cardiologists	not available
Surgeons	not available

9. Lead extractions

Centres perform lead extractions			
2010	1	2011	1

Specialty performing extractions	
Cardiologists	100%
Surgeons	0%



10. Device specific

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

Unavailability

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

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

	2010	2011
Number of ablation centres	1	1
Number of ablations performed	67	189
Mean number of ablations per centre	67	189
Number of AF ablations	2	4
Number of ablation centres (> 50 AF ablations)	0	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	1

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

12. Guidelines

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

Necessity of guideline translation to national language	Yes
---	-----

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☐	☐	☐	☐	☒	6
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒	1
Lack of referral	☐	☐	☒	☐	☐	3
Lack of trained personnel	☐	☐	☒	☐	☐	3
Low awareness of guidelines	☐	☐	☐	☐	☒	2
Lack of operators	☐	☐	☒	☐	☐	4

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

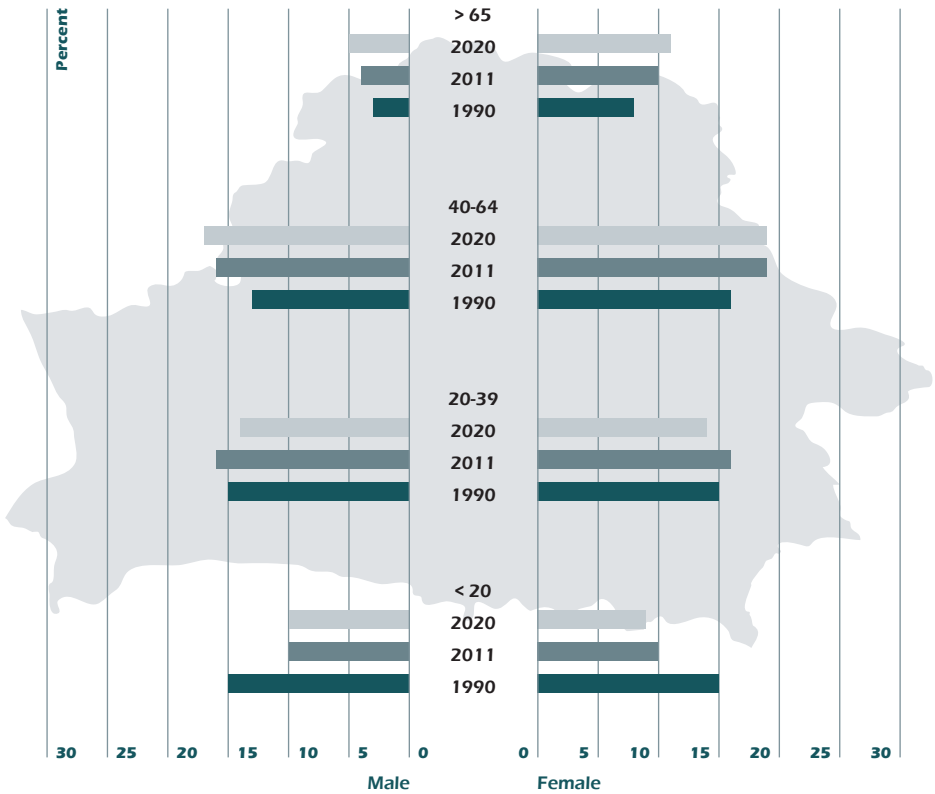
Please, find all sources at the end of the EHRA White Book 2012.

BELARUS



1. Statistics

Age pyramid for Belarus





Healthcare data		
Hospitals (per 100.000 population)	6,8	2009
Beds (per 100.000 population)	1.106,7	2009
Density of physicians (per 1.000 population)	5,1	2009
Density of nurses (per 1.000 population)	12,4	2009

Demographic information		
Population	9.577.552	2011
Population annual growth rate (%)	-0,4	2011
Life expectancy at birth	71	2011
Death rate (per 1.000 population)	14,0	2009
Live births (per 1.000 population)	11,4	2010

Economic information		
Gross domestic product (U.S dollar-billions)	57,72*	2011
Gross domestic product per capita (U.S dollar-units)	6.118,04*	2011
Total expenditure on health as % of GDP	5,8	2009
General government expenditure on health as % of total expenditure on health	72,2	2008
Private expenditure on health as % of total expenditure on health	27,8	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	53,9%
2011	51,9%

3. Healthcare System

The Healthcare system in Belarus is organised through a National Health system.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	100%	100%
Private insurance company	1%	0%
Private co-payment	3%	3%
National Budget, Privat plans. All (100%) have public insurance. About 3% (approx.) have additional privat plans.		

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

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

Founds for these therapies are limited.



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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☐	☐	☒
CRT devices	☐	☐	☒	☐	☐	☒
Ablation	☐	☐	☒	☐	☐	☒

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

4. Education

National certification availability

Device therapy	☒
Invasive electrophysiology	☒
None	☐
Roentgen-endovascular surgery	

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

There is license for Health services in general.

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Roentgen-endovascular surgeon	

Specialty required for ICD or pacemaker implants	Yes
Roentgen-endovascular surgeon, cardiac surgeon	

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

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

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

Number of medical faculties	4
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	75%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	8	10
Total Pacemaker units implanted	2.279	2.474
Thereof, New implants	2.031	2.193
Thereof, Replacements	248	281

Specialty performing implants	
Cardiologists	0%
Surgeons	100%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	1	3
Total CRT units implanted	34	49
Thereof, CRT pacemaker	21	10
Thereof, CRT ICD	13	39

Specialty performing implants	
Cardiologists	0%
Surgeons	100%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	2		6
Total ICD units implanted	55		131
Thereof, Single chamber	7		85
Thereof, Dual chamber	48		46
First implants	55		126
Replacements	0		5

Specialty performing implants	
Cardiologists	0%
Surgeons	100%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	1		1
Total loop recorders implanted	16		40

Specialty performing implants	
Cardiologists	30%
Surgeons	70%

9. Lead extractions

Centres perform lead extractions			
2010	1	2011	1

Specialty performing extractions	
Cardiologists	0%
Surgeons	100%



10. Device specific

Availability of remote monitoring of devices	No
Expensive, low number of implants.	

National registry for	
ICD	☒
Pacing	☒
Electrophysiology	☐
None	☐
IPG-Registry	

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

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
Republican Scientific and Practical Center of Cardiology and Ministry of Health	

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	3	5
Number of ablations performed	488	583
Mean number of ablations per centre	162,6	116,6
Number of AF ablations	55	38
Number of ablation centres (> 50 AF ablations)	1	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	1

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

12. Guidelines

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

Necessity of guideline translation to national language	Yes
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Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☐	☒	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☒	☐	☐
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☐	☐	☒	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

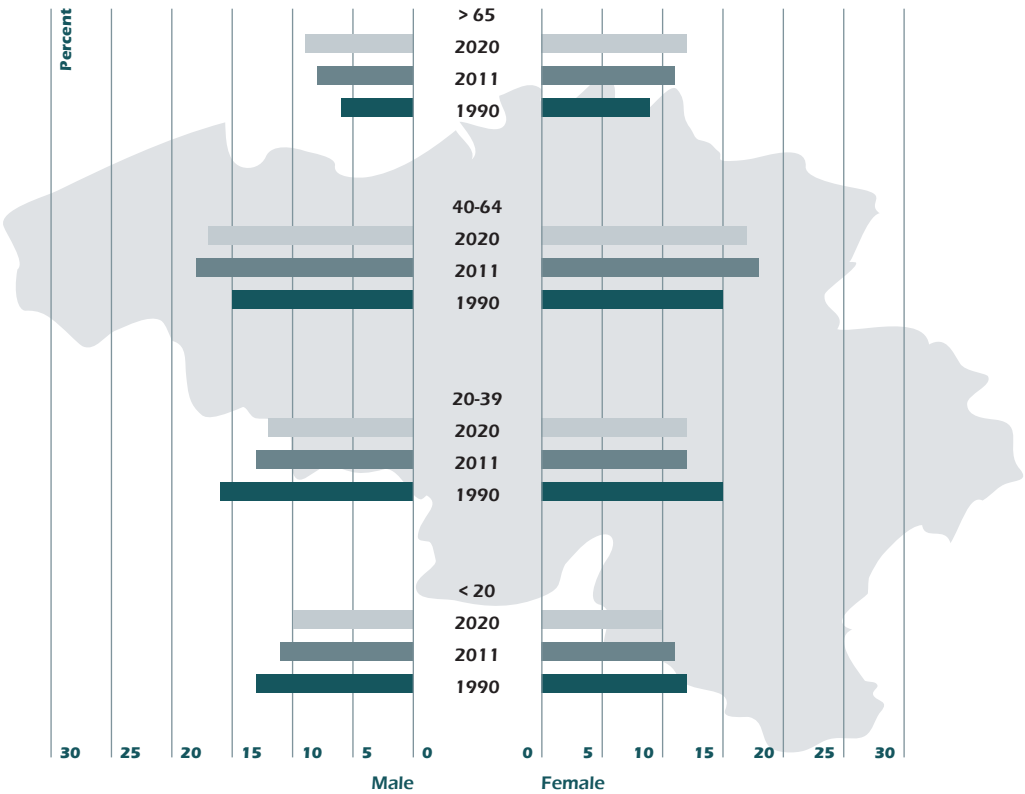
Please, find all sources at the end of the EHRA White Book 2012.

BELGIUM



1. Statistics

Age pyramid for Belgium





Healthcare data		
Hospitals (per 100.000 population)	1,9	2010
Beds (per 100.000 population)	654,7	2010
Density of physicians (per 1.000 population)	2,9	2009
Density of nurses (per 1.000 population)	not available	not available

Demographic information		
Population	10.431.477	2011
Population annual growth rate (%)	0,1	2011
Life expectancy at birth	80	2011
Death rate (per 1.000 population)	9,5	2006
Live births (per 1.000 population)	11,8	2009

Economic information		
Gross domestic product (U.S dollar-billions)	465,68*	2011
Gross domestic product per capita (U.S dollar-units)	42.630,00*	2011
Total expenditure on health as % of GDP	11,8	2009
General government expenditure on health as % of total expenditure on health	66,8	2008
Private expenditure on health as % of total expenditure on health	25,3	2008

* Data.net

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	33,6%
2011	33,6%

3. Healthcare System

INAMI - RIZIV : Feredal Health System

Belgium has a compulsory social healthcare system with 99% belgians insured via this National Health System and some have an additional private insurance. The federal government regulates and supervises the health insurance system. (Source: Highlights on health in Belgium. WHO 2004)

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	99%	99%
Uninsured citizens	1%	1%

Distribution of insurance modality		
	2010	2011
Public insurance company	±80%	±80%
Private insurance company	<1%	<1%
Private co-payment	±20%	±20%
Best estimate		

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

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



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	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
Internal loop recorders	☒	☐	☐	☒	☐	☐
ICD primary prevention	☒	☐	☐	☒	☐	☐
ICD secondary prevention	☒	☐	☐	☒	☐	☐
CRT devices	☒	☐	☐	☒	☐	☐
Ablation	☒	☐	☐	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☐
Not required for practice	☒
Accreditation not available	☐

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

Regional authorities are in charge of verifying the legal criteria for PM implantation or invasive EP. Besides that, the National health system has imposed additional criteria for ICD or ILR implantation.

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for ICD or pacemaker implants	No
--	----

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

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

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

*There are no specific regulations for defining a training centre, however all 7 universities can be considered as a training centre.

Number of medical faculties	7
-----------------------------	---

Percentage of academic facilities among practicing EP and implant centres	30%/20%
30% of centres implanting ICD are academics, 20% of centres practicing EP are academics.	



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	94	not available*
Total Pacemaker units implanted	8.980	not available*
Thereof, New implants	6.212	not available*
Thereof, Replacements	2.768	not available*

* Data not available yet by the Registry of the Belgian Heart Rhythm Association.

Specialty performing implants	
Cardiologists	75%
Surgeons	25%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	35	35
Total CRT units implanted	530	600*
Thereof, CRT pacemaker	368	not available
Thereof, CRT ICD	228	370

* Estimation

Specialty performing implants	
Cardiologists	85%
Surgeons	15%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	23		23
Total ICD units implanted	2.019		2.060
Thereof, Single chamber	not available		806*
Thereof, Dual chamber	not available		551*
First implants	1.429		1.420
Replacements	580		640

* Conseil d'accord INAMI (National health system)

Specialty performing implants	
Cardiologists	30%
Surgeons	70%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	36		36
Total loop recorders implanted	196		243

Specialty performing implants	
Cardiologists	95%
Surgeons	5%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	not available

Specialty performing extractions	
Cardiologists	not available
Surgeons	not available

10. Device specific

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

National registry for	
ICD*	☒
Pacing**	☒
Electrophysiology**	☒
None	☐

* Inami/Riziv database; ** BeHRA database

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

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

FAGG

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	38	38
Number of ablations performed	5.079	5.570
Mean number of ablations per centre	not available	539 ± 520*
Number of AF ablations	1.836	1.898
Number of ablation centres (> 50 AF ablations)	not available	22
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	17

* min: 3 - max: 1975

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

12. Guidelines

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

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☒	☐	☐
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☒	☐	☐	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☐	☒	☐	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

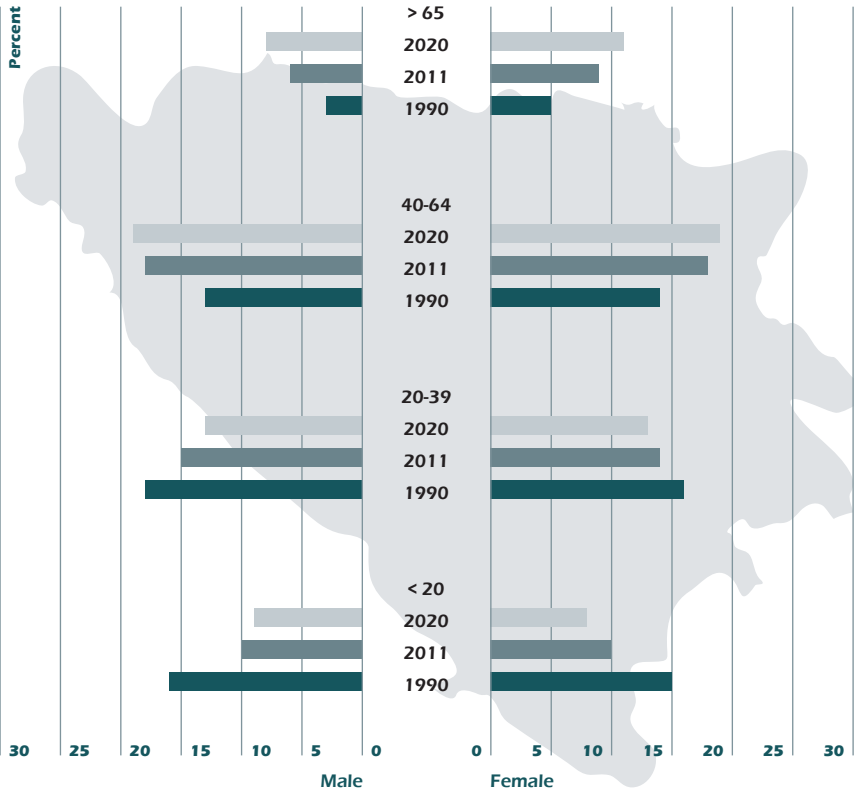
Please, find all sources at the end of the EHRA White Book 2012.

BOSNIA & HERZEGOVINA



1. Statistics

Age pyramid for Bosnia & Herzegovina



Healthcare data		
Hospitals (per 100.000 population)	1,0	2009
Beds (per 100.000 population)	341,3	2009
Density of physicians (per 1.000 population)	1,7	2009
Density of nurses (per 1.000 population)	4,8	2009

Demographic information		
Population	4.622.163	2011
Population annual growth rate (%)	0,0	2011
Life expectancy at birth	79	2011
Death rate (per 1.000 population)	6,7	1991
Live births (per 1.000 population)	8,1	2010

Economic information		
Gross domestic product (U.S dollar-billions)	18,34*	2011
Gross domestic product per capita (U.S dollar-units)	4.714,92*	2011
Total expenditure on health as % of GDP	10,9	2009
General government expenditure on health as % of total expenditure on health	58,2	2008
Private expenditure on health as % of total expenditure on health	41,8	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	54%
2011	54%

3. Healthcare System

The national healthcare system in Bosnia and Herzegovina is provided through an established network of health centres of family medicine (primary care). As a secondary and tertiary care, general hospitals, university clinical centres and specialised institutions are providing services. A few private healthcares are incorporated to the healthcare system.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	74%	74%
Uninsured citizens	26%	26%

Distribution of insurance modality		
	2010	2011
Public insurance company	74%	74%
Private insurance company	0%	0%
Private co-payment	26%	26%

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

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

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

Reimbursement availability for physicians and hospitals

	Physician receives per process reimbursement	Physician does not receive reimbursement, but incentives (eg. more salary on the following year)	Physician does not receive reimbursement neither incentive	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☐	☐	☒
CRT devices	☐	☐	☒	☐	☐	☒
Ablation	☐	☐	☒	☐	☐	☒

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☒
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☐

Specialty required for catheter ablation	Yes
Internist, cardiologist	

Specialty required for 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
---	-----------

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

Number of medical faculties	5
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	50%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	6	6
Total Pacemaker units implanted	770	636
Thereof, New implants	746	602
Thereof, Replacements	24	34

Specialty performing implants	
Cardiologists	20%
Surgeons	80%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	1	1
Total CRT units implanted	10	26
Thereof, CRT pacemaker	9	15
Thereof, CRT ICD	1	11

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	3		5
Total ICD units implanted	31		61
Thereof, Single chamber	26		45
Thereof, Dual chamber	5		16
First implants	31		60
Replacements	0		1

Specialty performing implants	
Cardiologists	55%
Surgeons	45%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	0		1
Total loop recorders implanted	0		6

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	0	2011	0

Specialty performing extractions	
Cardiologists	0%
Surgeons	0%

10. Device specific

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

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

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

	2010	2011
Number of ablation centres	1	1
Number of ablations performed	14	21
Mean number of ablations per centre	14	21
Number of AF ablations	2	0
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

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

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

Necessity of guideline translation to national language	Yes
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Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☐	☒	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☐	☐	☒	☐
Low awareness of guidelines	☐	☐	☐	☒	☐
Lack of operators	☐	☐	☐	☒	☐
Other: Limited finance	☐	☐	☐	☐	☒

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

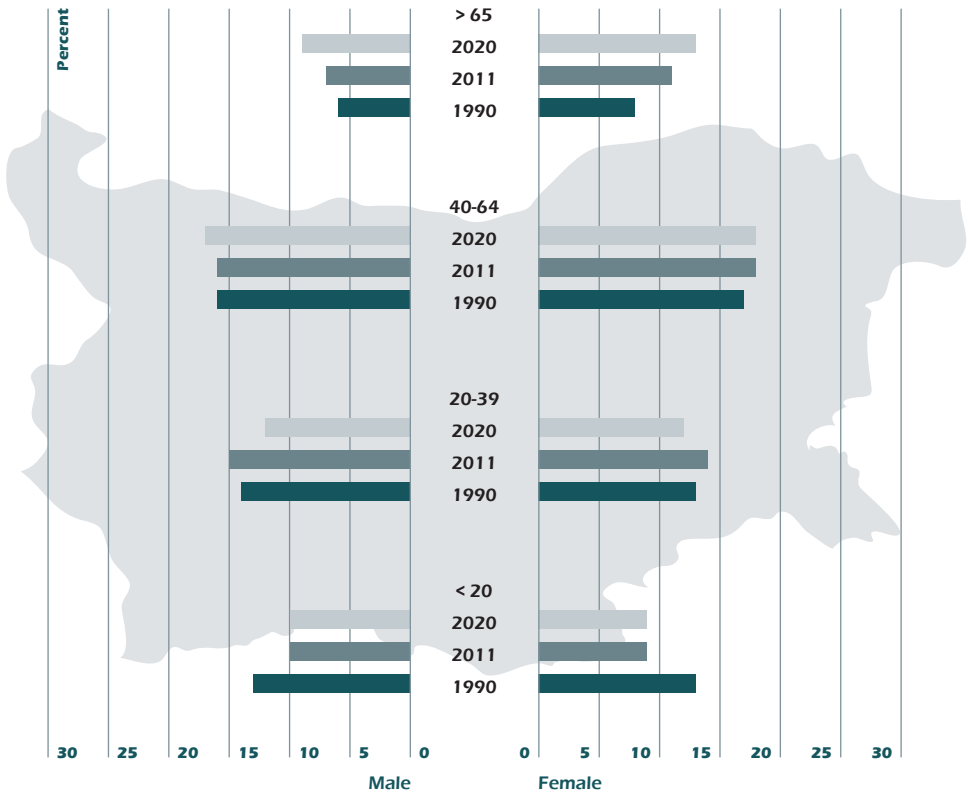
Please, find all sources at the end of the EHRA White Book 2012.

BULGARIA



1. Statistics

Age pyramid for Bulgaria





Healthcare data		
Hospitals (per 100.000 population)	4,6	2009
Beds (per 100.000 population)	659,7	2009
Density of physicians (per 1.000 population)	3,7	2009
Density of nurses (per 1.000 population)	4,2	2009

Demographic information		
Population	7.093.635	2011
Population annual growth rate (%)	-0,8	2011
Life expectancy at birth	74	2011
Death rate (per 1.000 population)	14,6	2010
Live births (per 1.000 population)	10,0	2010

Economic information		
Gross domestic product (U.S dollar-billions)	54,27*	2011
Gross domestic product per capita (U.S dollar-units)	7.242,92*	2011
Total expenditure on health as % of GDP	7,4	2009
General government expenditure on health as % of total expenditure on health	57,8	2008
Private expenditure on health as % of total expenditure on health	37,7	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	64%
2011	65%

3. Healthcare System

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

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	80%*	80%
Uninsured citizens	20%*	20%

* According to Bulgarian newspapers, these are not official sources.

Distribution of insurance modality		
	2010	2011
Public insurance company	62%	75%
Private insurance company	0,9%	0,9%
Private co-payment	37,1%	24,1%

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

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

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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

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

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

The National standard for device therapy and invasive electrophysiology are in process of regulation.

National certification for physicians

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiology	

Specialty required for ICD or pacemaker implants	Yes
Cardiology, surgery	

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	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 medical faculties	5
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	36%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	10		14
Total Pacemaker units implanted	2.463		2.730
Thereof, New implants	not available		2.303
Thereof, Replacements	not available		427

Specialty performing implants	
Cardiologists	99%
Surgeons	0,9%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	4		4
Total CRT units implanted	79		88
Thereof, CRT pacemaker	68		82
Thereof, CRT ICD	11		6

Specialty performing implants	
Cardiologists	99%
Surgeons	0,9%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2010	2011
Implanting centres	3	4
Total ICD units implanted	11	59
Thereof, Single chamber	5	31
Thereof, Dual chamber	6	28
First implants	7	56
Replacements	4	3

Specialty performing implants	
Cardiologists	99%
Surgeons	0,9%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2010	2011
Implanting centres	1	1
Total loop recorders implanted	1	3

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	not available

Specialty performing extractions	
Cardiologists	0%
Surgeons	0%



10. Device specific

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

National registry for	
ICD*	☒
Pacing*	☒
Electrophysiology**	☒
None	☐

* BGPace; ** Ablation Registry National Heart Hospital

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

	2010	2011
Number of ablation centres	1	1
Number of ablations performed	299	278
Mean number of ablations per centre	299	278
Number of AF ablations	14	3
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

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

12. Guidelines

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

Necessity of guideline translation to national language	Yes
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Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒
Lack of referral	☐	☐	☐	☒	☐
Lack of trained personnel	☐	☒	☐	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☒	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

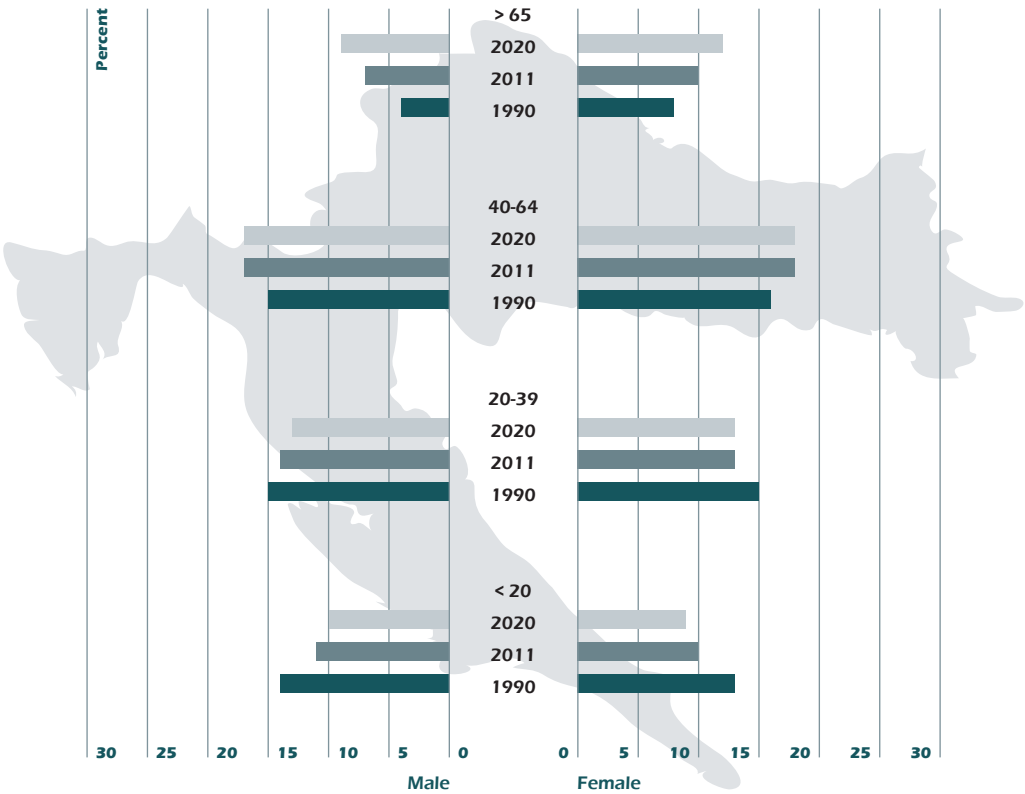
Please, find all sources at the end of the EHRA White Book 2012.

CROATIA



1. Statistics

Age pyramid for Croatia



Healthcare data		
Hospitals (per 100.000 population)	1,4	2009
Beds (per 100.000 population)	537,5	2009
Density of physicians (per 1.000 population)	2,7	2009
Density of nurses (per 1.000 population)	5,1	2009

Demographic information		
Population	4.483.804	2011
Population annual growth rate (%)	-0,1	2011
Life expectancy at birth	76	2011
Death rate (per 1.000 population)	11,8	2010
Live births (per 1.000 population)	9,8	2010

Economic information		
Gross domestic product (U.S dollar-billions)	64,16*	2011
Gross domestic product per capita (U.S dollar-units)	14.529,00*	2011
Total expenditure on health as % of GDP	7,8	2009
General government expenditure on health as % of total expenditure on health	84,9	2008
Private expenditure on health as % of total expenditure on health	15,1	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	50%
2011	49%

3. Healthcare System

The Croatian healthcare system is based on the single state Health Insurance Institute; contribution of private insurances in electrophysiology and pacing is non existing.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	90%	91%
Uninsured citizens	10%	9%

Distribution of insurance modality		
	2010	2011
Public insurance company	90%	91%
Private insurance company	3%	0%
Private co-payment	7%	9%

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

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

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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒
Currently there is no national certification for EP and pacing procedures.	

Specialty required for catheter ablation	Yes
Cardiologist; This is theoretical, since there is no formal training prescribed in EP and pacing.	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist, surgeon; This is theoretical, since there is no formal training prescribed in EP and pacing.	

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	No
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Training centres availability	
Pacemaker	5
ICD implantation	5
CRT implantation	5
Electrophysiological studies and catheter ablation	4
Atrial fibrillation ablation	3

Number of medical faculties	4
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	56%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	13		16
Total Pacemaker units implanted	2.340		2.532
Thereof, New implants	not available		2.147
Thereof, Replacements	not available		385

Specialty performing implants	
Cardiologists	87%
Surgeons	13%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	6		8
Total CRT units implanted	47		54
Thereof, CRT pacemaker	33		35
Thereof, CRT ICD	14		19

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	9		12
Total ICD units implanted	80		84
Thereof, Single chamber	52		55
Thereof, Dual chamber	28		29
First implants	not available		not available
Replacements	not available		not available

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	0		6
Total loop recorders implanted	0		15

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	0	2011	1

Specialty performing extractions	
Cardiologists	0%
Surgeons	0%
Mixed of cardiac surgeon and cardiologist	100%



10. Device specific

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

National registry for	
ICD	☒
Pacing	☒
Electrophysiology	☒
None	☐
Croatian Registry on pacing and EP procedures	

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

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

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	4	5
Number of ablations performed	not available	455
Mean number of ablations per centre	not available	546
Number of AF ablations	not available	46
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	Yes
Croatian Registry on pacing and EP procedures	

12. Guidelines

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

Necessity of guideline translation to national language	Yes
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Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☐	☒	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☐	☐	☒	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

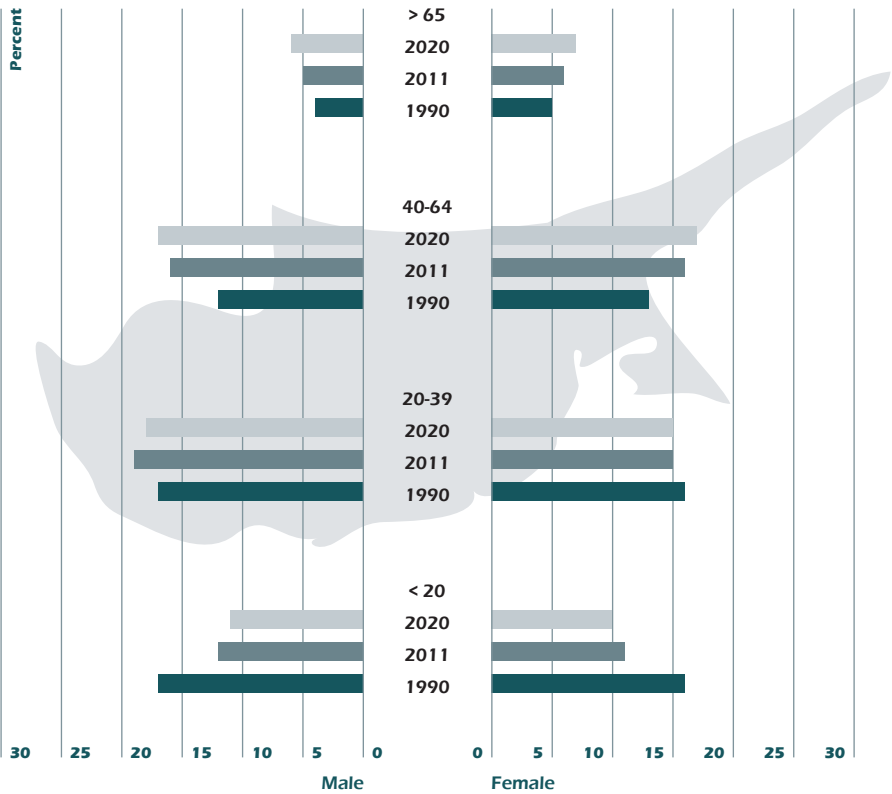
Please, find all sources at the end of the EHRA White Book 2012.

CYPRUS



1. Statistics

Age pyramid for Cyprus





Healthcare data		
Hospitals (per 100.000 population)	12,2	2008
Beds (per 100.000 population)	375,4	2008
Density of physicians (per 1.000 population)	2,9	2008
Density of nurses (per 1.000 population)	4,7	2008

Demographic information		
Population	1.120.489	2011
Population annual growth rate (%)	1,6	2011
Life expectancy at birth	78	2011
Death rate (per 1.000 population)	6,5	2009
Live births (per 1.000 population)	12,0	2009

Economic information		
Gross domestic product (U.S dollar-billions)	25,66*	2011
Gross domestic product per capita (U.S dollar-units)	31.435,14*	2011
Total expenditure on health as % of GDP	6,0	2009
General government expenditure on health as % of total expenditure on health	41,0	2008
Private expenditure on health as % of total expenditure on health	56,3	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	30%
2011	30%

3. Healthcare System

In Cyprus, free medical care is provided based on income criteria to above 85% of the population. Private care is also available in the country.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	85%	85%
Uninsured citizens	15%	15%

Distribution of insurance modality		
	2010	2011
Public insurance company	85%	85%
Private insurance company	15%	15%
Private co-payment	not available	not available

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

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



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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☒
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist	

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	No
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Training centres availability	
Pacemaker	2
ICD implantation	2
CRT implantation	2
Electrophysiological studies and catheter ablation	1
Atrial fibrillation ablation	1

Number of medical faculties	0
Medical school to be established in 2013.	

Percentage of academic facilities among practicing EP and implant centres	not available
--	----------------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	5		5
Total Pacemaker units implanted	230		250
Thereof, New implants	not available		not available
Thereof, Replacements	not available		not available

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	2		2
Total CRT units implanted	32		22
Thereof, CRT pacemaker	3		2
Thereof, CRT ICD	29		20

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	3		3
Total ICD units implanted	48		65
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

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	2		2
Total loop recorders implanted	10		6

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	not available

Specialty performing extractions	
Cardiologists	not available
Surgeons	not available

10. Device specific

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

Very limited.

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

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

	2010	2011
Number of ablation centres	2	2
Number of ablations performed	30	40
Mean number of ablations per centre	15	30
Number of AF ablations	0	3
Number of ablation centres (> 50 AF ablations)	not available	0
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	0

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

12. Guidelines

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

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

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☐	☐	☒	☐	☐	3
Lack of reimbursement, limited financial resources	☐	☐	☒	☐	☐	4
Lack of referral	☐	☒	☐	☐	☐	5
Lack of trained personnel	☐	☐	☐	☒	☐	2
Low awareness of guidelines	☐	☒	☐	☐	☐	6
Lack of operators	☐	☐	☐	☐	☒	1

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

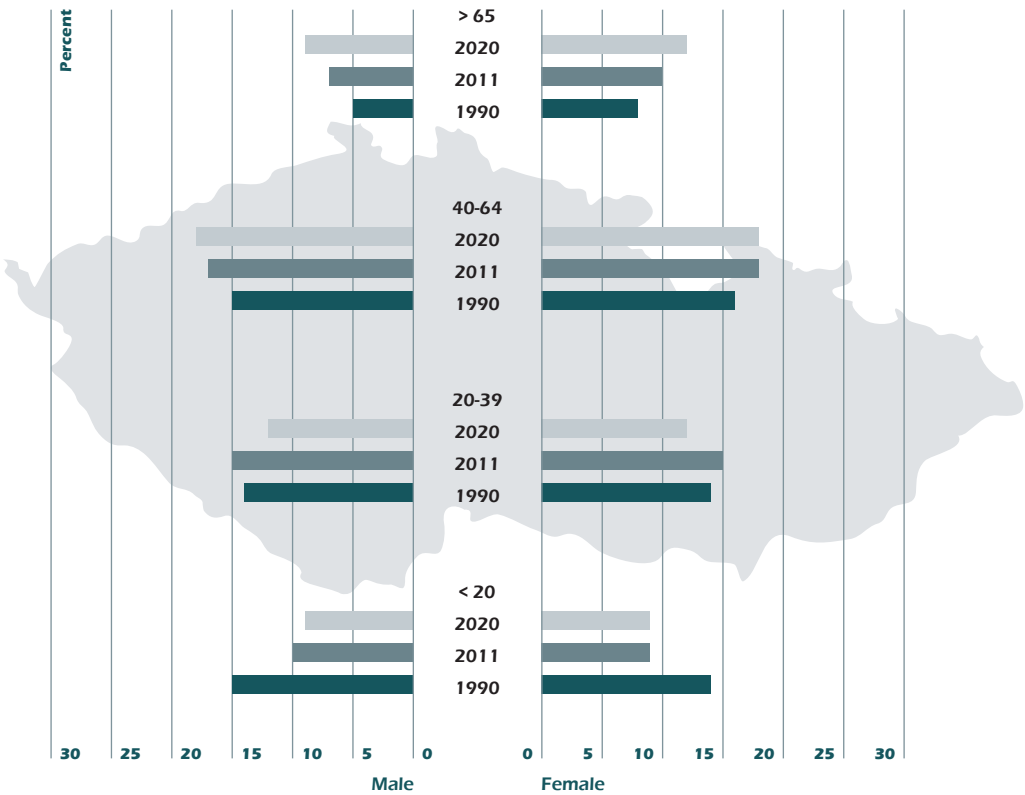
Please, find all sources at the end of the EHRA White Book 2012.

CZECH REPUBLIC



1. Statistics

Age pyramid for Czech Republic



Healthcare data		
Hospitals (per 100.000 population)	2,4	2009
Beds (per 100.000 population)	711,1	2009
Density of physicians (per 1.000 population)	3,6	2009
Density of nurses (per 1.000 population)	8,1	2009

Demographic information		
Population	10.190.213	2011
Population annual growth rate (%)	-0,1	2011
Life expectancy at birth	77	2011
Death rate (per 1.000 population)	10,2	2010
Live births (per 1.000 population)	11,1	2010

Economic information		
Gross domestic product (U.S dollar-billions)	220,34*	2011
Gross domestic product per capita (U.S dollar-units)	20.925,44*	2011
Total expenditure on health as % of GDP	7,6	2009
General government expenditure on health as % of total expenditure on health	80,1	2008
Private expenditure on health as % of total expenditure on health	17,5	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	not available

3. Healthcare System

In Czech Republic the healthcare is provided primarily on the basis of a national statutory health insurance. There is almost no demand for supplementary private healthcare insurance, reimbursement is available through twelve State insurance companies. A limited number of services are not covered through the statutory healthcare system and require co-payment. (Source: Health Care System in Transition: Czech Republic. European Observatory on Health Systems and Policies, 2005)

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	99,9%*	99,9%*
Uninsured citizens	0,1%	0,1%

* Estimative

Distribution of insurance modality		
	2010	2011
Public insurance company	99,8%	99,9%
Private insurance company	0,1%	0,1%
Private co-payment	0,1%	0,1%

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

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

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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☒	☐
ICD secondary prevention	☐	☐	☒	☐	☒	☐
CRT devices	☐	☐	☒	☐	☒	☐
Ablation	☐	☐	☒	☐	☒	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

4. Education

National certification availability

Device therapy*	☒
Invasive electrophysiology**	☒
None	☐

* ICD and PM Accreditation; ** EP Accreditation

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒

Specialty required for catheter ablation	Yes
Cardiologist, licence for EP diagnostics, licence for ablations	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist, surgeon, licence for implantation, follow-up	

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
Czech Society of Cardiology – Working Group on Arrhythmias and Cardiac Pacing	

Required period of training to perform implantations	Yes
Requires certain number of implantations.	

Training centres availability	
Pacemaker	37
ICD implantation	17
CRT implantation	19
Electrophysiological studies and catheter ablation	20
Atrial fibrillation ablation	10

Number of medical faculties	7
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Percentage of academic facilities among practicing EP and implant centres	not available
--	----------------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	37	37
Total Pacemaker units implanted	8.910	8.980
Thereof, New implants	6.549	6.277
Thereof, Replacements	2.361	2.703

Specialty performing implants	
Cardiologists	90%
Surgeons	10%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	19	19
Total CRT units implanted	1.248	1.460
Thereof, CRT pacemaker	301	289
Thereof, CRT ICD	947	1.171

Specialty performing implants	
Cardiologists	95%
Surgeons	5%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	16		17
Total ICD units implanted	2.631		2.751
Thereof, Single chamber	879		1.137
Thereof, Dual chamber	335		442*
First implants	2.161		2.201
Replacements	470		550

* + CRT

Specialty performing implants	
Cardiologists	95%
Surgeons	5%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		not available
Total loop recorders implanted	300-350*		250*

* Estimation

Specialty performing implants	
Cardiologists	not available
Surgeons	not available

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	not available

Specialty performing extractions	
Cardiologists	70%
Surgeons	30%

10. Device specific

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

National registry for	
ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* ICD online registry; ** PM online registry; *** Ablation online registry

Availability of a national quality insurance system or complication registry	Yes
State institute for drug control	

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
State institute for drug control	

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	20	20
Number of ablations performed	4.364	4.480
Mean number of ablations per centre	221	224
Number of AF ablations	1.215	1.590
Number of ablation centres (> 50 AF ablations)	7	8
Number of ablation centres (> 10 VT ablations on structural heart diseases)	6	6

Availability of a national registry for interventional electrophysiology	Yes
Ablation registry (online)	

12. Guidelines

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

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☒	☒	☐
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☒	☐	☐	☐
Low awareness of guidelines	☐	☒	☐	☐	☐
Lack of operators	☐	☒	☐	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

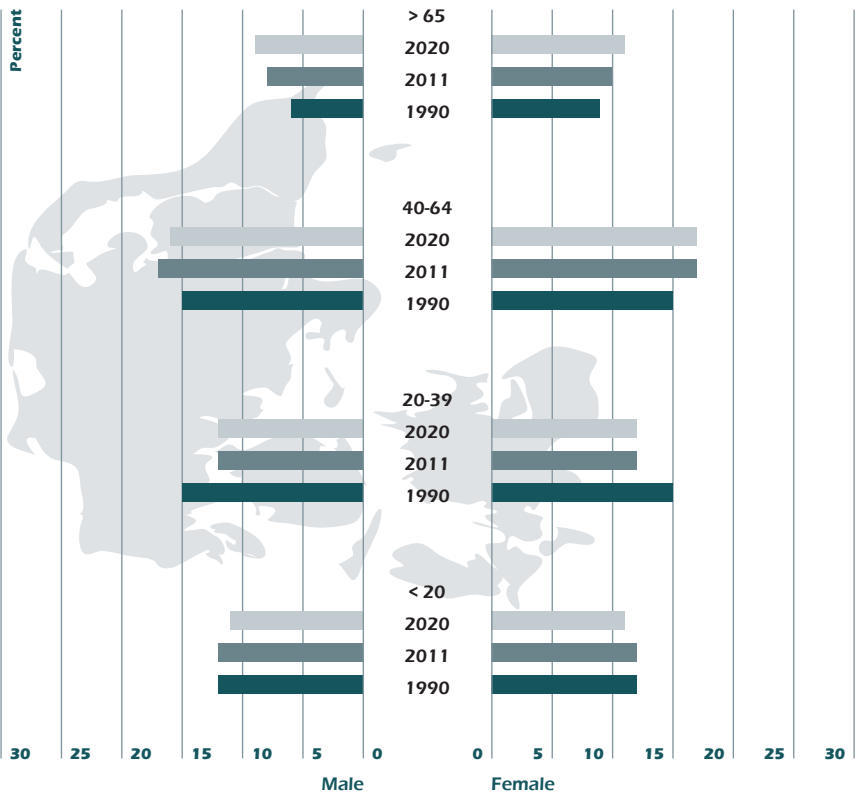
Please, find all sources at the end of the EHRA White Book 2012.

DENMARK



1. Statistics

Age pyramid for Denmark





Healthcare data		
Hospitals (per 100.000 population)	not available	not available
Beds (per 100.000 population)	349,6	2009
Density of physicians (per 1.000 population)	3,4	2008
Density of nurses (per 1.000 population)	14,8	2008

Demographic information		
Population	5.529.888	2011
Population annual growth rate (%)	0,3	2011
Life expectancy at birth	79	2011
Death rate (per 1.000 population)	10,2	2006
Live births (per 1.000 population)	11,4	2009

Economic information		
Gross domestic product (U.S dollar-billions)	349,12*	2011
Gross domestic product per capita (U.S dollar-units)	63.003,00*	2011
Total expenditure on health as % of GDP	11,2	2009
General government expenditure on health as % of total expenditure on health	80,1	2008
Private expenditure on health as % of total expenditure on health	15,3	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	not available

3. Healthcare System

National Health System.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	100%	100%
Private insurance company	not available	not available
Private co-payment	not available	not available

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

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



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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☒
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☐
Not required for practice	☒
Accreditation not available	☐

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒

Specialty required for catheter ablation	Yes
Cardiologist with special electrophysiology training.	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist with special electrophysiology training.	

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
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Required period of training to perform implantations	5 years
---	----------------

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

Number of medical faculties	4
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	83%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	14	14
Total Pacemaker units implanted	4.131	4.397
Thereof, New implants	3.287	3.349
Thereof, Replacements	744	1.048

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	5	5
Total CRT units implanted	565	873
Thereof, CRT pacemaker	181	289
Thereof, CRT ICD	384	584

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	5		5
Total ICD units implanted	1.074		1.095
Thereof, Single chamber	521		725
Thereof, Dual chamber	315		370
First implants	836		848
Replacements	267		247

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	9		9
Total loop recorders implanted	195		250

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	3	2011	3

Specialty performing extractions	
Cardiologists	90%
Mixed team of surgeons and cardiologists	10%



10. Device specific

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

National registry for	
ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* Danish ICD register; ** Danish Pacemaker register; *** Ablation.dk since 2010

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

Danish ICD and pacemaker register; Infection, lead displacement, reoperation.

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

The Steering Committee of The Danish Pacemaker and ICD Registry will discuss these issues when they arise and suggest ways of handling it.

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	6	6
Number of ablations performed	2.724	2.529
Mean number of ablations per centre	454	422
Number of AF ablations	1.290	1.074
Number of ablation centres (> 50 AF ablations)	6	6
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	6

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

Ablation.dk

12. Guidelines

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

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐
Lack of referral	☒	☐	☐	☐	☐
Lack of trained personnel	☒	☐	☐	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☒	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

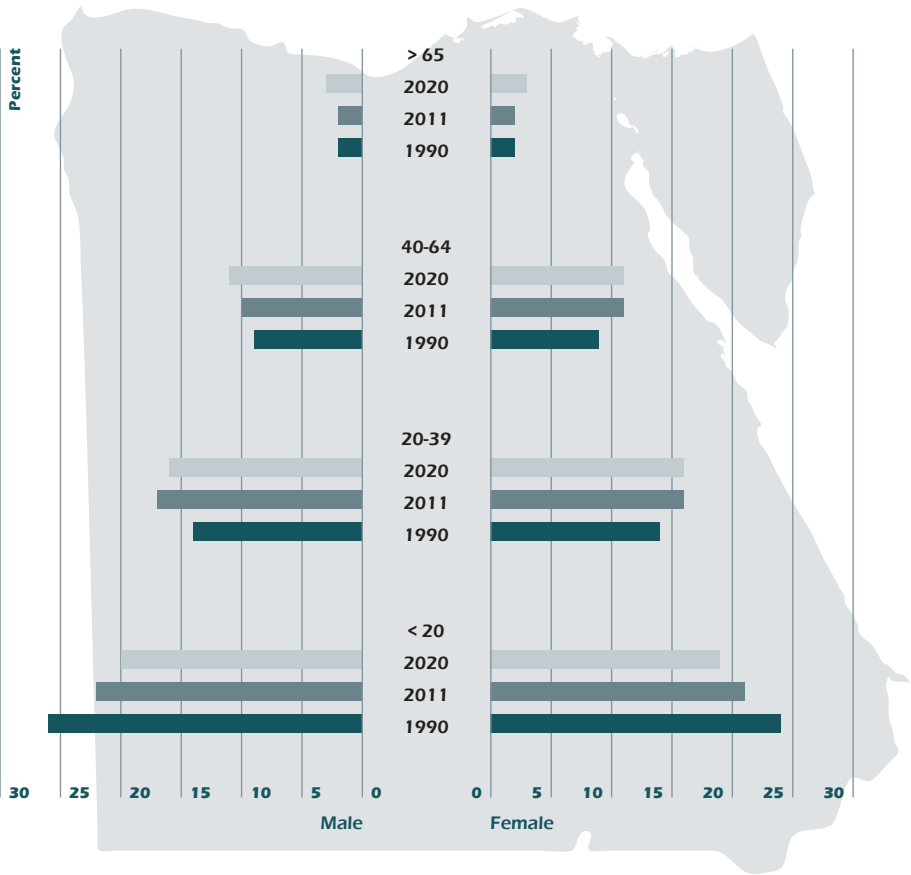
Please, find all sources at the end of the EHRA White Book 2012.

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	82.079.636	2011
Population annual growth rate (%)	2,0	2011
Life expectancy at birth	73	2011
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)	231,89*	2011
Gross domestic product per capita (U.S dollar-units)	2.922,15*	2011
Total expenditure on health as % of GDP	not available	not available
General government expenditure on health as % of total expenditure on health	42,2	2008
Private expenditure on health as % of total expenditure on health	57,8	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	0,06-0,12%
2011	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 (same as 2011).

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	64%	not available
Uninsured citizens	36%	not available

Distribution of insurance modality		
	2010	2011
Public insurance company	64%	not available
Private insurance company	0,6%	not available
Private co-payment	30%*	not available

* No separate category for co-payment. It rather represents a vague component of each category which represents about 30% of the total.

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



Co-payment necessary for the following therapy

ICD devices	☒
Pacemakers	☒ *
Ablation	☒ **

Private insurance companies pay all devices up to CRT-D and 3D mapping, but this covers 0,6% of the total population; * VVIR, DDD & CRT with Ministry of Health, with Health Insurance Organization; ** for 3D mapping.

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	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
Internal loop recorders*	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☒	☐	☐	☒	☐	☐
CRT devices	☒	☐	☐	☒	☐	☐
Ablation	☒	☐	☐	☒	☐	☐

* Loop recorders are not available in Egypt except in one private hospital.

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☒

The operator has to provide procedure done specifically to a special committee in the Health Insurance Organisation to provide acceptance per procedure.

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians	
Required for practice	☐
Not required for practice	☐
Accreditation not available	☒
Cardiologists who are interested in devices and invasive electrophysiology obtain their training in university hospitals. The university hospitals have suitable labs for those services.	
National accreditation for centres	
Required for practice	☐
Not required for practice	☐
Accreditation not available	☒
University hospitals, military hospitals, NHI and some private hospitals have EP labs suitable for invasive electrophysiology and device implantation.	
National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒
The Egyptian cardiac rhythm association is planning to start accreditation in cooperation with Ain Shams university certificate of devices and EP.	
Specialty required for catheter ablation	Yes
Cardiologists/electrophysiologists. There is one exception only in one department (critical care departement in one university ,Cairo university) they allow critical care medical doctors to perform Electrophysiology, ablation and implant CRM devices.	
Specialty required for ICD or pacemaker implants	Yes
Cardiologists not necessarily electrophysiologists. There is one exception only In one department (critical care departement in one university ,Cairo university) they allow critical care medical doctors to perform Electrophysiology, ablation and implant CRM devices.	
Official national competency guidelines for electrophysiological studies or catheter ablation	No
Required period of training to perform implantations	4 years

Training centres availability	
Pacemaker	28
ICD implantation	11
CRT implantation	24
Electrophysiological studies and catheter ablation	11
Atrial fibrillation ablation	6
Number of medical faculties	22
Percentage of academic facilities among practicing EP and implant centres	28%

5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	28		not available
Total Pacemaker units implanted	1.550*		not available
Thereof, New implants	not available		not available
Thereof, Replacements	not available		not available

* 1200 VVI/R and 350 DDD/R from distributors of devices in Egypt and implanting centres.

Specialty performing implants	
Cardiologists	89%
Surgeons	11%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	10		not available
Total CRT units implanted	140		not available
Thereof, CRT pacemaker	120		not available
Thereof, CRT ICD	20		not available

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	10		not available
Total ICD units implanted	40		not available
Thereof, Single chamber	33		not available
Thereof, Dual chamber	7		not available
First implants	not available		not available
Replacements	not available		not available

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	1		not available
Total loop recorders implanted	1		not available

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	not available



Specialty performing extractions	
Cardiologists	not available
Surgeons	not available

10. Device specific

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

The service is not yet available and the server is not functioning in our country. Moreover it is expensive and not insured neither by governmental nor by private insurance.

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

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

	2010	2011
Number of ablation centres	24	not available
Number of ablations performed	836	not available
Mean number of ablations per centre	35*	not available
Number of AF ablations	160**	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

* However, it varies between university and private hospitals; ** 160 cases in 5 years

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

12. Guidelines

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

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	1
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒	1
Lack of referral	☐	☐	☒	☐	☐	3
Lack of trained personnel	☐	☒	☐	☐	☐	5
Low awareness of guidelines	☐	☐	☐	☒	☐	1
Lack of operators	☐	☒	☐	☐	☐	4
Other: Lack of population awareness of the device therapy and its indications, No media interaction about this topic.	☐	☐	☐	☐	☒	1

1 = no obstacle 5 = great obstacle * (1 = top; 7 = lowest)

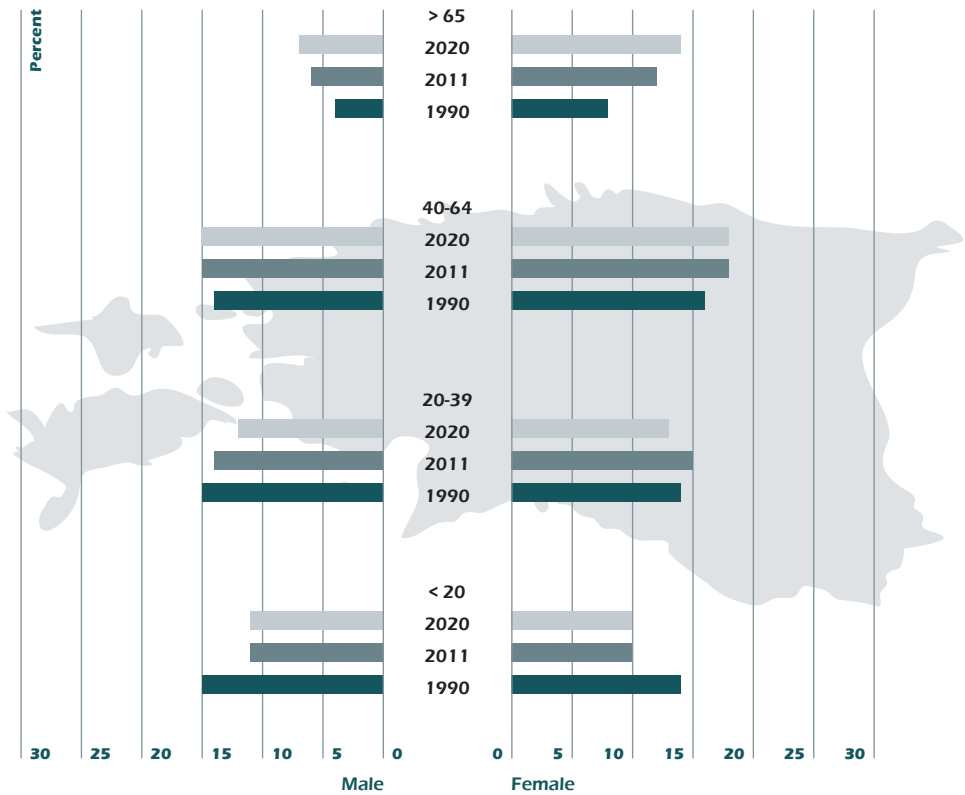
Please, find all sources at the end of the EHRA White Book 2012.

ESTONIA



1. Statistics

Age pyramid for Estonia



Healthcare data		
Hospitals (per 100.000 population)	4,4	2009
Beds (per 100.000 population)	543,9	2009
Density of physicians (per 1.000 population)	3,3	2009
Density of nurses (per 1.000 population)	6,1	2009

Demographic information		
Population	1.282.963	2011
Population annual growth rate (%)	-0,6	2011
Life expectancy at birth	73	2011
Death rate (per 1.000 population)	11,8	2010
Live births (per 1.000 population)	11,8	2010

Economic information		
Gross domestic product (U.S dollar-billions)	22,54*	2011
Gross domestic product per capita (U.S dollar-units)	16.880,25*	2011
Total expenditure on health as % of GDP	7,0	2009
General government expenditure on health as % of total expenditure on health	77,8	2008
Private expenditure on health as % of total expenditure on health	20,6	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	not available

3. Healthcare System

Estonia has a state owned central tax-based sick fund. Emergency medical care is free of charge to all citizens. First line level healthcare is provided by family doctors (GP). Most of the hospitals are public. Private hospitals focus on gynaecology and obstetrics, vascular surgery, reconstructive surgery and orthopaedics. Hospitals are categorized by competence level. Tartu University Clinic and North Estonian Medical Centre have the highest level of competence and are reference hospitals for others. First line level healthcare is provided by family doctors (GP).

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	95%	95%
Uninsured citizens	5%	5%

Distribution of insurance modality		
	2010	2011
Public insurance company	95%	95%
Private insurance company	1%	1%
Private co-payment	1%	1%

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

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



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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for 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	1 year
---	---------------

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

Number of medical faculties	1
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	50%/20%
50% among EP centres, 20% among implant centres	



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	5	5
Total Pacemaker units implanted	999	983
Thereof, New implants	882	862
Thereof, Replacements	117	121

Specialty performing implants	
Cardiologists	80%
Surgeons	20%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	2	2
Total CRT units implanted	52	75
Thereof, CRT pacemaker	32	46
Thereof, CRT ICD	20	29

Specialty performing implants	
Cardiologists	74%
Surgeons	26%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2010	2011
Implanting centres	2	2
Total ICD units implanted	52	58
Thereof, Single chamber	11	15
Thereof, Dual chamber	41	43
First implants	47	57
Replacements	5	1

Specialty performing implants	
Cardiologists	72%
Surgeons	28%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2010	2011
Implanting centres	2	2
Total loop recorders implanted	8	8

Specialty performing implants	
Cardiologists	63%
Surgeons	37%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	not available

Specialty performing extractions	
Cardiologists	50%
Surgeons	50%



10. Device specific

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

National registry for	
ICD*	☒
Pacing*	☒
Electrophysiology	☐
None	☐

* Estonian Pacemaker and ICD implantation registry

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

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

"Ravimiamet", function of the State Agency of Medicines

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	2	2
Number of ablations performed	447	385
Mean number of ablations per centre	223	193
Number of AF ablations	112	115
Number of ablation centres (> 50 AF ablations)	1	1
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	☐
U.S.	☐
European	☒

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

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☐	☒	☐	☐	☐	6
Lack of reimbursement, limited financial resources	☐	☐	☐	☒	☐	1
Lack of referral	☐	☐	☒	☐	☐	2
Lack of trained personnel	☐	☐	☒	☐	☐	3
Low awareness of guidelines	☐	☐	☐	☒	☐	4
Lack of operators	☐	☒	☐	☐	☐	5

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

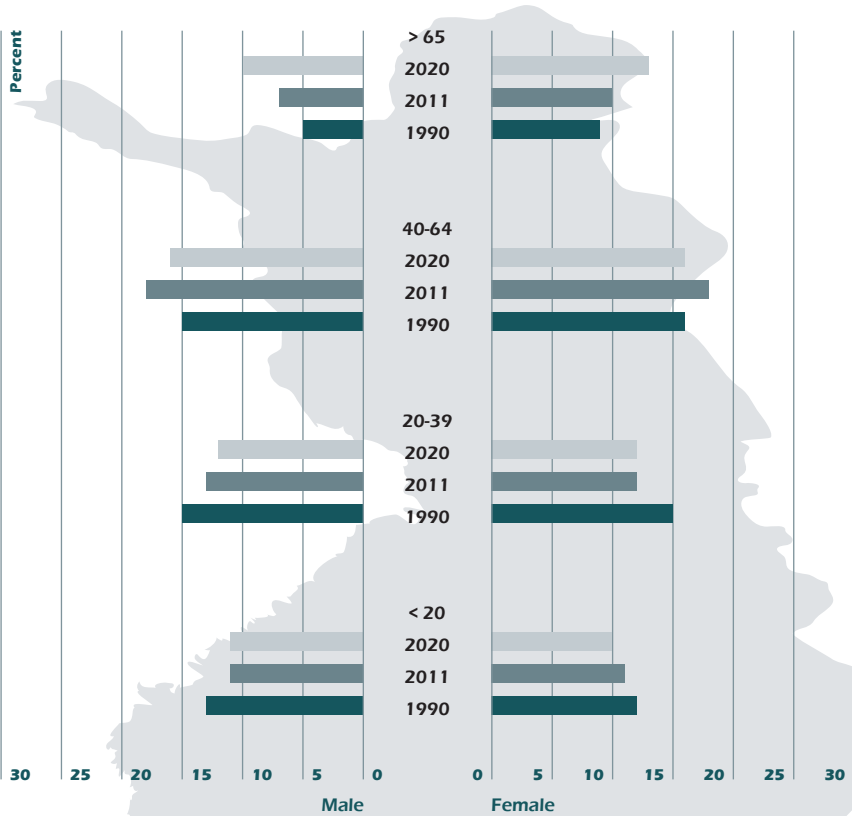
Please, find all sources at the end of the EHRA White Book 2012.

FINLAND



1. Statistics

Age pyramid for Finland



Healthcare data		
Hospitals (per 100.000 population)	5,5	2009
Beds (per 100.000 population)	621,6	2009
Density of physicians (per 1.000 population)	2,7	2008
Density of nurses (per 1.000 population)	9,6	2008

Demographic information		
Population	5.259.250	2011
Population annual growth rate (%)	0,1	2011
Life expectancy at birth	79	2011
Death rate (per 1.000 population)	9,5	2010
Live births (per 1.000 population)	11,4	2010

Economic information		
Gross domestic product (U.S dollar-billions)	270,55*	2011
Gross domestic product per capita (U.S dollar-units)	50.090,04*	2011
Total expenditure on health as % of GDP	9,7	2009
General government expenditure on health as % of total expenditure on health	70,7	2008
Private expenditure on health as % of total expenditure on health	24,5	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	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		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	75,4%	75%
Private insurance company	1,7%	2%
Private co-payment	22,9%	23%

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

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



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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☐	☐	☒
CRT devices	☐	☐	☒	☐	☐	☒
Ablation	☐	☐	☒	☐	☐	☒

Treatment availability

No restrictions	☒
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒

Specialty required for catheter ablation	No
There is no official specialty requirement, but in practice it is performed only by cardiologists or pediatric cardiologist.	

Specialty required for ICD or pacemaker implants	No
There is no official specialty requirement, but in practice it is performed by cardiologists, pediatric cardiologist and occasionally also by surgeons or specialists of internal medicine.	

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

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

Number of medical faculties	5
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Percentage of academic facilities among practicing EP and implant centres	71/20%*
---	---------

* 71% of the EP and 20% of the implanting centres



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	25	25
Total Pacemaker units implanted	4.918	4.852
Thereof, New implants	3.767	3.738
Thereof, Replacements	1.151	1.114

Specialty performing implants	
Cardiologists	95%
Surgeons	5%
Internist	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	8	8
Total CRT units implanted	269	327
Thereof, CRT pacemaker	108	142
Thereof, CRT ICD	161	185

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2010	2011
Implanting centres	16	16
Total ICD units implanted	807	703
Thereof, Single chamber	383	not available
Thereof, Dual chamber	424	not available
First implants	614	446
Replacements	193	257

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2010	2011
Implanting centres	16	16
Total loop recorders implanted	225	230

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions		
2010	not available	2011
		5

Specialty performing extractions	
Cardiologists	not available
Surgeons	not available



10. Device specific

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

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

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

	2010	2011
Number of ablation centres	7	7
Number of ablations performed	1.521	1.906
Mean number of ablations per centre	217	not available
Number of AF ablations	391	476
Number of ablation centres (> 50 AF ablations)	3	4
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available

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

12. Guidelines

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

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	7
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐	7
Lack of referral	☐	☐	☐	☒	☐	1
Lack of trained personnel	☐	☒	☐	☐	☐	5
Low awareness of guidelines	☐	☐	☒	☐	☐	3
Lack of operators	☐	☒	☐	☐	☐	2

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

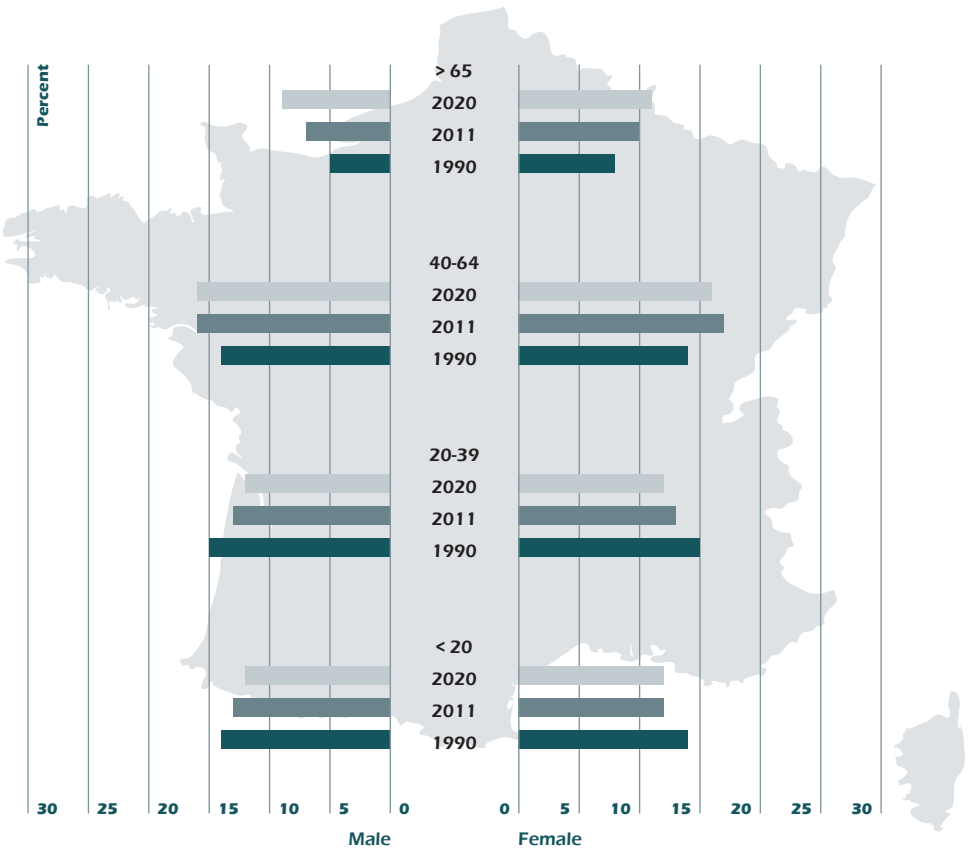
Please, find all sources at the end of the EHRA White Book 2012.

FRANCE



1. Statistics

Age pyramid for France



Healthcare data		
Hospitals (per 100.000 population)	4,8	2009
Beds (per 100.000 population)	685,7	2009
Density of physicians (per 1.000 population)	3,4	2010
Density of nurses (per 1.000 population)	not available	not available

Demographic information		
Population	65.102.719	2011
Population annual growth rate (%)	0,5	2011
Life expectancy at birth	81	2011
Death rate (per 1.000 population)	8,6	2008
Live births (per 1.000 population)	12,8	2008

Economic information		
Gross domestic product (U.S dollar-billions)	2.808,27*	2011
Gross domestic product per capita (U.S dollar-units)	44.400,77*	2011
Total expenditure on health as % of GDP	11,7	2009
General government expenditure on health as % of total expenditure on health	75,9	2008
Private expenditure on health as % of total expenditure on health	21,4	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	32%

3. Healthcare System

France's healthcare system is public based and completed by private healthcare insurances.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	40%	40%
Estimation for private co payment.		

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

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

All interventional procedures are covered by the public health system.



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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☒	☐	☐	☒	☐	☐
ICD secondary prevention	☒	☐	☐	☒	☐	☐
CRT devices	☒	☐	☐	☒	☐	☐
Ablation	☒	☐	☐	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☒
Restricted to certain number of treatments/budget	☐
Not funded	☐
Body issuing the guidelines: HAS.	

4. Education

National certification availability

Device therapy	☒
Invasive electrophysiology	☒
None	☐
DIU de Rythmologie et Stimulation Cardiaque.	

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

Except for conventional (VVI,DDD) pacemaker implantation.

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist for ICD and CRT; Surgeon may implant conventional (VVI,DDD) pacemakers.	

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
French Society of cardiology guidelines.	

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

Training centres availability	
Pacemaker	120
ICD implantation	50
CRT implantation	50
Electrophysiological studies and catheter ablation	50
Atrial fibrillation ablation	20

Number of medical faculties	28
-----------------------------	----

Percentage of academic facilities among practicing EP and implant centres	25%*
Estimation	



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	520	492
Total Pacemaker units implanted	64.179	63.100
Thereof, New implants	not available	50.100
Thereof, Replacements	not available	13.000

Specialty performing implants	
Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	85	150
Total CRT units implanted	7.413	8.040
Thereof, CRT pacemaker	2.613	2.741
Thereof, CRT ICD	4.800	5.299

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	80		141
Total ICD units implanted	5.924		6.672
Thereof, Single chamber	3.024		3.474
Thereof, Dual chamber	2.900		3.198
First implants	not available		5.340
Replacements	not available		1.332

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		250
Total loop recorders implanted	1.350		1.500
Manufacturer data (estimation).			

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	37	2011	37

Specialty performing extractions	
Cardiologists	70%
Surgeons	20%
Mixed team of cardiologist, surgeon	10%



10. Device specific

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

National registry for	
ICD*	☒
Pacing*	☒
Electrophysiology	☐
None	☐

* STIDEFIX (It's mandatory).

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

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

AFSSAPS (National agency)

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	130	not available
Number of ablations performed	28.800	31.175
Mean number of ablations per centre	not available	not available
Number of AF ablations	7.400	6.488
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

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

12. Guidelines

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

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	6
Lack of reimbursement, limited financial resources	☐	☒	☐	☐	☐	2
Lack of referral	☐	☐	☐	☒	☐	3
Lack of trained personnel	☐	☐	☒	☐	☐	4
Low awareness of guidelines	☐	☐	☐	☒	☐	1
Lack of operators	☐	☒	☐	☐	☐	5

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

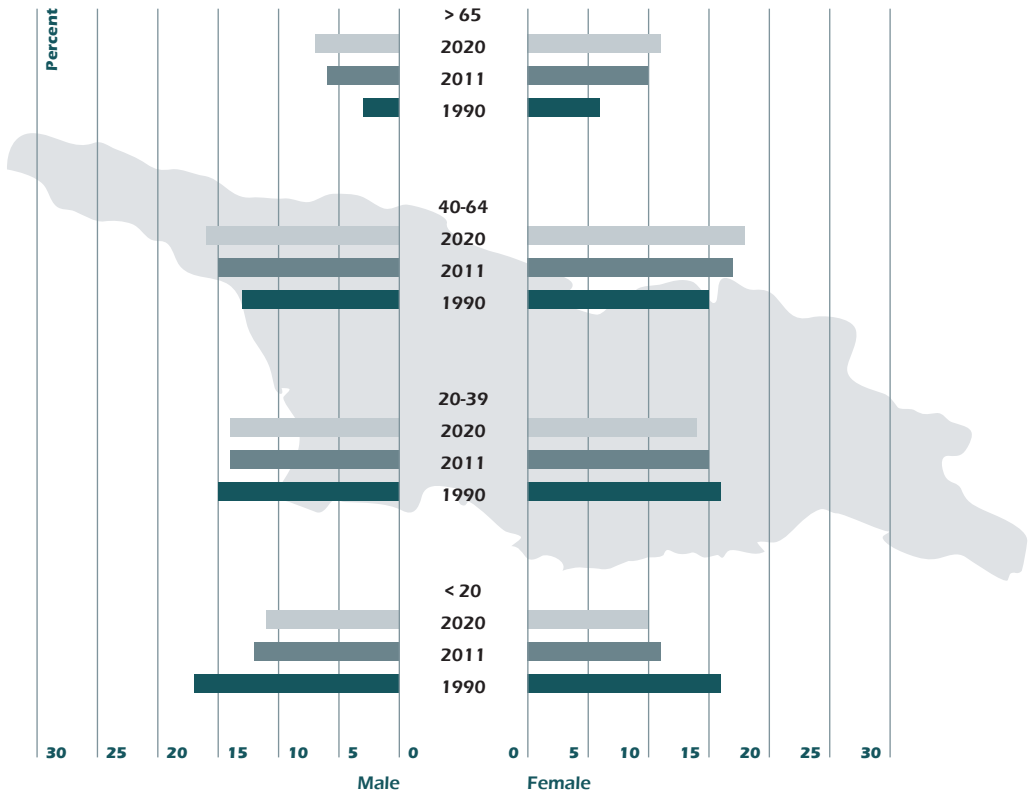
Please, find all sources at the end of the EHRA White Book 2012.

GEORGIA



1. Statistics

Age pyramid for Georgia



Healthcare data		
Hospitals (per 100.000 population)	6,0	2009
Beds (per 100.000 population)	309,1	2009
Density of physicians (per 1.000 population)	4,7	2009
Density of nurses (per 1.000 population)	3,5	2009

Demographic information		
Population	4.585.874	2011
Population annual growth rate (%)	-0,3	2011
Life expectancy at birth	77	2011
Death rate (per 1.000 population)	10,6	2009
Live births (per 1.000 population)	14,0	2010

Economic information		
Gross domestic product (U.S dollar-billions)	13,84*	2011
Gross domestic product per capita (U.S dollar-units)	3.097,58*	2011
Total expenditure on health as % of GDP	10,1	2009
General government expenditure on health as % of total expenditure on health	30,9	2008
Private expenditure on health as % of total expenditure on health	69,1	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	30%
2011	not available

3. Healthcare System

National health fund for poor (cooperation with private insurance companies), private insurance, private payment, healthcare programs.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	33%	33%
Uninsured citizens	67%	67%

Distribution of insurance modality		
	2010	2011
Public insurance company	25%	25%
Private insurance company	8%	60%
Private co-payment	67%	15%

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

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

Yes, except for the poor with public insurance.



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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☐	☐	☒
CRT devices	☐	☐	☒	☐	☐	☒
Ablation	☐	☐	☒	☐	☐	☒

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☒

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for 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
---	-----------

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

Number of medical faculties	6
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	40%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	7		8
Total Pacemaker units implanted	307		383
Thereof, New implants	not available		not available
Thereof, Replacements	not available		not available

Specialty performing implants	
Cardiologists	90%
Surgeons	10%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	5		5
Total CRT units implanted	14		15
Thereof, CRT pacemaker	5		4
Thereof, CRT ICD	9		11

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	4		6
Total ICD units implanted	15		24
Thereof, Single chamber	13		22
Thereof, Dual chamber	2		2
First implants	15		21
Replacements	0		3

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	0		0
Total loop recorders implanted	0		0

Specialty performing implants	
Cardiologists	0%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	0	2011	0

Specialty performing extractions	
Cardiologists	0%
Surgeons	0%

10. Device specific

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

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

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

	2010	2011
Number of ablation centres	5	6
Number of ablations performed	184	253
Mean number of ablations per centre	37	42
Number of AF ablations	44	39
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	☐
U.S.	☒
European	☒

Necessity of guideline translation to national language	Yes
---	-----

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☐	☐	☒	☐	☐	6
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒	2
Lack of referral	☐	☐	☐	☐	☒	3
Lack of trained personnel	☐	☐	☐	☐	☒	4
Low awareness of guidelines	☐	☐	☐	☐	☒	1
Lack of operators	☐	☐	☐	☒	☐	5

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

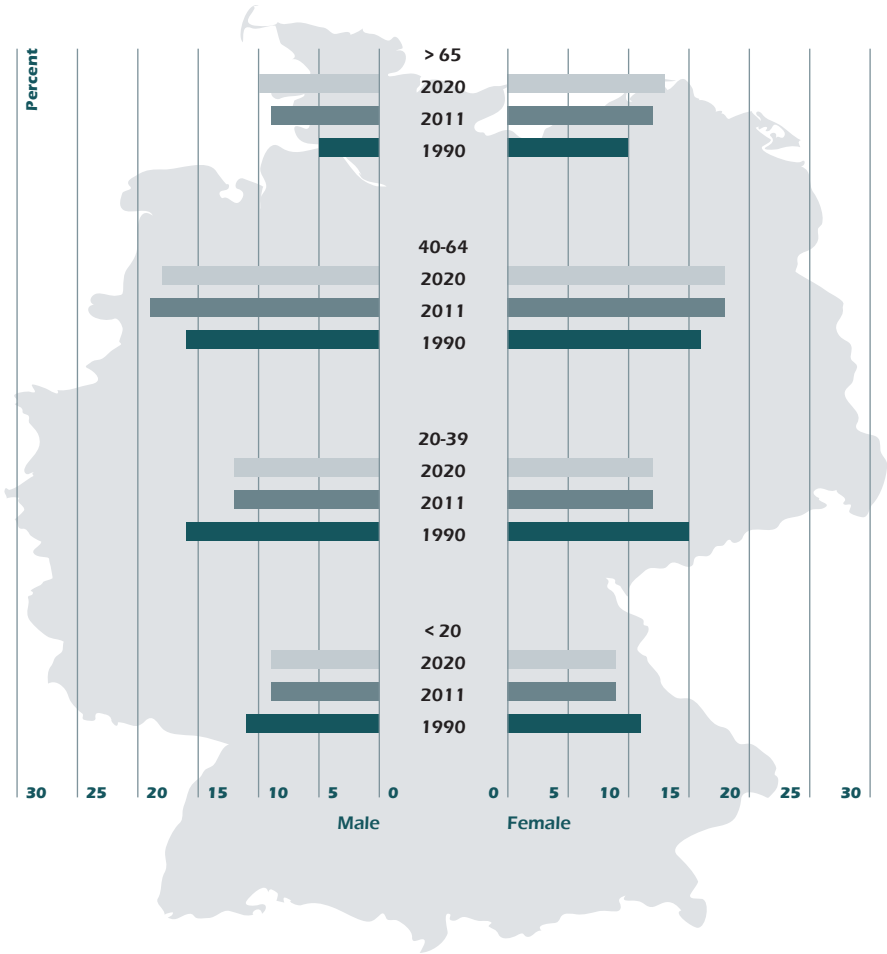
Please, find all sources at the end of the EHRA White Book 2012.

GERMANY



1. Statistics

Age pyramid for Germany





Healthcare data		
Hospitals (per 100.000 population)	4,1	2009
Beds (per 100.000 population)	824,2	2009
Density of physicians (per 1.000 population)	3,6	2009
Density of nurses (per 1.000 population)	11,0	2009

Demographic information		
Population	81.471.834	2011
Population annual growth rate (%)	-0,2	2011
Life expectancy at birth	80	2011
Death rate (per 1.000 population)	10,5	2010
Live births (per 1.000 population)	8,3	2010

Economic information		
Gross domestic product (U.S dollar-billions)	3.628,62*	2011
Gross domestic product per capita (U.S dollar-units)	44.555,74*	2011
Total expenditure on health as % of GDP	11,3	2009
General government expenditure on health as % of total expenditure on health	74,6	2008
Private expenditure on health as % of total expenditure on health	22,0	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	not available

3. Healthcare System

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

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2010	2011
Public insurance company	not available	not available
Private insurance company	not available	not available
Private co-payment	not available	not available

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

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



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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☒
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

A certification for devices and for EP is in progress.

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
--	-----

Cardiologist; Beyond being certified as a cardiologist, there are no specific requirements to perform catheter ablation procedures.

Specialty required for ICD or pacemaker implants	Yes
--	-----

Cardiologist, surgeon (exceptionally general internal medicine); Examined cardiologist or surgeon (heart, vascular, thoracic, and others) is a precondition to receive the level of competency accreditation and to train another physician.

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
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German Cardiac Society (Deutsche Gesellschaft für Kardiologie - Herz- und Kreislaufforschung e.V.),
Leitlinien zur elektrophysiologischen Untersuchung, Leitlinien zur Katheterablation

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

Training centres availability	
Pacemaker	1.048
ICD implantation	561
CRT implantation	300*
Electrophysiological studies and catheter ablation	371
Atrial fibrillation ablation	40*
* Approximation	

Number of medical faculties	36
-----------------------------	----

Percentage of academic facilities among practicing EP and implant centres	20%
---	-----



5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	1.041		1.041
Total Pacemaker units implanted	103.423		106.953
Thereof, New implants	not available		not available
Thereof, Replacements	not available		not available

Specialty performing implants	
Cardiologists	58%
Surgeons	30%
Other: Surgeons, pediatric surgeons, pediatric cardiologist	12%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	411		411
Total CRT units implanted	14.534		16.425
Thereof, CRT pacemaker	1.666		1.792
Thereof, CRT ICD	12.868		14.633

Specialty performing implants	
Cardiologists	45%
Surgeons	5%
Other: Both together	50%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	607		607
Total ICD units implanted	25.071		26.579
Thereof, Single chamber	15.790		16.158
Thereof, Dual chamber	9.281		10.421
First implants	not available		not available
Replacements	not available		not available

Specialty performing implants	
Cardiologists	30%
Surgeons	50%
Other	20%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	560		560
Total loop recorders implanted	670*		7.000*

* Approximation

Specialty performing implants	
Cardiologists	not available
Surgeons	not available

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	not available

Specialty performing extractions	
Cardiologists	not available
Surgeons	not available



10. Device specific

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

National registry for	
ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* Device Registry; ** Pacemaker Registry; *** Ablation Registry

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

BQS Registry; It is compulsory for pacemaker implantation and currently introduced for ICD-Implantation.

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

Federal Institute for Drugs and Medical Devices, Bonn (Bundesinstitut für Arzneimittel und Medizinprodukte); The Federal Institute for Drugs and Medical Devices (Bundesinstitut für Arzneimittel und Medizinprodukte - BfArM) is a medical regulatory body in Germany that operates under the Federal Ministry of Health.

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	200*	200*
Number of ablations performed	42.000*	50.000*
Mean number of ablations per centre	210*	200*
Number of AF ablations	12.000*	15.000*
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

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

Ablation registry, The Stiftung Institut für Herzinfarktforschung (IHF), Ludwigshafen

12. Guidelines

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

Necessity of guideline translation to national language	Yes
---	-----

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	6
Lack of reimbursement, limited financial resources	☐	☒	☐	☐	☐	5
Lack of referral	☐	☒	☐	☐	☐	3
Lack of trained personnel	☐	☒	☐	☐	☐	2
Low awareness of guidelines	☐	☒	☐	☐	☐	4
Lack of operators	☐	☐	☒	☐	☐	1

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

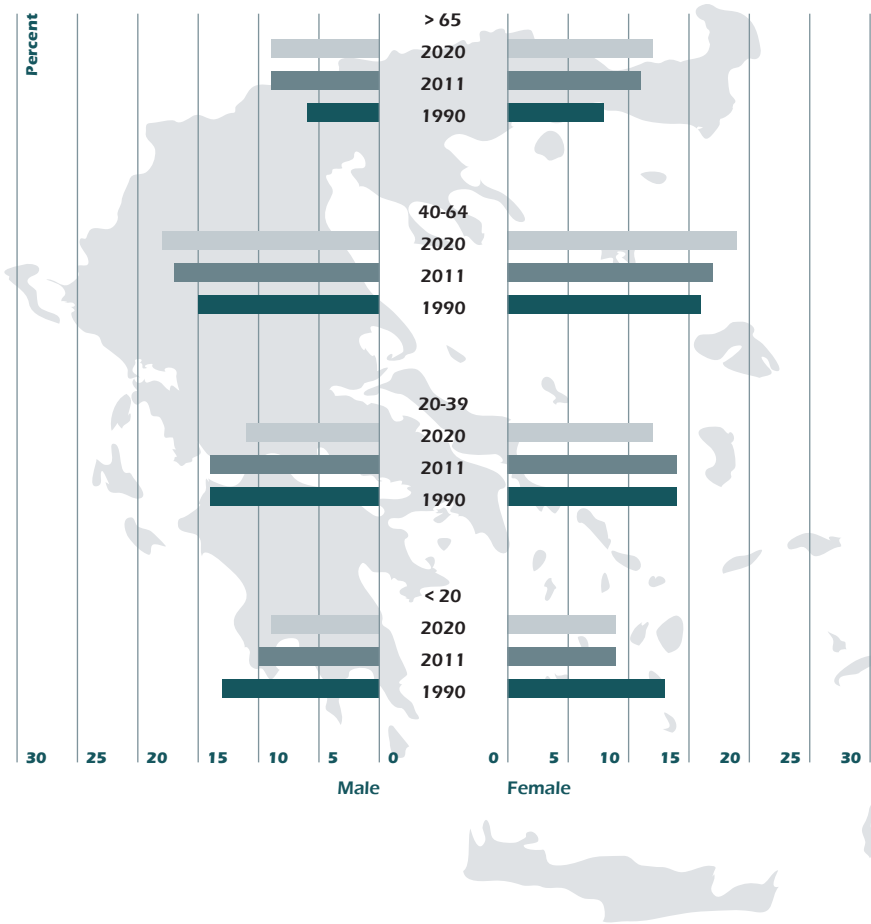
Please, find all sources at the end of the EHRA White Book 2012.

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	2009
Density of nurses (per 1.000 population)	not available	not available

Demographic information		
Population	10.760.136	2011
Population annual growth rate (%)	0,1	2011
Life expectancy at birth	80	2011
Death rate (per 1.000 population)	9,6	2009
Live births (per 1.000 population)	10,5	2009

Economic information		
Gross domestic product (U.S dollar-billions)	312,04*	2011
Gross domestic product per capita (U.S dollar-units)	27.875,38*	2011
Total expenditure on health as % of GDP	10,6	2009
General government expenditure on health as % of total expenditure on health	60,9	2008
Private expenditure on health as % of total expenditure on health	39,1	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	not available

3. Healthcare System

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

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	95%	95%
Uninsured citizens	5%	5%

Distribution of insurance modality		
	2010	2011
Public insurance company	89%	89%
Private insurance company	10%	10%
Private co-payment	1%	1%

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

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



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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☒
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation is only available for pacemaker therapy. It's required a minimum of one year of training at an implanting centre.

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres only for pacing and ICD implanting centres.

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☒
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiology	

Specialty required for ICD or pacemaker implants	Yes
Cardiology	

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

Required period of training to perform implantations	1 year
---	---------------

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

Number of medical faculties	7
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	12,5%
--	--------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	61	56
Total Pacemaker units implanted	8.098	7.548
Thereof, New implants	5.993	5.588
Thereof, Replacements	2.105	1.960

Specialty performing implants	
Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	16	16
Total CRT units implanted	371	396
Thereof, CRT pacemaker	48	32
Thereof, CRT ICD	323	364

Specialty performing implants	
Cardiologists	98%
Surgeons	2%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	24		24
Total ICD units implanted	972		892
Thereof, Single chamber	262		158
Thereof, Dual chamber	710		734
First implants	not available		714
Replacements	not available		178

Specialty performing implants	
Cardiologists	99%
Surgeons	1%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	14		14
Total loop recorders implanted	70		74

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	17

Specialty performing extractions	
Cardiologists	90%
Surgeons	5%
Mixed team of cardiologist and surgeon	5%



10. Device specific

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

National registry for	
ICD	☒
Pacing	☒
Electrophysiology	☒
None	☐
National registration center	

Availability of a national quality insurance system or complication registry	Yes
EOF; Under proposal to the Ministry of Health by the Working Group.	

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

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	23	23
Number of ablations performed	1.307	1.400
Mean number of ablations per centre	57	61
Number of AF ablations	247	340
Number of ablation centres (> 50 AF ablations)	4	4
Number of ablation centres (> 10 VT ablations on structural heart diseases)	10	10

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

12. Guidelines

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

Necessity of guideline translation to national language	Yes
---	-----

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☒	☐	☐	☐
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☒	☐	☐	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☐	☒	☐	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

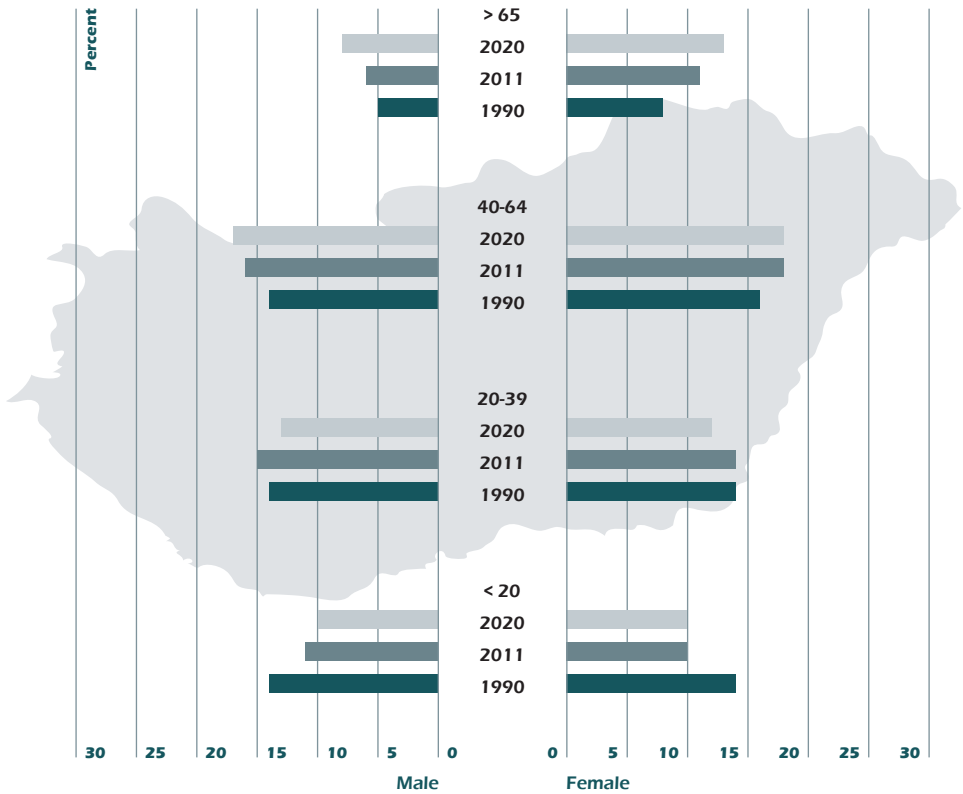
Please, find all sources at the end of the EHRA White Book 2012.

HUNGARY



1. Statistics

Age pyramid for Hungary



Healthcare data		
Hospitals (per 100.000 population)	1,8	2009
Beds (per 100.000 population)	714,4	2009
Density of physicians (per 1.000 population)	3,0	2009
Density of nurses (per 1.000 population)	6,2	2009

Demographic information		
Population	9.976.062	2011
Population annual growth rate (%)	-0,2	2011
Life expectancy at birth	75	2011
Death rate (per 1.000 population)	13,0	2009
Live births (per 1.000 population)	9,0	2010

Economic information		
Gross domestic product (U.S dollar-billions)	147,87*	2011
Gross domestic product per capita (U.S dollar-units)	14.808,13*	2011
Total expenditure on health as % of GDP	7,3	2009
General government expenditure on health as % of total expenditure on health	68,9	2008
Private expenditure on health as % of total expenditure on health	28,5	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	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		
	2010	2011
Insured citizens	98%	98%
Uninsured citizens	2%	2%

Distribution of insurance modality		
	2010	2011
Public insurance company	99%	99%
Private insurance company	1%	1%
Private co-payment	0%	0%

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

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



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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

4. Education

National certification availability

Device therapy*	☒
Invasive electrophysiology**	☒
None	☐

* Arrhythmologist Licence for Pacemaker/ICD/CRT (Device Therapy); ** Arrhythmologist Licence for Electrophysiology and Ablation; EHRA accreditation is welcome, endorsed

National certification for physicians

Required for practice	☐
Not required for practice	☒
Accreditation not available	☐

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☒
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☐

Specialty required for catheter ablation	Yes
Cardiologist/cardiologist fellow	

Specialty required for 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	2 years
---	----------------

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

Number of medical faculties	4
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	40%/25%
40% of the EP and 25% of the implanting centres.	



5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	15		16
Total Pacemaker units implanted	5.381		5.822
Thereof, New implants	not available		not available
Thereof, Replacements	not available		not available

Specialty performing implants	
Cardiologists	90%
Surgeons	5%
Other: Anaesthesiologists	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	12		13
Total CRT units implanted	832		806
Thereof, CRT pacemaker	396		454
Thereof, CRT ICD	436		352

Specialty performing implants	
Cardiologists	98%
Surgeons	2%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	12		13
Total ICD units implanted	719		794
Thereof, Single chamber	515		588
Thereof, Dual chamber	204		206
First implants	not available		not available
Replacements	not available		not available

Specialty performing implants	
Cardiologists	90%
Surgeons	5%
Other: Anaesthesiologist	5%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	4		0
Total loop recorders implanted	0		0

Specialty performing implants	
Cardiologists	0%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	2

Specialty performing extractions	
Cardiologists	90%
Surgeons	10%

10. Device specific

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

National registry for	
ICD*	☒
Pacing*	☒
Electrophysiology	☐
None	☐

* Hungarian Online Pacemaker Registry

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

Hungarian Online Pacemaker Registry and individual paper based data collection from centres.

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

National Health Insurance Fund

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	10	10
Number of ablations performed	2.654	2.926
Mean number of ablations per centre	265	293
Number of AF ablations	490	606
Number of ablation centres (> 50 AF ablations)	5	5
Number of ablation centres (> 10 VT ablations on structural heart diseases)	3	3

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

12. Guidelines

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

Necessity of guideline translation to national language	Yes
---	-----

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	6
Lack of reimbursement, limited financial resources	☐	☐	☒	☐	☐	2
Lack of referral	☐	☐	☒	☐	☐	1
Lack of trained personnel	☐	☒	☐	☐	☐	4
Low awareness of guidelines	☐	☐	☒	☐	☐	3
Lack of operators	☐	☒	☐	☐	☐	5

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

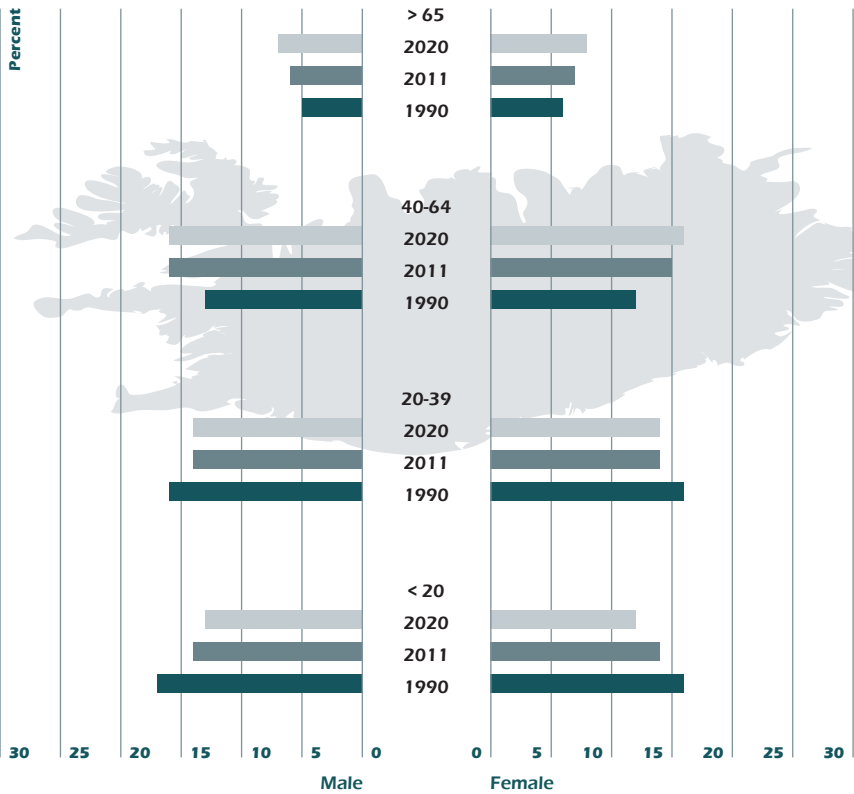
Please, find all sources at the end of the EHRA White Book 2012.

ICELAND



1. Statistics

Age pyramid for Iceland



Healthcare data		
Hospitals (per 100.000 population)	6,8	2005
Beds (per 100.000 population)	578,7	2007
Density of physicians (per 1.000 population)	3,6	2010
Density of nurses (per 1.000 population)	15,3	2009

Demographic information		
Population	311.058	2011
Population annual growth rate (%)	0,7	2011
Life expectancy at birth	81	2011
Death rate (per 1.000 population)	6,3	2009
Live births (per 1.000 population)	15,4	2010

Economic information		
Gross domestic product (U.S dollar-billions)	14,09*	2011
Gross domestic product per capita (U.S dollar-units)	43.226,28*	2011
Total expenditure on health as % of GDP	8,2	2009
General government expenditure on health as % of total expenditure on health	81,8	2008
Private expenditure on health as % of total expenditure on health	16,5	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	40%
2011	40%

3. Healthcare System

Iceland has a national healthcare system with universal access.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	0%	0%

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

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



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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☐	☐	☒
CRT devices	☐	☐	☒	☐	☐	☒
Ablation	☐	☐	☒	☐	☐	☒

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

A set amount of funding is allocated each year for EP procedures at the University Hospital, the only tertiary care hospital in Iceland. The number of procedure sin limited to this budget.

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist, cardiothoracic surgeon	

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

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

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

Number of medical faculties	1
University of Iceland in Reykjavik	

Percentage of academic facilities among practicing EP and implant centres	100%
---	------

Landspítali: The National University Hospital of Iceland in Reykjavik, was the only centre performing EP procedures, ablations, ICD and pacemaker implants. Pacemaker implantations were also performed at Akureyri University Hospital in Akureyri.



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	2	2
Total Pacemaker units implanted	265	313
Thereof, New implants	202	270
Thereof, Replacements	63	43

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	1	1
Total CRT units implanted	11	15
Thereof, CRT pacemaker	7	11
Thereof, CRT ICD	4	4

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	1		1
Total ICD units implanted	25		35
Thereof, Single chamber	10		23
Thereof, Dual chamber	15		12
First implants	19		24
Replacements	6		11

Specialty performing implants	
Cardiologists	50%
Surgeons	50%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	1		1
Total loop recorders implanted	4		7

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	0	2011	0

Specialty performing extractions	
Cardiologists	0%
Surgeons	0%



10. Device specific

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

National registry for	
ICD	☐
Pacing*	☒
Electrophysiology	☐
None	☐

* The Icelandic Pacemaker Registry

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

The Directorate of Health in Iceland

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

The Directorate of Health in Iceland

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	1	1
Number of ablations performed	70	63
Mean number of ablations per centre	70	63
Number of AF ablations	13	15
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	☐
U.S.	☐
European	☒

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

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☐	☒	☐	☐	☐	6
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒	1
Lack of referral	☐	☐	☒	☐	☐	4
Lack of trained personnel	☐	☐	☒	☐	☐	3
Low awareness of guidelines	☐	☐	☒	☐	☐	5
Lack of operators	☐	☒	☐	☐	☐	2

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

Please, find all sources at the end of the EHRA White Book 2012.

IRELAND



1. Statistics

Age pyramid for Ireland



Healthcare data		
Hospitals (per 100.000 population)	4,0	2008
Beds (per 100.000 population)	492,7	2008
Density of physicians (per 1.000 population)	3,1	2010
Density of nurses (per 1.000 population)	12,7	2009

Demographic information		
Population	4.670.976	2011
Population annual growth rate (%)	1,1	2011
Life expectancy at birth	80	2011
Death rate (per 1.000 population)	6,5	2009
Live births (per 1.000 population)	16,7	2009

Economic information		
Gross domestic product (U.S dollar-billions)	222,27*	2011
Gross domestic product per capita (U.S dollar-units)	48.516,98*	2011
Total expenditure on health as % of GDP	9,7	2009
General government expenditure on health as % of total expenditure on health	76,9	2008
Private expenditure on health as % of total expenditure on health	23,1	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	27.122*
2011	2.612 **

* 27.122 deaths in Ireland in 2010. Of these 9,189 were attributable to Diseases of the Circulatory System. Breaking these down further: 4.625 were due to Ischaemic Heart Disease (of which 2280 were due to Acute Myocardial Infarction), 2.015 were due to Cerebrovascular Disease, 1.269 were due to Other Heart Disease – i.e. endocarditis, valve disorders, heart failure, cardiomyopathy etc, 1.280 were due to Other Disease of Circulatory System - i.e. rheumatic, hypertension, hypotension, atherosclerosis, aneurysms, varicose veins etc.

** Deaths from diseases of the Heart and Arteries Q1 2011: 2.612

3. Healthcare System

Ireland has a comprehensive, government funded public healthcare system. A person living in Ireland for at least one year is considered by the HSE to be 'ordinarily resident' and is entitled to either full eligibility (Category 1) or limited eligibility (Category 2) for health services. People who have not been resident in Ireland for at least one year must satisfy the HSE that it is their intention to remain for a minimum of one year in order to be eligible for health services. Dependants of such individuals must also contact the HSE to confirm their eligibility. Category 1 – People with Medical Cards. Over 30% of people in Ireland have medical cards. Medical Cards allow people to get a wide range of health services and medicines free of charge. You can read more about Medical Cards and how to apply for one here.

Category 2 – People without Medical Cards. People without medical cards can still access a wide range of community and hospital health services, either free of charge or at reduced cost.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	>30%	>30%
Uninsured citizens	<70%	<70%

Distribution of insurance modality		
	2010	2011
Public insurance company	32%	32%
Private insurance company	47,2%	<47%
Private co-payment	not available	not available



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

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

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	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
Internal loop recorders	☒	☐	☒	☒	☐	☐
ICD primary prevention	☒	☐	☐	☒	☐	☐
ICD secondary prevention	☒	☐	☐	☒	☐	☐
CRT devices	☒	☐	☐	☒	☐	☐
Ablation	☒	☐	☐	☒	☐	☐

* The above applies to the private hospitals and not the public hospitals.

Treatment availability	
No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

All patients found to have an indication are funded either through the public or private system.

4. Education

National certification availability	
Device therapy	☐
Invasive electrophysiology	☐
None	☒

EP subgroup of Irish Cardiac Society is primarily involved with education. The RCPI had an accreditation role as well as education for hospital physicians.

National certification for physicians	
Required for practice	☒
Not required for practice	☐
Accreditation not available	☐
Subspecialty registry for cardiology run by RCPI	

National accreditation for centres	
Required for practice	☒
Not required for practice	☐
Accreditation not available	☐
HSE	

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒
Almost all EP doctors in Ireland have completed EP fellowship programs in the North America.	

Specialty required for catheter ablation	Yes
Cardiac electrophysiologist; Almost all EP doctors in Ireland have completed EP fellowship programs in the North America.	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist,	

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

Required period of training to perform implantations	>6 years
--	----------



Training centres availability	
Pacemaker	10
ICD implantation	10
CRT implantation	6
Electrophysiological studies and catheter ablation	10
Atrial fibrillation ablation	6
Number of medical faculties	5
Percentage of academic facilities among practicing EP and implant centres	62,5%

5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	16		17
Total Pacemaker units implanted	1.867		2.367
Thereof, New implants	not available		not available
Thereof, Replacements	not available		not available
Specialty performing implants			
Cardiologists			100%
Surgeons			0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	16		17
Total CRT units implanted	223		268
Thereof, CRT pacemaker	30		39
Thereof, CRT ICD	193		223
Specialty performing implants			
Cardiologists			100%
Surgeons			0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	16		17
Total ICD units implanted	600		654
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

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	not available

Specialty performing extractions	
Cardiologists	40%
Surgeons	60%



10. Device specific

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

National registry for	
ICD	☒
Pacing	☒
Electrophysiology	☐
None	☐
G-pace	

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

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

Irish Medicines Board

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	11	11
Number of ablations performed	800*	1.000*
Mean number of ablations per centre	not available	not available
Number of AF ablations	350**	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

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

12. Guidelines

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

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

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐
Lack of referral	☒	☐	☐	☐	☐
Lack of trained personnel	☒	☐	☐	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☒	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

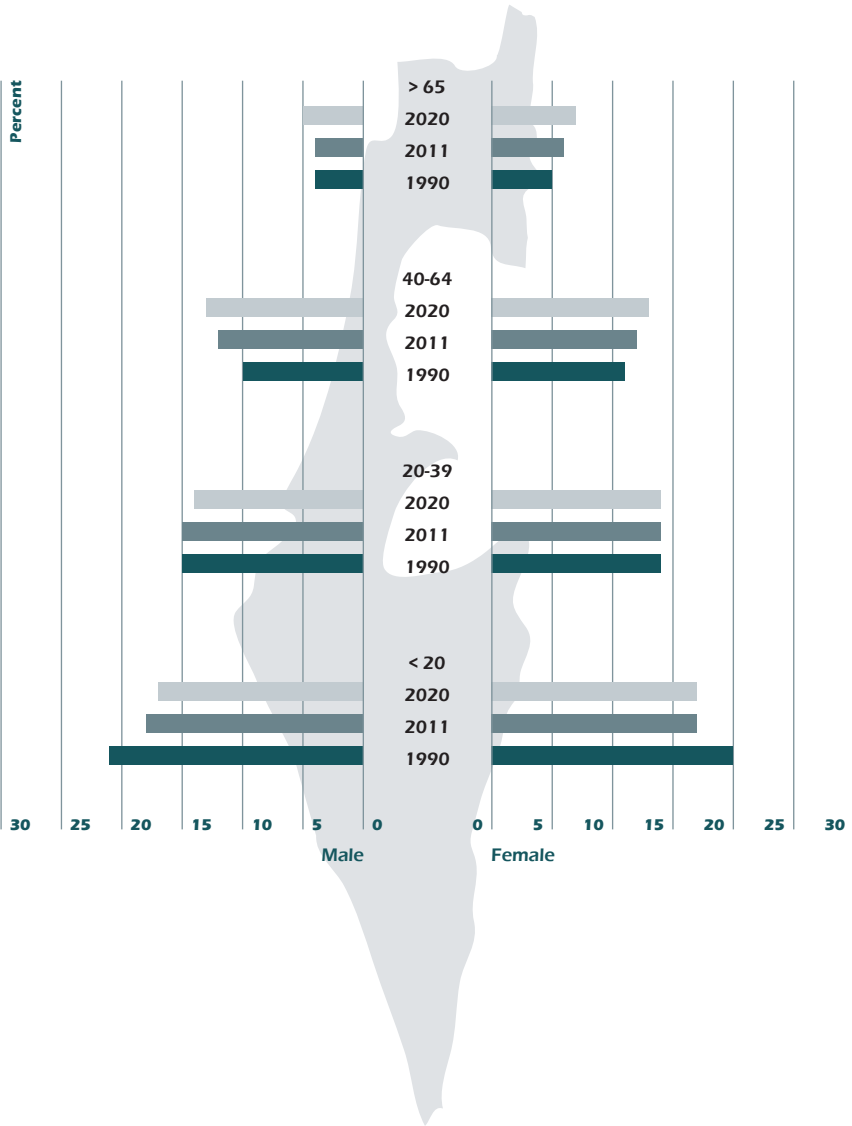
Please, find all sources at the end of the EHRA White Book 2012.

ISRAEL



1. Statistics

Age pyramid for Israel



Healthcare data		
Hospitals (per 100.000 population)	1,6	2010
Beds (per 100.000 population)	343,5	2010
Density of physicians (per 1.000 population)	3,5	2010
Density of nurses (per 1.000 population)	4,8	2010

Demographic information		
Population	7.473.052	2011
Population annual growth rate (%)	1,6	2011
Life expectancy at birth	81	2011
Death rate (per 1.000 population)	5,2	2009
Live births (per 1.000 population)	21,8	2010

Economic information		
Gross domestic product (U.S dollar-billions)	245,27*	2011
Gross domestic product per capita (U.S dollar-units)	32.297,67*	2011
Total expenditure on health as % of GDP	7,6	2009
General government expenditure on health as % of total expenditure on health	58,4	2008
Private expenditure on health as % of total expenditure on health	41,6	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	17%

3. Healthcare System

Health care in Israel is universal and participation in a medical insurance plan is compulsory. Health care coverage is administered by a small number of organizations, with funding from the government. All Israeli citizens are entitled to the same Uniform Benefits Package, regardless of which organization they are a member of, and treatment under this package is funded for all citizens regardless of their financial means.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	99%	99%
Uninsured citizens	1%	1%

Distribution of insurance modality		
	2010	2011
Public insurance company	94%	85%
Private insurance company	1%	1%
Private co-payment	5%	14%

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

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

ICD therapy is covered by most health Funds for MADIT-II/SCD-HeFT indications beginning 2011.

In 2010, only MADIT-I indication was 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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☐	☐	☒
CRT devices	☐	☐	☒	☐	☐	☒
Ablation	☒	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☒
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

In 2011, all health Funds approved MADIT-II, SCD-HeFT and MADIT-CRT indications for ICD and CRT-D.

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation is required for physicians and for cardiologists, not for cardiology sub-specialties.

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation is required only for teaching purposes, i.e., to be recognized by a University as an Academic Department.

National Cardiac Society supporting EHRA certification system	
	☐
	☐
	☒
	☐

Specialty required for catheter ablation	Yes
Cardiologist after fellowship (usually done abroad) in cardiac electrophysiology	

Specialty required for 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
--	----

Training centres availability	
Pacemaker	22
ICD implantation	21
CRT implantation	20
Electrophysiological studies and catheter ablation	12
Atrial fibrillation ablation	7

Number of medical faculties	5
-----------------------------	---

Percentage of academic facilities among practicing EP and implant centres	100%
---	------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	17	22
Total Pacemaker units implanted	not available	3.737
Thereof, New implants	not available	2.615
Thereof, Replacements	not available	1.121

Specialty performing implants	
Cardiologists	5%
Surgeons	5%
Other: Cardiac electrophysiologists	90%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	12	20
Total CRT units implanted	825	527
Thereof, CRT pacemaker	105	100
Thereof, CRT ICD	720*	627**

* including CRT-D with plug; ** full CRT with LV lead

Specialty performing implants	
Other: Cardiac electrophysiologists	100%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2010	2011
Implanting centres	17	22
Total ICD units implanted	1.323	1.164
Thereof, Single chamber	624	349
Thereof, Dual chamber	923	815
First implants	1.067	609
Replacements	256	555

Specialty performing implants	
Cardiologists	5%
Surgeons	5%
Other: Cardiac electrophysiologists	90%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2010	2011
Implanting centres	12	not available
Total loop recorders implanted	not available	not available

Specialty performing implants	
Other: Cardiac electrophysiologists	100%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	3

Specialty performing extractions	
Cardiologists	100%
Surgeons	0%



10. Device specific

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

National registry for	
ICD*	☒
Pacing	☐
Electrophysiology	☐
None	☐

* Israel National ICD Registry

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

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

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	12	12
Number of ablations performed	not available	not available
Mean number of ablations per centre	not available	not available
Number of AF ablations	not available	not available
Number of ablation centres (> 50 AF ablations)	not available	3
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	3

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

12. Guidelines

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

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

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	2
Lack of reimbursement, limited financial resources	☐	☐	☒	☐	☐	2
Lack of referral	☐	☐	☐	☒	☐	3
Lack of trained personnel	☐	☒	☐	☐	☐	7
Low awareness of guidelines	☐	☐	☐	☒	☐	6
Lack of operators	☐	☒	☐	☐	☐	7

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

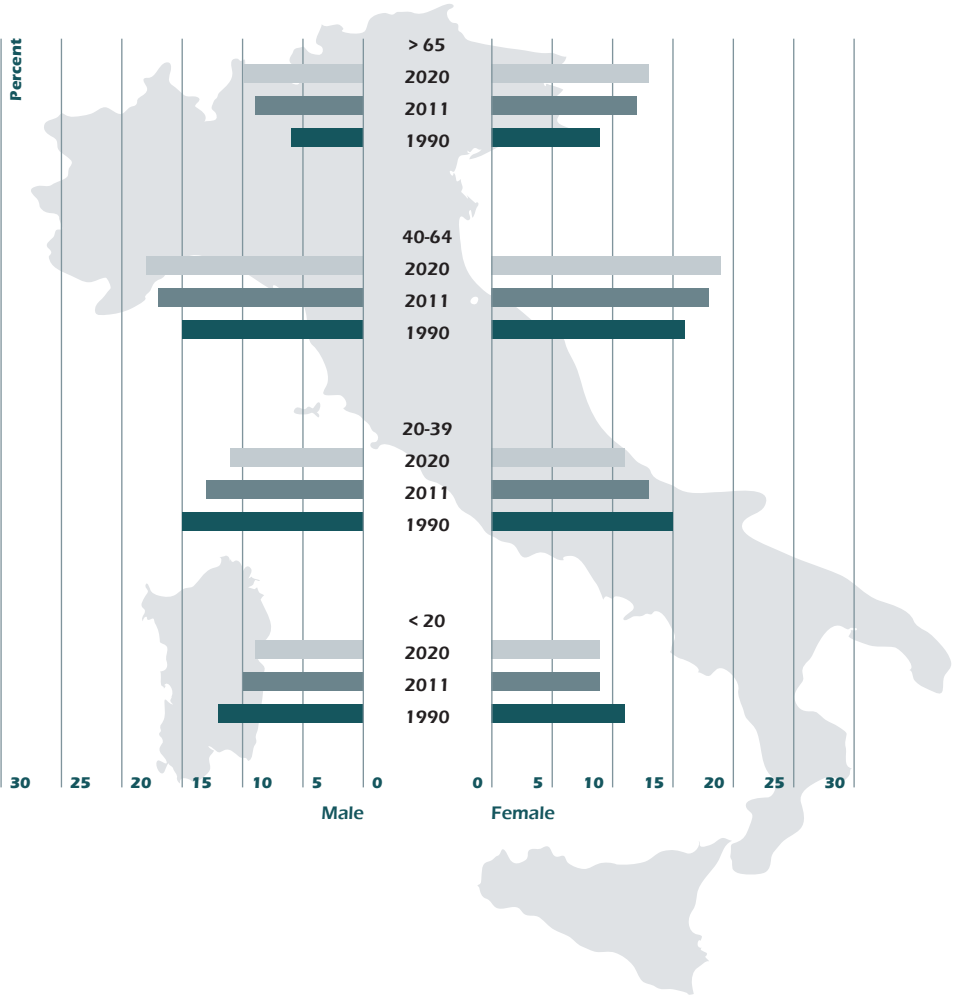
Please, find all sources at the end of the EHRA White Book 2012.

ITALY



1. Statistics

Age pyramid for Italy



Healthcare data		
Hospitals (per 100.000 population)	2,1	2009
Beds (per 100.000 population)	363,4	2009
Density of physicians (per 1.000 population)	3,4	2009
Density of nurses (per 1.000 population)	not available	not available

Demographic information		
Population	61.016.804	2011
Population annual growth rate (%)	0,4	2011
Life expectancy at birth	82	2011
Death rate (per 1.000 population)	9,7	2008
Live births (per 1.000 population)	9,3	2010

Economic information		
Gross domestic product (U.S dollar-billions)	2.245,71*	2011
Gross domestic product per capita (U.S dollar-units)	37.046,28*	2011
Total expenditure on health as % of GDP	9,5	2009
General government expenditure on health as % of total expenditure on health	76,3	2008
Private expenditure on health as % of total expenditure on health	23,7	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	0,38%/0,42%*
2011	0,38%/0,42%*

* 0.38% for male and 0.42% for female

3. Healthcare System

Healthcare is provided to all citizens and residents by a mixed public-private system. The public part is the national health service (SSN = Servizio Sanitario Nazionale) which is organized under the Ministry of Health and it's administered on a regional basis. Visits by specialist doctors, diagnostic tests, surgeries and hospitalization are provided by the public hospitals or by conventioned private ones and are completely free of charge for everyone, regardless of the income. When specialist doctors' visits or diagnostic tests are prescribed by the family doctor a copay is required to the patient (of the order of 30 EUR for a visit without diagnostic tests) and are free for the poor. Waiting times are usually up to a few months in the big public facilities and up to a few weeks in the small conventioned private facilities. Patients, however, can opt for the "free market" option, provided by both public and private hospitals, which is paid completely out-of-pocket and has generally much shorter waiting times.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	0%	0%

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

Co-payment necessary for the following therapy	
ICD devices	☐
Pacemakers	☐
Ablation	☐
Co-payment is necessary only in case of procedures in the private sector (not conventionated).	

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	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
Internal loop recorders	☐	☐	☒	☒	☐	☒
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability	
No restrictions	☒
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability	
Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians	
Required for practice	☐
Not required for practice	☒
Accreditation not available	☐
Certification process started: 2011	

National accreditation for centres	
Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it's not homologated to national certification	☐
No	☒
The AIAC (Italian Association for Cardiac Pacing and Arrhythmology) started an accreditation examination based on EHRA model.	

Specialty required for catheter ablation	No
--	----

Specialty required for ICD or pacemaker implants	No
--	----

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
Italian Association for Cardiac Pacing and Arrhythmology (AIAC)	

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

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

Number of medical faculties	24
-----------------------------	----

Percentage of academic facilities among practicing EP and implant centres	5%
---	----

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	400	400
Total Pacemaker units implanted	63.400***	63.100*
Thereof, New implants	not available	45.430**
Thereof, Replacements	not available	17.670**

* EUCOMED 2011; ** Approximation; *** Approximation/ EUCOMED 2011

Specialty performing implants	
Cardiologists	99%
Surgeons	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	not available	350**
Total CRT units implanted	118.000***	12.380*
Thereof, CRT pacemaker	1.800***	2.000*
Thereof, CRT ICD	10.000***	10.380*

* EUCOMED 2011; ** Approximation; *** Approximation/ EUCOMED 2011

Specialty performing implants	
Cardiologists	99%
Surgeons	1%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		360**
Total ICD units implanted	11.100***		11.970*
Thereof, Single chamber	not available		5.300*
Thereof, Dual chamber	not available		6.670*
First implants	not available		9.200**
Replacements	not available		2.750**

* EUCOMED 2011; ** Approximation; *** Approximation/ EUCOMED 2011

Specialty performing implants	
Cardiologists	99%
Surgeons	1%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		not available
Total loop recorders implanted	2.200*		2.300*

* Approximation

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	57

Specialty performing extractions	
Cardiologists	95%
Surgeons	5%

10. Device specific

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

National registry for	
ICD	☒
Pacing	☒
Electrophysiology	☒
None	☐
AIAC Registry	

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

The AIAC organizes the coordination of device recalls since 2004.

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

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	not available	170*
Number of ablations performed	not available	19.000*
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

* Approximation

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

12. Guidelines

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

Necessity of guideline translation to national language	Yes
---	-----

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	3
Lack of reimbursement, limited financial resources	☐	☐	☐	☒	☐	4
Lack of referral	☐	☐	☒	☐	☐	3
Lack of trained personnel	☐	☐	☒	☐	☐	4
Low awareness of guidelines	☒	☐	☐	☐	☐	3
Lack of operators	☐	☒	☐	☐	☐	3

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

Please, find all sources at the end of the EHRA White Book 2012.



KOSOVO

Pending data submission.



LATVIA



1. Statistics

Age pyramid for Latvia





Healthcare data		
Hospitals (per 100.000 population)	3,1	2009
Beds (per 100.000 population)	640,1	2009
Density of physicians (per 1.000 population)	3,0	2009
Density of nurses (per 1.000 population)	4,6	2009

Demographic information		
Population	2.204.708	2011
Population annual growth rate (%)	-0,6	2011
Life expectancy at birth	73	2011
Death rate (per 1.000 population)	13,3	2009
Live births (per 1.000 population)	8,6	2010

Economic information		
Gross domestic product (U.S dollar-billions)	27,41*	2011
Gross domestic product per capita (U.S dollar-units)	12.226,47*	2011
Total expenditure on health as % of GDP	6,5	2009
General government expenditure on health as % of total expenditure on health	60,0	2008
Private expenditure on health as % of total expenditure on health	40,0	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	54,2%
2011	not available

3. Healthcare System

National Health system. The Ministry of Healthcare and municipalities.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	91%	90%
Private insurance company	9%	10%
Private co-payment	0%	0%

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

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

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	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
Internal loop recorders	☒	☐	☐	☒	☐	☐
ICD primary prevention	☒	☐	☐	☒	☐	☐
ICD secondary prevention	☒	☐	☐	☒	☐	☐
CRT devices	☒	☐	☐	☒	☐	☐
Ablation	☒	☐	☐	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐
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.	

4. Education

National certification availability

Device therapy	☒
Invasive electrophysiology	☒
None	☐
Method certificates since 2009.for all The first speciality must be cardiologist.	

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
--	-----

Cardiologist, cardiac surgeon; cardiac surgeons – if performing catheter ablation with a surgical approach.

Specialty required for ICD or pacemaker implants	Yes
--	-----

Cardiologist, cardiac surgeon

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

National Society, Guidelines of Competency

Required period of training to perform implantations	2 years
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Training centres availability	
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Pacemaker	1
ICD implantation	1
CRT implantation	1
Electrophysiological studies and catheter ablation	1
Atrial fibrillation ablation	1

Number of medical faculties	2
-----------------------------	---

Percentage of academic facilities among practicing EP and implant centres	100%
---	------

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	3	3
Total Pacemaker units implanted	1.103	1.213
Thereof, New implants	863	1.009
Thereof, Replacements	240	204

Specialty performing implants	
Cardiologists	60%
Surgeons	40%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	2	2
Total CRT units implanted	25	54
Thereof, CRT pacemaker	40	22
Thereof, CRT ICD	65	32

Specialty performing implants	
Cardiologists	60%
Surgeons	40%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	3		3
Total ICD units implanted	43		63
Thereof, Single chamber	15		20
Thereof, Dual chamber	28		43
First implants	38		56
Replacements	5		7

Specialty performing implants	
Cardiologists	50%
Surgeons	50%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	2		2
Total loop recorders implanted	32		30

Specialty performing implants	
Cardiologists	60%
Surgeons	40%

9. Lead extractions

Centres perform lead extractions			
2010	1	2011	1

Specialty performing extractions	
Cardiologists	0%
Surgeons	100%



10. Device specific

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

National registry for	
ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* National Register of ICD; ** National Register of Pacing; *** National Register of Electrophysiology

Availability of a national quality insurance system or complication registry	Yes
National Healthcare Agency	

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
Health Statistics and Medical Technologies State Agency	

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	2	2
Number of ablations performed	395*	545*
Mean number of ablations per centre	177,9	272,5
Number of AF ablations	35	69
Number of ablation centres (> 50 AF ablations)	not available	1
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	1

* In Latvian Centre of Cardiology were 525 EP procedures performed.

Availability of a national registry for interventional electrophysiology	Yes
Latvian National Register of Interventional Electrophysiology	

12. Guidelines

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

Necessity of guideline translation to national language	Yes
---	-----

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☐	☒	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☒	☐	☐	☐
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☐	☐	☒	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

Please, find all sources at the end of the EHRA White Book 2012.



LEBANON

Pending data submission.





LIBYA

Pending data submission.

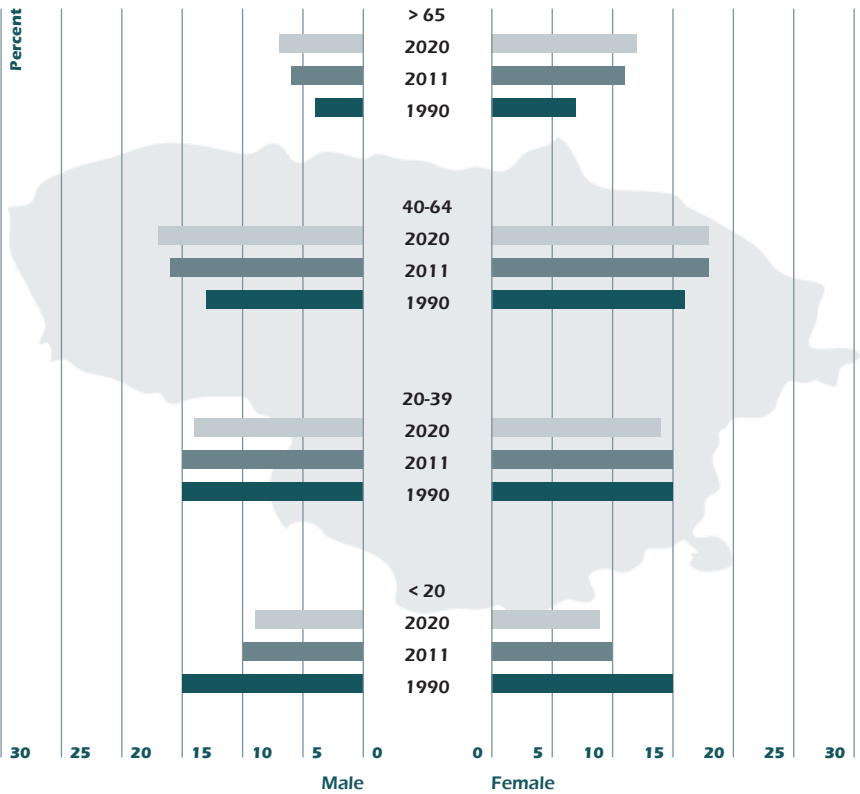


LITHUANIA



1. Statistics

Age pyramid for Lithuania



Healthcare data		
Hospitals (per 100.000 population)	3,4	2009
Beds (per 100.000 population)	680,3	2009
Density of physicians (per 1.000 population)	3,7	2009
Density of nurses (per 1.000 population)	7,0	2009

Demographic information		
Population	3.535.547	2011
Population annual growth rate (%)	-0,3	2011
Life expectancy at birth	75	2011
Death rate (per 1.000 population)	12,6	2009
Live births (per 1.000 population)	10,8	2010

Economic information		
Gross domestic product (U.S dollar-billions)	43,17*	2011
Gross domestic product per capita (U.S dollar-units)	13.190,38*	2011
Total expenditure on health as % of GDP	6,6	2009
General government expenditure on health as % of total expenditure on health	68,3	2008
Private expenditure on health as % of total expenditure on health	27,4	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

3. Healthcare System

The Healthcare system in Lithuania is based on a compulsory health insurance. The State Fund finances nearly 100% of services and there are only a few private medicine services.

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

Percentage of insured and uninsured citizens	2010	2011
Insured citizens	98%	98%
Uninsured citizens	2%	2%

Distribution of insurance modality	2010	2011
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	0%	0%

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

Co-payment necessary for the following therapy	☐
	☐
	☐



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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

4. Education

National certification availability

Device therapy	☒
Invasive electrophysiology	☒
None	☐
State Health Care Accreditation Agency	

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist, cardiac surgeon	

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

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

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

Number of medical faculties	2
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	50%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	4		4
Total Pacemaker units implanted	2.379		2.526
Thereof, New implants	2.063		2.147
Thereof, Replacements	316		379

Specialty performing implants	
Cardiologists	99,5%
Surgeons	0,5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	3		3
Total CRT units implanted	72		108
Thereof, CRT pacemaker	56		83
Thereof, CRT ICD	16		25

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	3		3
Total ICD units implanted	88		117
Thereof, Single chamber	62		87
Thereof, Dual chamber	26		30
First implants	70		98
Replacements	18		19

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	3		2
Total loop recorders implanted	15		18

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	2	2011	2

Specialty performing extractions	
Cardiologists	100%
Surgeons	0%



10. Device specific

Availability of remote monitoring of devices	No
No reimbursement.	

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry	Yes
State Health Care Accreditation Agency	

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
State Health Care Accreditation Agency	

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	3	3
Number of ablations performed	804	801
Mean number of ablations per centre	268	267
Number of AF ablations	73	66
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

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

12. Guidelines

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

Necessity of guideline translation to national language	Yes
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Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☐	☐	☒	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☒	☐	☐	☐
Lack of operators	☐	☐	☒	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

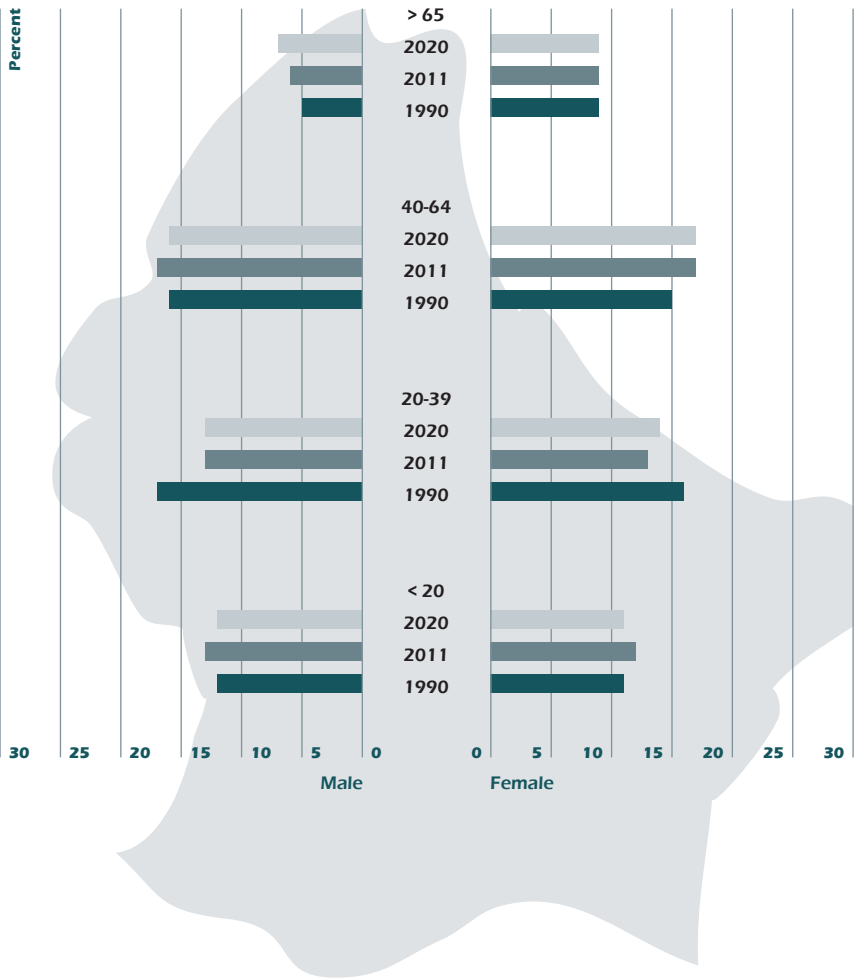
Please, find all sources at the end of the EHRA White Book 2012.

LUXEMBOURG



1. Statistics

Age pyramid for Luxembourg





Healthcare data		
Hospitals (per 100.000 population)	2,2	2009
Beds (per 100.000 population)	546,6	2009
Density of physicians (per 1.000 population)	2,7	2009
Density of nurses (per 1.000 population)	10,9	2006

Demographic information		
Population	503.302	2011
Population annual growth rate (%)	1,1	2011
Life expectancy at birth	80	2011
Death rate (per 1.000 population)	7,3	2009
Live births (per 1.000 population)	11,3	2009

Economic information		
Gross domestic product (U.S dollar-billions)	62,94*	2011
Gross domestic product per capita (U.S dollar-units)	122.272,34*	2011
Total expenditure on health as % of GDP	7,8	2009
General government expenditure on health as % of total expenditure on health	74,8	2008
Private expenditure on health as % of total expenditure on health	15,9	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	33,8%
2011	not available

3. Healthcare System

Luxembourg's healthcare system is based on three principles: compulsory health insurance, free choice of provider for patients and compulsory provider compliance with the fixed set of fees for services. (Highlights on health, WHO, 2004)

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	not available

Distribution of insurance modality		
	2010	2011
Public insurance company	100%	100%
Private insurance company	58%	58%*
Private co-payment	not available	not available

* Citizens are covered by a public insurance (which is 100%) and some of them around 58% contract in addition to their public insurance a private one to be better covered or reimbursed.

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

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



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	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
Internal loop recorders	☒	☐	☐	☐	☒	☐
ICD primary prevention	☒	☐	☐	☐	☒	☐
ICD secondary prevention	☒	☐	☐	☐	☒	☐
CRT devices	☒	☐	☐	☐	☒	☐
Ablation	☒	☐	☐	☐	☒	☐

Treatment availability

No restrictions	☒
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist, surgeon	

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

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

Number of medical faculties	0
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	0%
--	-----------



5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	5		5
Total Pacemaker units implanted	91*		169**
Thereof, New implants	59		101
Thereof, Replacements	32		68

* it refers to only one center; ** refers to 2 centres

Specialty performing implants	
Cardiologists	97%
Surgeons	3%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	1		1
Total CRT units implanted	20		20
Thereof, CRT pacemaker	5		7
Thereof, CRT ICD	15		13

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2010	2011
Implanting centres	1	1
Total ICD units implanted	37	50
Thereof, Single chamber	31	28
Thereof, Dual chamber	6	9
First implants	30	40
Replacements	7	10

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2010	2011
Implanting centres	1	1
Total loop recorders implanted	7	2

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	1	2011	1

Specialty performing extractions	
Cardiologists	not available
Surgeons	100%



10. Device specific

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

National registry for	
ICD*	☒
Pacing	☐
Electrophysiology*	☒
None	☐
* INCCI	

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

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

Ministry of health: Direction de la santé

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	1	1
Number of ablations performed	93	127
Mean number of ablations per centre	93	127
Number of AF ablations	12	27
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	Yes
--	-----

INCCI

12. Guidelines

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

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	2
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐	2
Lack of referral	☐	☒	☐	☐	☐	1
Lack of trained personnel	☒	☐	☐	☐	☐	2
Low awareness of guidelines	☒	☐	☐	☐	☐	2
Lack of operators	☒	☐	☐	☐	☐	2

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

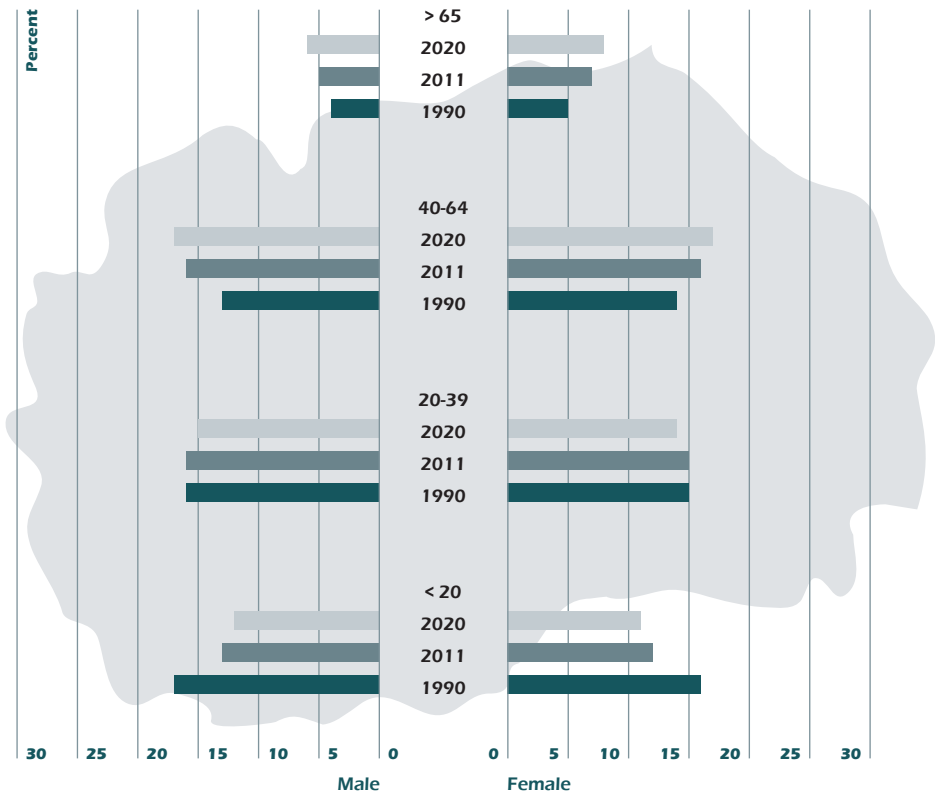
Please, find all sources at the end of the EHRA White Book 2012.

MACEDONIA FYR



1. Statistics

Age pyramid for Macedonia FYR



Healthcare data		
Hospitals (per 100.000 population)	3,0	2009
Beds (per 100.000 population)	449,6	2009
Density of physicians (per 1.000 population)	2,6	2008
Density of nurses (per 1.000 population)	not available	not available

Demographic information		
Population	2.077.328	2011
Population annual growth rate (%)	0,2	2011
Life expectancy at birth	75	2011
Death rate (per 1.000 population)	8,9	2003
Live births (per 1.000 population)	11,0	2005

Economic information		
Gross domestic product (U.S dollar-billions)	10,32*	2011
Gross domestic product per capita (U.S dollar-units)	5.011,53*	2011
Total expenditure on health as % of GDP	6,9	2009
General government expenditure on health as % of total expenditure on health	68,2	2008
Private expenditure on health as % of total expenditure on health	31,8	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	57%
2011	not available

3. Healthcare System

The healthcare system in the former Yugoslav Republic of Macedonia is based on a National Health system which is administrated by the Ministry of Health. A system of compulsory health insurance was established to coordinate health insurance for the population and to oversee health services. Private healthcare system is also available where reimbursement for treatment is limited to certain procedures. (Healthcare systems in transition, 2000)

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	90%	90%
Uninsured citizens	10%	10%

Distribution of insurance modality		
	2010	2011
Public insurance company	90%	90%
Private insurance company	10%	10%
Private co-payment	0%	0%

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

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

There is no co-payment in public hospitals. In private hospitals the treatment is privately funded.

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	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
Internal loop recorders	☐	☐	☒	☐	☐	☐
ICD primary prevention	☐	☐	☒	☐	☐	☐
ICD secondary prevention	☐	☐	☒	☐	☐	☐
CRT devices	☐	☐	☒	☐	☐	☐
Ablation	☐	☐	☒	☐	☐	☐

In the public sector the hospital incentive is for increase in budget, In the private sector the hospital does not receive neither reimbursement nor incentive.

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☒
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

In private hospitals there are no restrictions and the indications follow ESC guidelines. In public hospitals, the procedures are restricted to a certain number of treatment/budget.

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐
Licence to practice Cardiology	

National accreditation for centres	
Required for practice	☒
Not required for practice	☐
Accreditation not available	☐
Hospitals are certified to practice specific procedures.	

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for 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
The only period required is until competence is attained to perform independent implantations.	

Training centres availability	
Pacemaker	2
ICD implantation	2
CRT implantation	2
Electrophysiological studies and catheter ablation	2
Atrial fibrillation ablation	0

Number of medical faculties	3
-----------------------------	---

Percentage of academic facilities among practicing EP and implant centres	33%
---	-----



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	2	2
Total Pacemaker units implanted	310	362
Thereof, New implants	231	286
Thereof, Replacements	79	76

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	2	2
Total CRT units implanted	8	16
Thereof, CRT pacemaker	6	6
Thereof, CRT ICD	2	10

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	2		2
Total ICD units implanted	14		26
Thereof, Single chamber	not available		8
Thereof, Dual chamber	not available		18
First implants	8		20
Replacements	6		6

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	2		2
Total loop recorders implanted	0		0

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	2	2011	2

Specialty performing extractions	
Mixed team of cardiologists and surgeons	100%

10. Device specific

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

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

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

	2010	2011
Number of ablation centres	2	2
Number of ablations performed	30	53
Mean number of ablations per centre	15	32/21
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

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

12. Guidelines

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

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

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☐	☒	☐	☐	☐	3 (public); 6 (private)
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒	6 (public); 1 (private)
Lack of referral	☐	☐	☒	☐	☐	4 (public); 2 (private)
Lack of trained personnel	☐	☒	☐	☐	☐	1 (public); 5 (private)
Low awareness of guidelines	☐	☒	☐	☐	☐	5 (public); 3 (private)
Lack of operators	☐	☒	☐	☐	☐	2 (public); 4 (private)

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

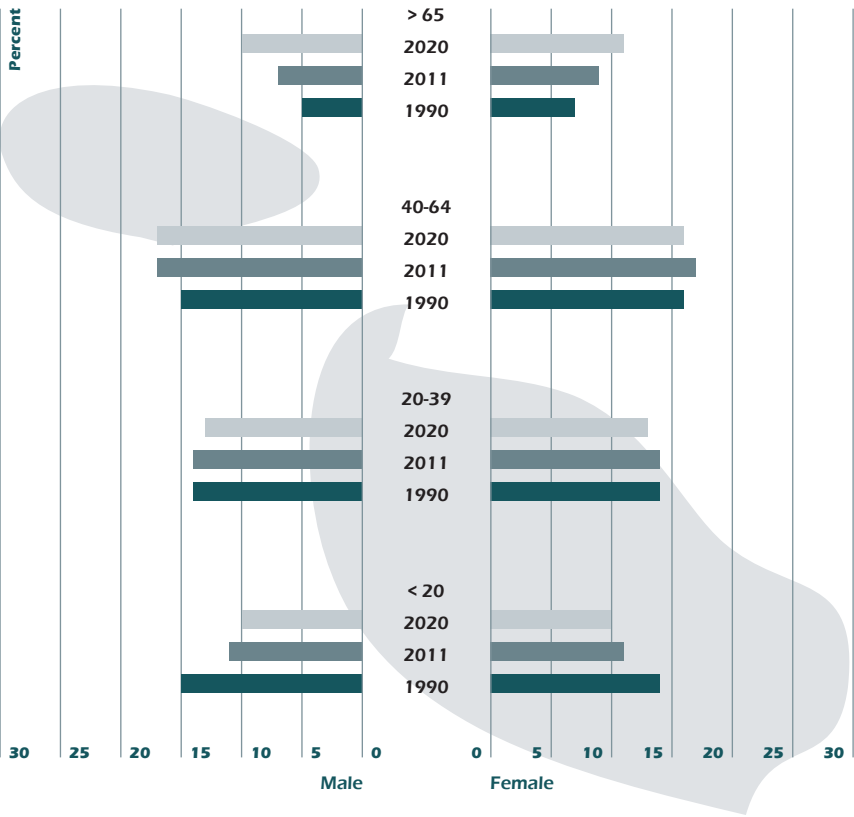
Please, find all sources at the end of the EHRA White Book 2012.

Malta



1. Statistics

Age pyramid for Malta



Healthcare data		
Hospitals (per 100.000 population)	1,9	2010
Beds (per 100.000 population)	450,5	2010
Density of physicians (per 1.000 population)	3,1	2010
Density of nurses (per 1.000 population)	6,5	2010

Demographic information		
Population	408.333	2011
Population annual growth rate (%)	0,4	2011
Life expectancy at birth	80	2011
Death rate (per 1.000 population)	7,2	2010
Live births (per 1.000 population)	9,7	2010

Economic information		
Gross domestic product (U.S dollar-billions)	9,33*	2011
Gross domestic product per capita (U.S dollar-units)	22.057,77*	2011
Total expenditure on health as % of GDP	7,5	2009
General government expenditure on health as % of total expenditure on health	75,2	2008
Private expenditure on health as % of total expenditure on health	24,8	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	38%

3. Healthcare System

National Health Service providing free health care to all the population.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	0%	0%
Private insurance company	25%	25%
Private co-payment	0%	0%

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

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

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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☐	☐	☒
CRT devices	☐	☐	☒	☐	☐	☒
Ablation	☐	☐	☒	☐	☐	☒

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒
Not in place yet	

Specialty required for catheter ablation	Yes
Cardiologist; not formalised	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist; not formalised	

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

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

Training centres availability	
Pacemaker	1
ICD implantation	1
CRT implantation	1
Electrophysiological studies and catheter ablation	1
Atrial fibrillation ablation	0

Number of medical faculties	1
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	100%
--	-------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	2		2
Total Pacemaker units implanted	286		302
Thereof, New implants	not available		254
Thereof, Replacements	not available		48

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	1		1
Total CRT units implanted	25		23
Thereof, CRT pacemaker	0		4
Thereof, CRT ICD	25		19

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	1		1
Total ICD units implanted	30		29
Thereof, Single chamber	15		0
Thereof, Dual chamber	15		18
First implants	13*		18
Replacements	2*		11
* Dual chamber			

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	1		1
Total loop recorders implanted	3		3

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	0	2011	0

Specialty performing extractions	
Cardiologists	not available
Surgeons	not available

10. Device specific

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

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

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

	2010	2011
Number of ablation centres	1	1
Number of ablations performed	13	8
Mean number of ablations per centre	not available	not available
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

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

12. Guidelines

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

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

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	3
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐	1
Lack of referral	☐	☐	☐	☒	☐	6
Lack of trained personnel	☐	☐	☒	☐	☐	4
Low awareness of guidelines	☐	☐	☐	☐	☒	2
Lack of operators	☒	☐	☐	☐	☐	5

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

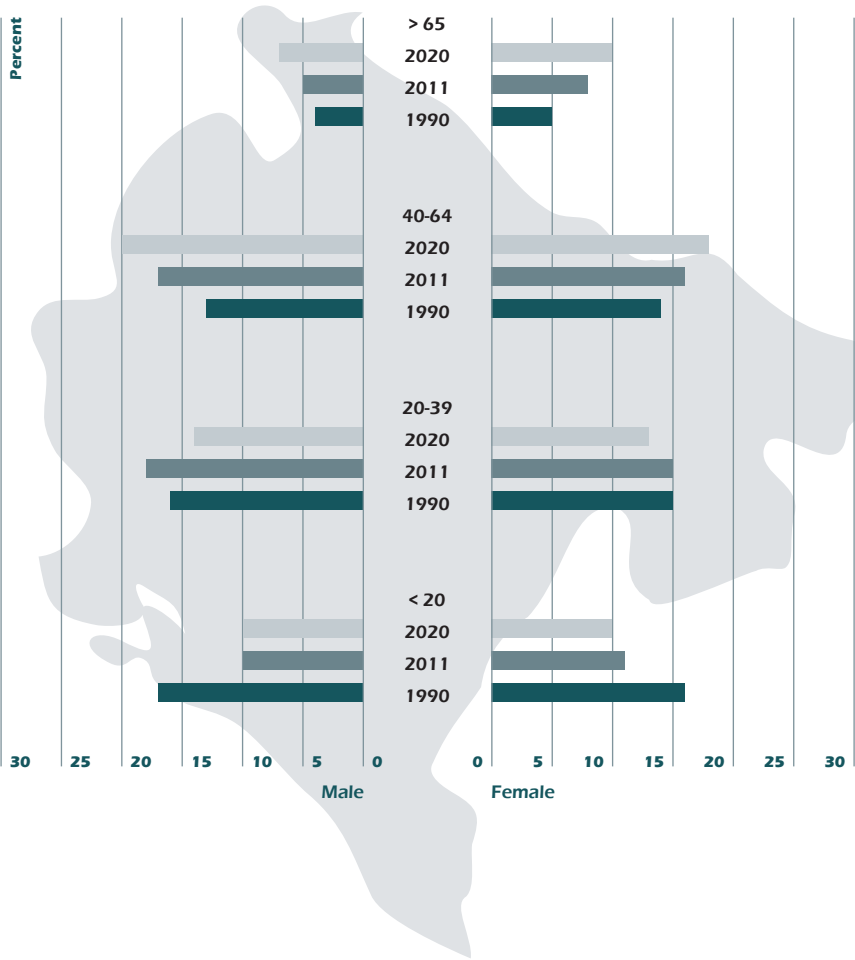
Please, find all sources at the end of the EHRA White Book 2012.

MONTENEGRO



1. Statistics

Age pyramid for Montenegro



Healthcare data		
Hospitals (per 100.000 population)	1,7	2009
Beds (per 100.000 population)	385,9	2009
Density of physicians (per 1.000 population)	2,1	2009
Density of nurses (per 1.000 population)	5,1	2009

Demographic information		
Population	661.807	2011
Population annual growth rate (%)	-0,7	2011
Life expectancy at birth	78	2011
Death rate (per 1.000 population)	9,3	2009
Live births (per 1.000 population)	12,0	2010

Economic information		
Gross domestic product (U.S dollar-billions)	41,74*	2011
Gross domestic product per capita (U.S dollar-units)	6.667,82*	2011
Total expenditure on health as % of GDP	9,3	2009
General government expenditure on health as % of total expenditure on health	67,0	2008
Private expenditure on health as % of total expenditure on health	33,0	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	54%
2011	54%

3. Healthcare System

The healthcare system in Montenegro, a country of about 650 000 inhabitants, is organised through the House of Health. There is a primary healthcare system and family doctors and a total of 6 general hospitals, 3 specialised clinics and 1 clinical center.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	not available	96%
Uninsured citizens	not available	4%

Distribution of insurance modality		
	2010	2011
Public insurance company	100%	100%
Private insurance company	not available	not available
Private co-payment	not available	not available

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

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



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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☐	☐	☒
CRT devices	☐	☐	☒	☐	☐	☒
Ablation	☐	☐	☒	☐	☐	☒

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☒
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

There is an initiative to rationalize especially in primary prevention and CRTD system.

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

We started with invasive electrophysiology practice in December 2011.

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
---	------------

Cardiologist; We started with EP in December 2011 with support with colleagues from EP center from Belgrade. We have one educated cardiologist and the second one is in the process of education.

Specialty required for ICD or pacemaker implants	Yes
---	------------

Cardiologist or vascular surgeon

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

Required period of training to perform implantations	0,5-1 year
---	-------------------

Training centres availability	
Pacemaker	1
ICD implantation	1
CRT implantation	1
Electrophysiological studies and catheter ablation	1
Atrial fibrillation ablation	0

Number of medical faculties	1
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	100%
--	-------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	1	1
Total Pacemaker units implanted	162	175
Thereof, New implants	150	162
Thereof, Replacements	12	13

Specialty performing implants	
Cardiologists	50%
Surgeons	50%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	1	1
Total CRT units implanted	17	14
Thereof, CRT pacemaker	10	5
Thereof, CRT ICD	7	9

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	1		1
Total ICD units implanted	18		31
Thereof, Single chamber	12		20
Thereof, Dual chamber	6		11
First implants	17		29
Replacements	1		2

Specialty performing implants	
Cardiologists	60%
Surgeons	40%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	1		1
Total loop recorders implanted	2		2

Specialty performing implants	
Cardiologists	0%
Surgeons	100%

9. Lead extractions

Centres perform lead extractions			
2010	1	2011	1

Specialty performing extractions	
Cardiologists	0%
Surgeons	100%

10. Device specific

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

High price for devices and system control. We will have donation from BIOTRONIK for 6 months to perform the actions for 3 patients.

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

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

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

National Agency for controlling drugs and devices.

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	0	1
Number of ablations performed	0	7
Mean number of ablations per centre	0	7
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

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

12. Guidelines

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

Necessity of guideline translation to national language	Yes
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Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☒	☐	☐
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☐	☐	☐	☐	☒

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

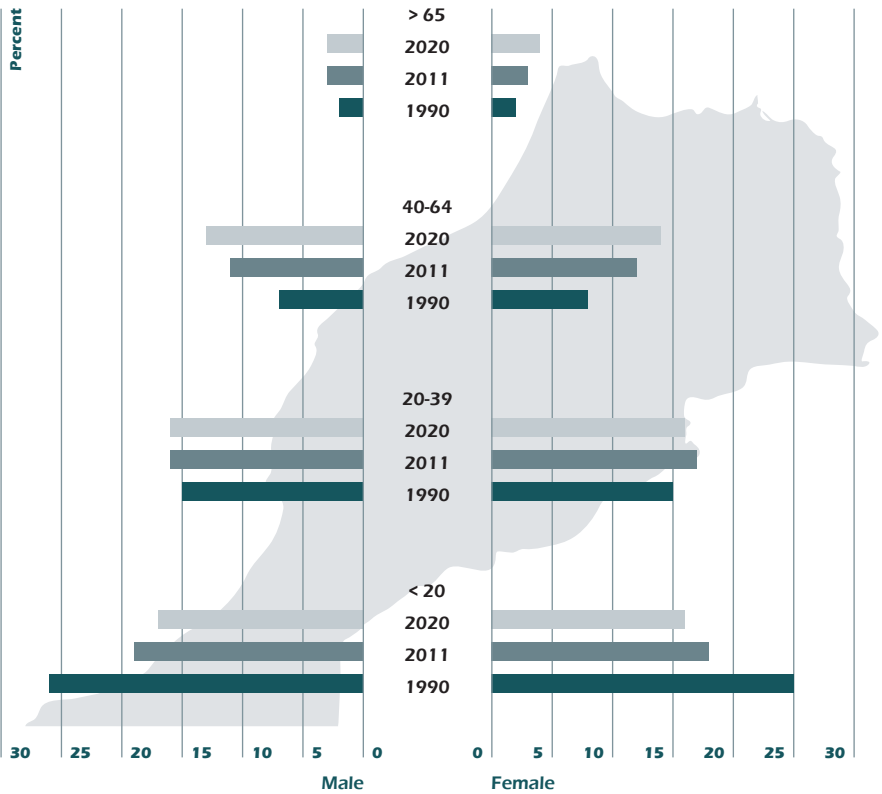
Please, find all sources at the end of the EHRA White Book 2012.

MOROCCO



1. Statistics

Age pyramid for Morocco



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	31.968.361	2011
Population annual growth rate (%)	1,1	2011
Life expectancy at birth	76	2011
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)	101,77*	2011
Gross domestic product per capita (U.S dollar-units)	3.161,73*	2011
Total expenditure on health as % of GDP	not available	not available
General government expenditure on health as % of total expenditure on health	36,3	2008
Private expenditure on health as % of total expenditure on health	63,7	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	not available

3. Healthcare System

Governmental private insurance.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	30%	30%
Uninsured citizens	70%	70%

Distribution of insurance modality		
	2010	2011
Public insurance company	34%	34%
Private insurance company	5%	5%
Private co-payment	not available	not available

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

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



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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☒	☒	☐	☒	☒	☐
CRT devices	☒	☐	☐	☒	☐	☐
Ablation	☒	☐	☐	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐
Not for primary prevention.	

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☐
Not required for practice	☒
Accreditation not available	☐

National accreditation for centres

Required for practice	☐
Not required for practice	☒
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒
Not yet.	

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist and cardiologist surgeon	

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

Required period of training to perform implantations	1 year
---	---------------

Training centres availability	
Pacemaker	13
ICD implantation	8
CRT implantation	5
Electrophysiological studies and catheter ablation	6
Atrial fibrillation ablation	1

Number of medical faculties	5
Governmental source	

Percentage of academic facilities among practicing EP and implant centres	30%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		13
Total Pacemaker units implanted	1.100		1.240
Thereof, New implants	not available		not available
Thereof, Replacements	not available		not available

Specialty performing implants	
Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	5		5
Total CRT units implanted	> 28*		> 30*
Thereof, CRT pacemaker	28		30
Thereof, CRT ICD	not available		not available

* Recensement societe de PM.

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		not available
Total ICD units implanted	46		40
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

Specialty performing implants	
Cardiologists	95%
Surgeons	5%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	0		0
Total loop recorders implanted	0		0

Specialty performing implants	
Cardiologists	0%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	0	2011	0

Specialty performing extractions	
Cardiologists	0%
Surgeons	0%



10. Device specific

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

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

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

	2010	2011
Number of ablation centres	5	5
Number of ablations performed	60	100
Mean number of ablations per centre	20	30
Number of AF ablations	0	6
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	Yes
--	-----

Filiale de rythmologie

12. Guidelines

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

Necessity of guideline translation to national language	Yes
---	-----

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☐	☒	☐	☐	☐	3
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒	1
Lack of referral	☐	☐	☐	☐	☒	2
Lack of trained personnel	☐	☐	☐	☒	☐	3
Low awareness of guidelines	☐	☐	☒	☐	☐	3
Lack of operators	☐	☐	☒	☐	☐	2

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

Please, find all sources at the end of the EHRA White Book 2012.

NETHERLANDS



1. Statistics

Age pyramid for Netherlands



Healthcare data		
Hospitals (per 100.000 population)	1,1	2009
Beds (per 100.000 population)	465,7	2009
Density of physicians (per 1.000 population)	2,9	2008
Density of nurses (per 1.000 population)	8,4	2008

Demographic information		
Population	16.653.734	2011
Population annual growth rate (%)	0,5	2011
Life expectancy at birth	81	2011
Death rate (per 1.000 population)	8,2	2010
Live births (per 1.000 population)	11,1	2010

Economic information		
Gross domestic product (U.S dollar-billions)	858,28*	2011
Gross domestic product per capita (U.S dollar-units)	51.409,51*	2011
Total expenditure on health as % of GDP	10,8	2009
General government expenditure on health as % of total expenditure on health	75,3	2008
Private expenditure on health as % of total expenditure on health	16,5	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	29%
2011	not available

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
------------------------------	-----

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	99,2%	not available
Uninsured citizens	0,8%	not available

Distribution of insurance modality		
	2010	2011
Public insurance company	0%	0%
Private insurance company	100%	100%
Private co-payment	0%	0%
All health insurance companies are private, some are profit based, some non-profit.		

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

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

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	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
Internal loop recorders	☒	☐	☐	☒	☐	☐
ICD primary prevention	☒	☐	☐	☒	☐	☐
ICD secondary prevention	☒	☐	☐	☒	☐	☐
CRT devices	☒	☐	☐	☒	☐	☐
Ablation	☒	☐	☐	☒	☐	☐

Treatment availability

No restrictions	☒
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy*	☒
Invasive electrophysiology**	☐
None	☐

* EHRA or IBHRE certification; ** EP certification is under development.

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☒
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☐

Specialty required for catheter ablation	Yes
Electrophysiologist	

Specialty required for ICD or pacemaker implants	Yes
ICD cardiologist	

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
NVVC Praktijkrichtlijnen voor ICD centra	

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

Training centres availability	
Pacemaker	17
ICD implantation	12
CRT implantation	12
Electrophysiological studies and catheter ablation	12
Atrial fibrillation ablation	12

Number of medical faculties	8
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	47%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	100	87
Total Pacemaker units implanted	9.976	9.736
Thereof, New implants	7.517	7.246
Thereof, Replacements	2.459	2.490

Specialty performing implants	
Cardiologists	90%
Surgeons	5%
Others: Nurse practitioners	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	19	30
Total CRT units implanted	2.133	2.162
Thereof, CRT pacemaker	428	481
Thereof, CRT ICD	1.705	1.681

Specialty performing implants	
Cardiologists	90%
Surgeons	5%
Others: Nurse practitioners	5%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	19		30
Total ICD units implanted	2.835		2.577
Thereof, Single chamber	not available		not available
Thereof, Dual chamber	not available		not available
First implants	2.240		2.007
Replacements	595		570

Specialty performing implants	
Cardiologists	90%
Surgeons	5%
Others: Nurse practitioners	5%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		not available
Total loop recorders implanted	not available		not available

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	not available

Specialty performing extractions	
Cardiologists	not available
Surgeons	not available



10. Device specific

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

National registry for	
ICD*	☒
Pacing*	☒
Electrophysiology	☐
None	☐
* DIPR (NCDR)	

Availability of a national quality insurance system or complication registry	Yes
DIPR (NCDR)	

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

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	15	15
Number of ablations performed	5.717	not available
Mean number of ablations per centre	381	not available
Number of AF ablations	2.147	not available
Number of ablation centres (> 50 AF ablations)	11	not available
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	not available

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

12. Guidelines

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

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

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	6
Lack of reimbursement, limited financial resources	☒	☐	☒	☐	☐	2
Lack of referral	☐	☒	☐	☐	☐	3
Lack of trained personnel	☐	☒	☐	☐	☐	4
Low awareness of guidelines	☐	☐	☒	☐	☐	1
Lack of operators	☒	☐	☐	☐	☐	5

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

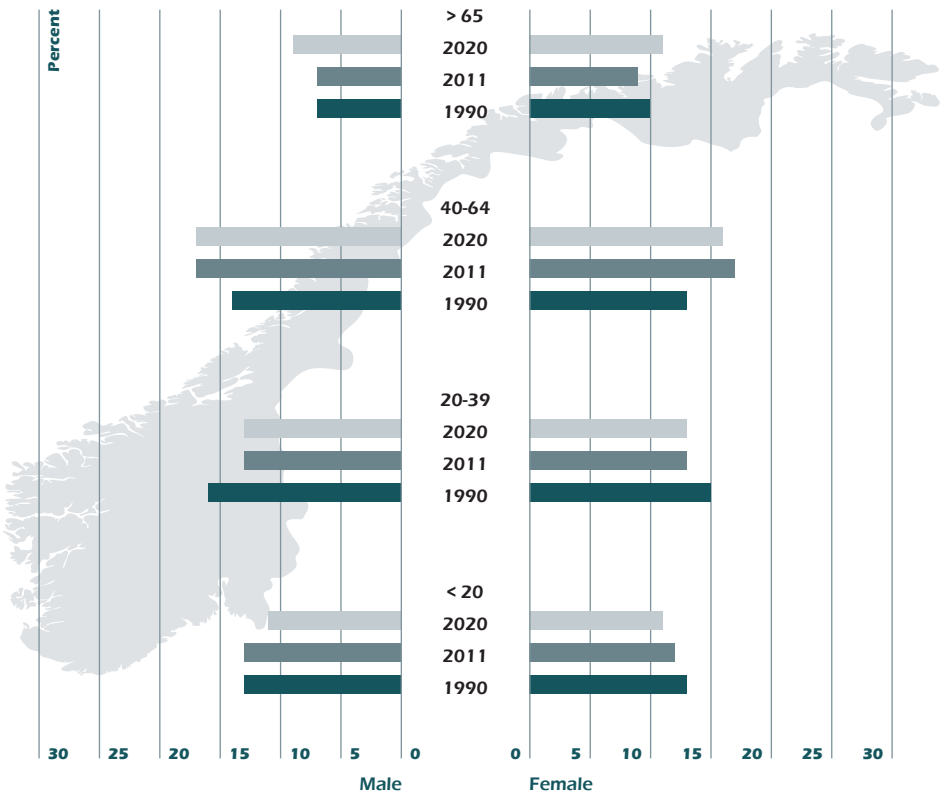
Please, find all sources at the end of the EHRA White Book 2012.

NORWAY



1. Statistics

Age pyramid for Norway



Healthcare data		
Hospitals (per 100.000 population)	1,4	2009
Beds (per 100.000 population)	334,5	2009
Density of physicians (per 1.000 population)	4,0	2009
Density of nurses (per 1.000 population)	14,2	2009

Demographic information		
Population	4.691.849	2011
Population annual growth rate (%)	0,3	2011
Life expectancy at birth	80	2011
Death rate (per 1.000 population)	8,5	2010
Live births (per 1.000 population)	12,6	2010

Economic information		
Gross domestic product (U.S dollar-billions)	479,30*	2011
Gross domestic product per capita (U.S dollar-units)	96.590,87*	2011
Total expenditure on health as % of GDP	9,7	2009
General government expenditure on health as % of total expenditure on health	78,6	2008
Private expenditure on health as % of total expenditure on health	15,6	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	not available

3. Healthcare System

In Norway, the healthcare system is nationally organised. The hospitals have free admission.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	3%	3%

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

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



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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☒
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for 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
---	-----------

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

Number of medical faculties	5
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	22%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	24	23
Total Pacemaker units implanted	3.310	3.169
Thereof, New implants	2.424	2.500
Thereof, Replacements	886	669

Specialty performing implants	
Cardiologists	99,6%
Surgeons	0,4%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	10	9
Total CRT units implanted	335	412
Thereof, CRT pacemaker	166	183
Thereof, CRT ICD	169	229

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2010	2011
Implanting centres	9	9
Total ICD units implanted	608	863
Thereof, Single chamber	133	142
Thereof, Dual chamber	244	465
First implants	377	613
Replacements	231	250

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2010	2011
Implanting centres	20	20
Total loop recorders implanted	145	227

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	3	2011	3

Specialty performing extractions	
Cardiologists	100%
Surgeons	0%



10. Device specific

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

National registry for	
ICD*	☒
Pacing*	☒
Electrophysiology	☐
None	☐

* Norwegian Pacemaker Registry

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

Norwegian Pacemaker Registry

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

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	5	4
Number of ablations performed	1.280	2.284
Mean number of ablations per centre	256	571
Number of AF ablations	417	1.137
Number of ablation centres (> 50 AF ablations)	not available	3
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	0

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

12. Guidelines

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

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

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☒	☐	☐	☐
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☐	☐	☒	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☒	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

Please, find all sources at the end of the EHRA White Book 2012.

POLAND



1. Statistics

Age pyramid for Poland



Healthcare data		
Hospitals (per 100.000 population)	2,4	2009
Beds (per 100.000 population)	665,3	2009
Density of physicians (per 1.000 population)	2,2	2009
Density of nurses (per 1.000 population)	5,2	2009

Demographic information		
Population	38.441.588	2011
Population annual growth rate (%)	-0,1	2011
Life expectancy at birth	76	2011
Death rate (per 1.000 population)	10,1	2009
Live births (per 1.000 population)	11,0	2009

Economic information		
Gross domestic product (U.S dollar-billions)	531,76*	2011
Gross domestic product per capita (U.S dollar-units)	13.966,75*	2011
Total expenditure on health as % of GDP	7,1	2009
General government expenditure on health as % of total expenditure on health	67,4	2008
Private expenditure on health as % of total expenditure on health	26,0	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	46%*
2011	46%*
* 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
------------------------------	-----

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	98%*	99%*
Uninsured citizens	2%*	1%*

* Estimation

Distribution of insurance modality		
	2010	2011
Public insurance company	98%	65%
Private insurance company	1%	1%
Private co-payment	6%	34%

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

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

There is a possibility to perform procedures in private centres, but it is very uncommon. Private centres 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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☒	☐	☐	☒	☐	☐
ICD secondary prevention	☒	☐	☐	☒	☐	☐
CRT devices	☒	☐	☐	☒	☐	☐
Ablation	☒	☐	☐	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐
There are waiting lists for the procedures. Implantations of pacemakers, ICD-secondary prevention are performed almost without delay for other queuing lasts weeks to month.	

4. Education

National certification availability

Device therapy*	☒
Invasive electrophysiology*	☒
None	☐

* Polish Cardiac Society Accreditation for Centres; Applications are sent to WG on Heart Rhythm of the Polish Cardiac Society and are verified by the commission and confirmed by Board of the Polish cardiac Society.

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

Licence for physicians practice - imposed by the Polish Chamber of Physicians. Certification in Device

Implantation and EP is under evaluation (start 2nd half 2012).

National accreditation for centres	
Required for practice	☒
Not required for practice	☐
Accreditation not available	☐
Accreditation (three levels A, B and C) are imposed by the W/G on Heart Rhythm and should be accepted by the Board of Polish Cardiac Society.	

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☒
Society advises EHRA certification, but it's not homologated to national certification	☐
No	☐

We are planning to accept EHRA's accreditation as equivalent to the national (planned) accreditation. Our national certification will consist in an adaptation of the EHRA certification.

Specialty required for catheter ablation	No
--	----

Today there no specialty requirement but enough certified cardiologists must be employed by a center in which catheter ablation is performed, but in the future cardiology will be mandatory.

Specialty required for ICD or pacemaker implants	No
--	----

Today there no specialty requirement but enough certified cardiologists must be employed by a center in which devices are implanted, but in the future cardiology will be mandatory.

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

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

Training centres availability	
Pacemaker	65
ICD implantation	39
CRT implantation	11
Electrophysiological studies and catheter ablation	18
Atrial fibrillation ablation	6

Number of medical faculties	15
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Percentage of academic facilities among practicing EP and implant centres	17%
---	-----

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	116	not available
Total Pacemaker units implanted	27.513	27.294
Thereof, New implants	22.349	not available
Thereof, Replacements	5.164	not available

Specialty performing implants	
Cardiologists	99%
Surgeons	<1%
Other: Pediatrics	<1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	65	not available
Total CRT units implanted	2.344	2.539
Thereof, CRT pacemaker	431	387
Thereof, CRT ICD	1.913	2.152

Specialty performing implants	
Cardiologists	96%
Surgeons	<3%
Other	<1%

Surgeons: Only for LV epicardial lead implantation during CABG or if standard transvenous LV lead implantation failed.

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	92		not available
Total ICD units implanted	7.020		6.042
Thereof, Single chamber	not available		not available
Thereof, Dual chamber	not available		not available
First implants	6.450		not available
Replacements	570		not available

Specialty performing implants	
Cardiologists	99%
Surgeons	0%
Other: Pediatrics, pediatrics cardiac surgeons	<1%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	3		not available
Total loop recorders implanted	not available		not available

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	7

Specialty performing extractions	
Cardiologists	72%
Surgeons	14%
Mixed team	14%



10. Device specific

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

Remote monitoring is available but, electronic follow up is not reimbursed by the National Health Fund.

National registry for	
ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* Polish ICD Register (temporarily hold); ** Elektroterapia (temporarily hold); *** Polish Multi-center AF Ablation Register (temporarily hold)

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

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

Urząd Rejestracji Produktów Medycznych – Warsaw; National Consultant in Cardiology in Cooperation with WG on Heart Rhythm of Polish Cardiac Society

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	47	not available
Number of ablations performed	7.669	8.220
Mean number of ablations per centre	163	not available
Number of AF ablations	1.176	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

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

12. Guidelines

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

Necessity of guideline translation to national language	Yes
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Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	6
Lack of reimbursement, limited financial resources	☐	☐	☐	☒	☐	1
Lack of referral	☐	☐	☒	☐	☐	2
Lack of trained personnel	☐	☐	☒	☐	☐	3
Low awareness of guidelines	☐	☐	☒	☐	☐	5
Lack of operators	☐	☒	☐	☐	☐	4

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

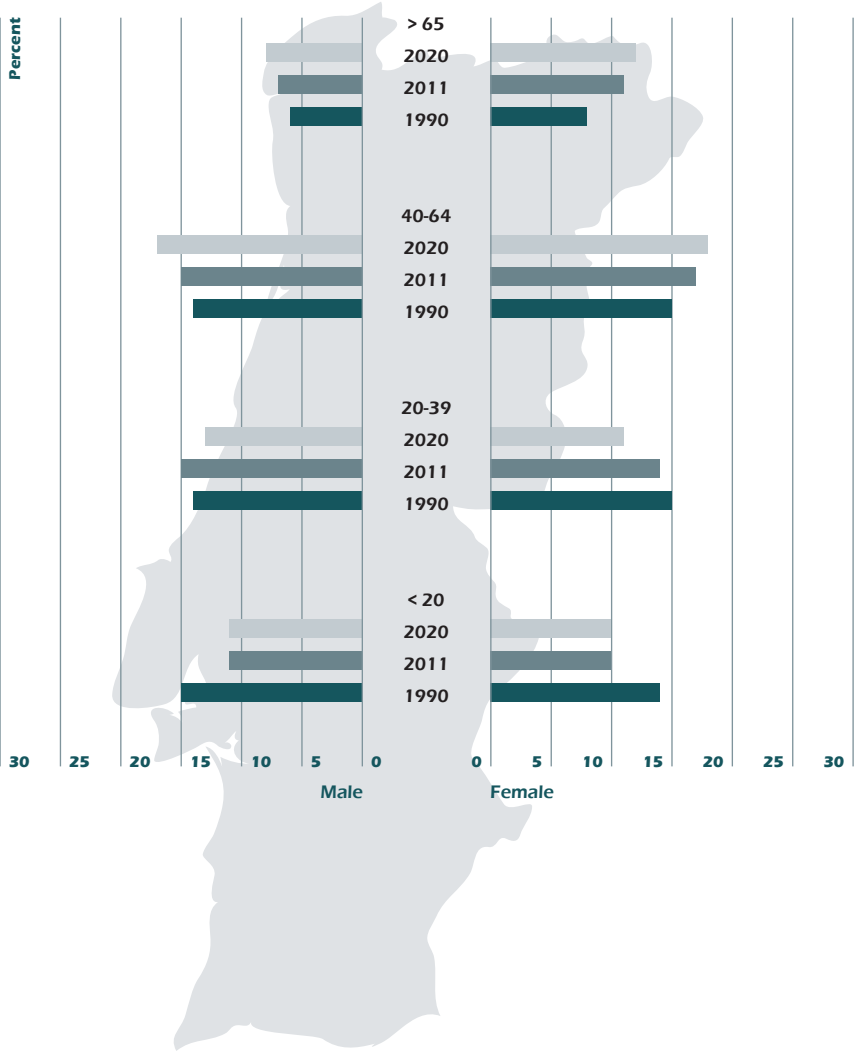
Please, find all sources at the end of the EHRA White Book 2012.

PORTUGAL



1. Statistics

Age pyramid for Portugal





Healthcare data		
Hospitals (per 100.000 population)	1,8	2009
Beds (per 100.000 population)	334,8	2009
Density of physicians (per 1.000 population)	3,9	2010
Density of nurses (per 1.000 population)	2,7	1989

Demographic information		
Population	10.760.305	2011
Population annual growth rate (%)	0,2	2011
Life expectancy at birth	79	2011
Death rate (per 1.000 population)	9,9	2009
Live births (per 1.000 population)	9,5	2010

Economic information		
Gross domestic product (U.S dollar-billions)	241,92*	2011
Gross domestic product per capita (U.S dollar-units)	22.698,82*	2011
Total expenditure on health as % of GDP	11,3	2009
General government expenditure on health as % of total expenditure on health	67,4	2008
Private expenditure on health as % of total expenditure on health	28,5	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	55%

3. Healthcare System

National health System (75% all individuals), Subsystems – insurances and all (25%).

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	15,2%	17%
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2010	2011
Public insurance company	85%	85%
Private insurance company	15%	0%
Private co-payment	30%	15%

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

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

In public no co-payement is needed. In private it depends of the insurance budget per year.



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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☐	☐	☒
CRT devices	☐	☐	☒	☐	☐	☒
Ablation	☐	☐	☒	☐	☐	☒

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology*	☒
None	☐

* College of cardiology, subspeciality in Cardiac Electrophysiology

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

☐
☐
☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiologist with the subspecialty in Cardiac Electrophysiology	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist with the subspecialty in Cardiac Electrophysiology	

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

Required period of training to perform implantations	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 medical faculties	9
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	33,3%
--	--------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	43	43
Total Pacemaker units implanted	8.153	6.400
Thereof, New implants	6.525	5.100
Thereof, Replacements	1.628	1.300

Specialty performing implants	
Cardiologists	97%
Surgeons	3%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	21	27
Total CRT units implanted	454	500
Thereof, CRT pacemaker	75	100
Thereof, CRT ICD	379	339

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	20		22
Total ICD units implanted	800		1.017
Thereof, Single chamber	not available		not available
Thereof, Dual chamber	not available		not available
First implants	635		815
Replacements	165		202

Specialty performing implants	
Cardiologists	98%
Surgeons	2%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		12
Total loop recorders implanted	not available		60

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	6

Specialty performing extractions	
Cardiologists	40%
Surgeons	0%
Mixed team of cardiologists and surgeons	60%



10. Device specific

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

National registry for	
ICD	☒
Pacing	☒
Electrophysiology	☒
None	☐
APAPE National Registry	

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

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

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	16	18
Number of ablations performed	1.628	2.013
Mean number of ablations per centre	102	not available
Number of AF ablations	350	467
Number of ablation centres (> 50 AF ablations)	not available	6
Number of ablation centres (> 10 VT ablations on structural heart diseases)	not available	6

Availability of a national registry for interventional electrophysiology	Yes
APAPE Registry	

12. Guidelines

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

Necessity of guideline translation to national language	Yes
---	-----

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	7
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒	1
Lack of referral	☐	☐	☐	☐	☒	1
Lack of trained personnel	☐	☐	☒	☐	☐	4
Low awareness of guidelines	☐	☐	☐	☒	☐	2
Lack of operators	☐	☒	☐	☐	☐	4

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

Please, find all sources at the end of the EHRA White Book 2012.



REPUBLIC OF MOLDOVA

Pending data submission.

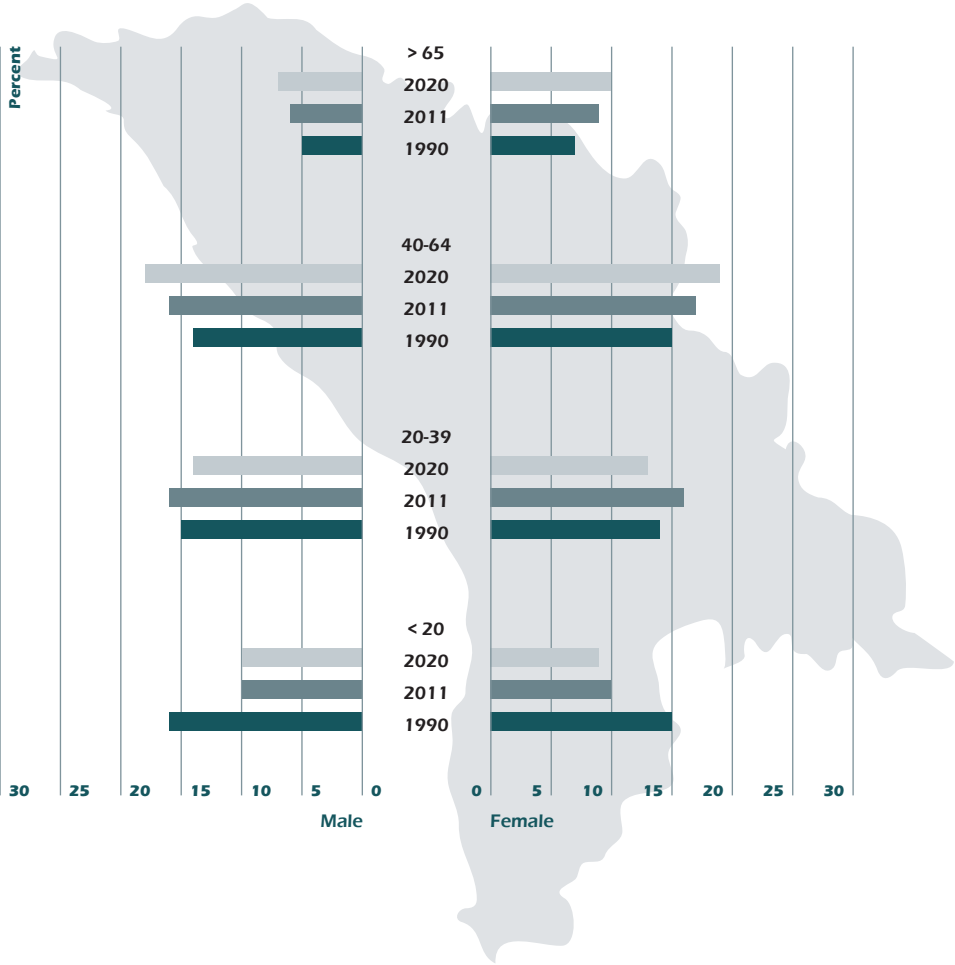


ROMANIA



1. Statistics

Age pyramid for Romania





Healthcare data		
Hospitals (per 100.000 population)	2,5	2009
Beds (per 100.000 population)	662,3	2009
Density of physicians (per 1.000 population)	2,3	2009
Density of nurses (per 1.000 population)	5,7	2009

Demographic information		
Population	21.904.551	2011
Population annual growth rate (%)	-0,3	2011
Life expectancy at birth	74	2011
Death rate (per 1.000 population)	12,1	2010
Live births (per 1.000 population)	9,1	2010

Economic information		
Gross domestic product (U.S dollar-billions)	185,32*	2011
Gross domestic product per capita (U.S dollar-units)	8.665,80*	2011
Total expenditure on health as % of GDP	5,4	2009
General government expenditure on health as % of total expenditure on health	78,9	2008
Private expenditure on health as % of total expenditure on health	18,0	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	43%

3. Healthcare System

The adoption of the Law on Social Health Insurance in 1997 initiated the transformation of the Romanian health-care system from a Semashko state-financed model to an insurance-based system. Since the law came into force in 1998, earmarked payroll contributions have become the main source of health sector revenue. The National Health system has been funded by the National Health Care Insurance Fund, to which employers and employees make mandatory contributions. Health insurance covers ambulatory, inpatient, and dental care, including clinical preventive services and drugs. A framework contract, agreed upon annually by the National Health Insurance Fund (NHIF) and the College of Physicians and approved by the Cabinet, defines the benefits package, conditions for service delivery, and payment mechanisms.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	98%	not available
Uninsured citizens	2%	not available

Distribution of insurance modality		
	2010	2011
Public insurance company	57%	57%
Private insurance company	14%	14%
Private co-payment	24%	24%

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



Co-payment necessary for the following therapy

ICD devices	☒
Pacemakers	☒
Ablation	☒

Aprox. 50% of PM, 70% of ICDs and 70% of ablations from private funding.

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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

The budget for devices and ablations is at best at 10-15% of the one needed.

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

In the beginning of 2012 national training and accreditation in devices and ablations were proposed to Health Ministry (not yet completely finalised).

National certification for physicians

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National accreditation for centres	
Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for 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
--	----

Training centres availability	
Pacemaker	12
ICD implantation	7
CRT implantation	7
Electrophysiological studies and catheter ablation	5
Atrial fibrillation ablation	2
Personal estimation based on the self-reported number and complexity of procedures.	

Number of medical faculties	11
-----------------------------	----

Percentage of academic facilities among practicing EP and implant centres	92%
---	-----



5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	20		21
Total Pacemaker units implanted	2.506		3.051
Thereof, New implants	not available		not available
Thereof, Replacements	not available		not available

Specialty performing implants	
Cardiologists	99%
Surgeons	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	12		14
Total CRT units implanted	213		220
Thereof, CRT pacemaker	171		159
Thereof, CRT ICD	42		61

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	14		19
Total ICD units implanted	176		167
Thereof, Single chamber	129		133
Thereof, Dual chamber	47		34
First implants	not available		not available
Replacements	not available		not available

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		2
Total loop recorders implanted	not available		5
Private (patients)			

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	2	2011	2

Specialty performing extractions	
Cardiologists	90%
Mixed team of cardiologists and surgeons	10%



10. Device specific

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

National registry for	
ICD	☒
Pacing	☒
Electrophysiology	☒
None	☐
National Registry on Cardiac Electrophysiology	

Availability of a national quality insurance system or complication registry	No
Proposed to National Health Insurance Company and to Health Ministry new registries (including complications) to become mandatory.	

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

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	12	14
Number of ablations performed	1.000	1.104
Mean number of ablations per centre	83	79
Number of AF ablations	15	67
Number of ablation centres (> 50 AF ablations)	0	1
Number of ablation centres (> 10 VT ablations on structural heart diseases)	0	1

Availability of a national registry for interventional electrophysiology	Yes
National Registry on Cardiac Electrophysiology	

12. Guidelines

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

Necessity of guideline translation to national language	Yes
---	-----

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☐	☐	☒	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☐	☐	☒	☐
Lack of operators	☐	☐	☒	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

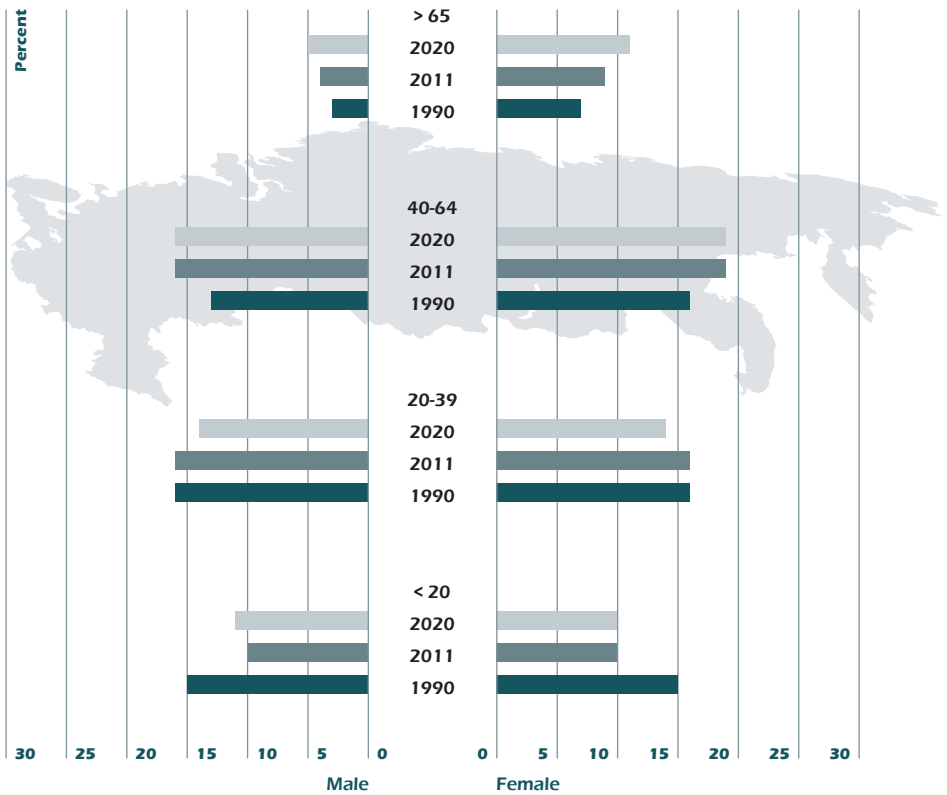
Please, find all sources at the end of the EHRA White Book 2012.

RUSSIAN FEDERATION



1. Statistics

Age pyramid for Russian Federation





Healthcare data		
Hospitals (per 100.000 population)	4,5	2006
Beds (per 100.000 population)	965,9	2006
Density of physicians (per 1.000 population)	4,3	2006
Density of nurses (per 1.000 population)	8,1	2006

Demographic information		
Population	138.739.892	2011
Population annual growth rate (%)	-0,5	2011
Life expectancy at birth	66	2011
Death rate (per 1.000 population)	14,2	2009
Live births (per 1.000 population)	12,4	2009

Economic information		
Gross domestic product (U.S dollar-billions)	1.884,90*	2011
Gross domestic product per capita (U.S dollar-units)	13.235,63*	2011
Total expenditure on health as % of GDP	5,4	2009
General government expenditure on health as % of total expenditure on health	64,3	2008
Private expenditure on health as % of total expenditure on health	35,7	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	56%
2011	not available

3. Healthcare System

National and Private healthcare systems.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2010	2011
Public insurance company	94%	90%
Private insurance company	5%	7%
Private co-payment	1%	3%

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

Co-payment necessary for the following therapy	
ICD devices	☐
Pacemakers	☒
Ablation	☐
Public sector only	

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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☒
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☒
Invasive electrophysiology	☒
None	☐
Bacoulev Center, Moscow	

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiologist, surgeon	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist, surgeon	

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
Russian Society of Arrhythmology (RSSA)	

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

Training centres availability	
Pacemaker	7
ICD implantation	7
CRT implantation	7
Electrophysiological studies and catheter ablation	5
Atrial fibrillation ablation	5

Number of medical faculties	not available
-----------------------------	---------------

Percentage of academic facilities among practicing EP and implant centres	not available
---	---------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	101	108
Total Pacemaker units implanted	26.874	30.006
Thereof, New implants	22.382	24.510
Thereof, Replacements	4.492	5.496

Specialty performing implants	
Cardiologists	70%
Surgeons	30%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	32	41
Total CRT units implanted	466	793
Thereof, CRT pacemaker	317	365
Thereof, CRT ICD	149	428

Specialty performing implants	
Cardiologists	50%
Surgeons	50%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2010	2011
Implanting centres	49	57
Total ICD units implanted	555	1.355
Thereof, Single chamber	119	428
Thereof, Dual chamber	436	380
First implants	476	480
Replacements	79	201

Specialty performing implants	
Cardiologists	70%
Surgeons	30%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2010	2011
Implanting centres	not available	not available
Total loop recorders implanted	not available	not available

Specialty performing implants	
Cardiologists	not available
Surgeons	not available

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	not available

Specialty performing extractions	
Cardiologists	30%
Surgeons	70%



10. Device specific

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

National registry for	
ICD	☒
Pacing	☒
Electrophysiology	☒
None	☐
Russian Centre of Arrhythmology	

Availability of a national quality insurance system or complication registry	Yes
Russian Customer Control	

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
Bakoulev Scientific Centre for Cardio-Vascular Surgery	

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	70	71
Number of ablations performed	14.048	16.380
Mean number of ablations per centre	200	230
Number of AF ablations	3.002	3.727
Number of ablation centres (> 50 AF ablations)	45	50
Number of ablation centres (> 10 VT ablations on structural heart diseases)	46	52

Availability of a national registry for interventional electrophysiology	Yes
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12. Guidelines

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

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	4
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐	1
Lack of referral	☐	☒	☐	☐	☐	5
Lack of trained personnel	☐	☐	☒	☐	☐	6
Low awareness of guidelines	☐	☒	☐	☐	☐	7
Lack of operators	☐	☐	☒	☐	☐	6

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

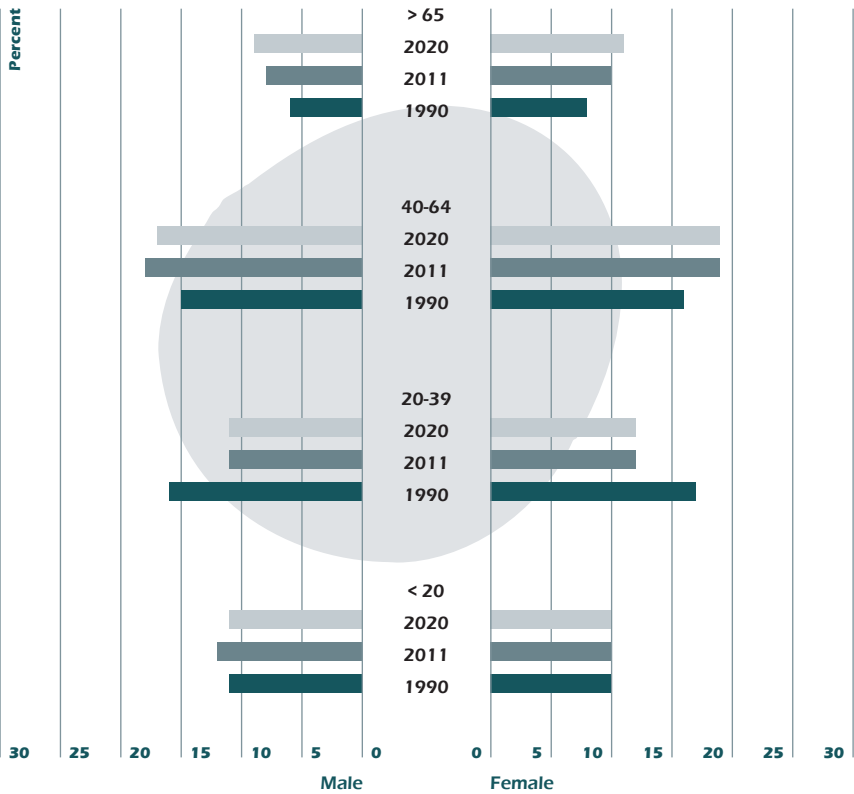
Please, find all sources at the end of the EHRA White Book 2012.

SAN MARINO



1. Statistics

Age pyramid for San Marino





Healthcare data		
Hospitals (per 100.000 population)	1	2011*
Beds (per 100.000 population)	716,0	1990
Density of physicians (per 1.000 population)	2,5	1990
Density of nurses (per 1.000 population)	5,1	1990

* Info by local Working Group

Demographic information		
Population	31.817	2011
Population annual growth rate (%)	1,0	2011
Life expectancy at birth	83	2011
Death rate (per 1.000 population)	7,3	2005
Live births (per 1.000 population)	9,1	2007

Economic information		
Gross domestic product (U.S dollar-billions)	not available	not available
Gross domestic product per capita (U.S dollar-units)	not available	not available
Total expenditure on health as % of GDP	7,1	2009
General government expenditure on health as % of total expenditure on health	85,5	2008
Private expenditure on health as % of total expenditure on health	14,5	2008

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	not available

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		
	2010	2011
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2010	2011
Public insurance company	100%	100%
Private insurance company	not available	not available
Private co-payment	not available	not available

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

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

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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☐	☐	☒
CRT devices	☐	☐	☒	☐	☐	☒
Ablation	☐	☐	☒	☐	☐	☒

Treatment availability

No restrictions	☒
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist	

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	5 years
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Training centres availability*	
Pacemaker	0
ICD implantation	0
CRT implantation	0
Electrophysiological studies and catheter ablation	0
Atrial fibrillation ablation	0

* There are not Universities centres neither training centres in San Marino.

Number of medical faculties	0
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Percentage of academic facilities among practicing EP and implant centres	0%
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5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	1		1
Total Pacemaker units implanted	22		16
Thereof, New implants	not available		12
Thereof, Replacements	not available		4

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	1		1
Total CRT units implanted	4		3
Thereof, CRT pacemaker	0		0
Thereof, CRT ICD	4		3

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	1		1
Total ICD units implanted	20		19
Thereof, Single chamber	1		3
Thereof, Dual chamber	2		3
First implants	3		9
Replacements	14		10

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	0		1
Total loop recorders implanted	0		1

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	0	2011	0

Specialty performing extractions	
Cardiologists	0%
Surgeons	0%

10. Device specific

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

National registry for	
ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* ICD Data Base; ** PM Data Base; *** SEF Data Base

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

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

State Hospital UOC Cardiology

11. Interventional electrophysiology

	2010	2011
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

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

12. Guidelines

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

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

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐
Lack of referral	☒	☐	☐	☐	☐
Lack of trained personnel	☒	☐	☐	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☒	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

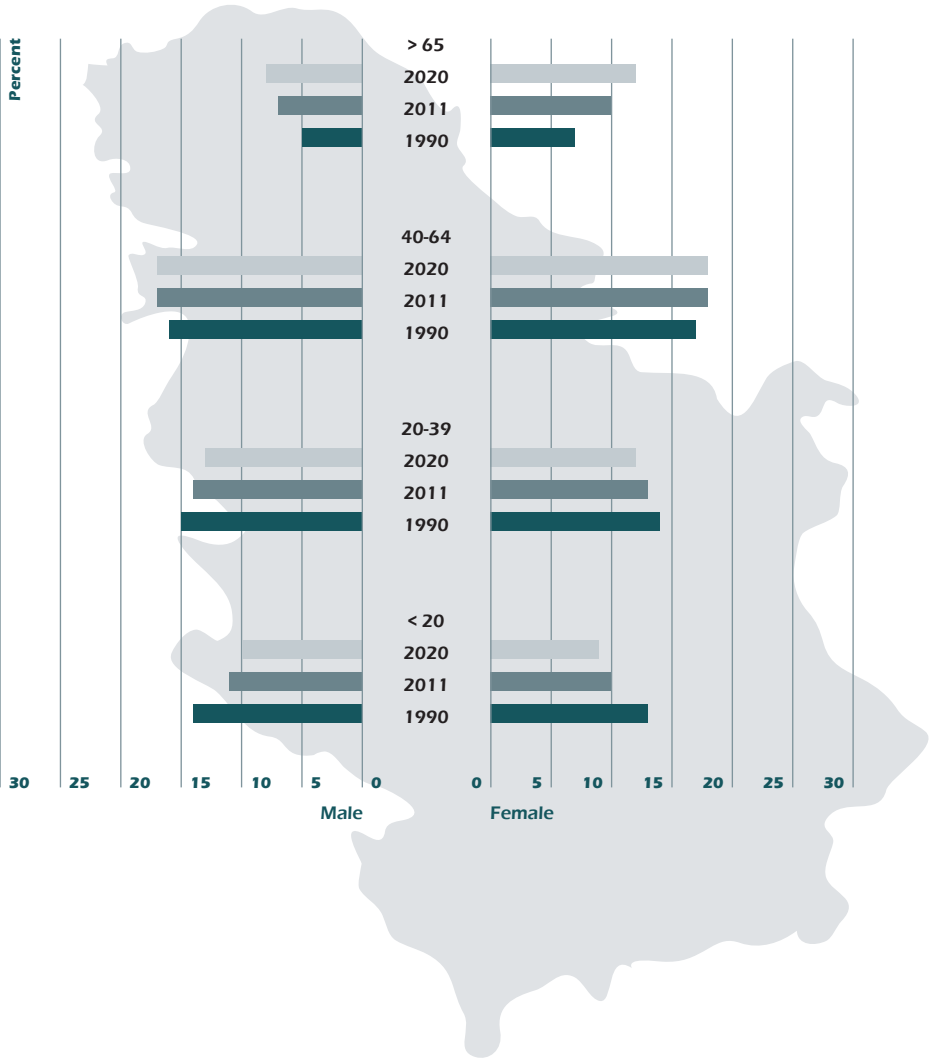
Please, find all sources at the end of the EHRA White Book 2012.

SERBIA



1. Statistics

Age pyramid for Serbia



Healthcare data		
Hospitals (per 100.000 population)	1,4	2009
Beds (per 100.000 population)	540,5	2009
Density of physicians (per 1.000 population)	2,8	2009
Density of nurses (per 1.000 population)	5,8	2009

Demographic information		
Population	7.310.555	2011
Population annual growth rate (%)	-0,5	2011
Life expectancy at birth	74	2011
Death rate (per 1.000 population)	14,2	2009
Live births (per 1.000 population)	9,1	2009

Economic information		
Gross domestic product (U.S dollar-billions)	46,44*	2011
Gross domestic product per capita (U.S dollar-units)	6.266,79*	2011
Total expenditure on health as % of GDP	9,9	2009
General government expenditure on health as % of total expenditure on health	62,5	2008
Private expenditure on health as % of total expenditure on health	37,5	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	56%
2011	56%

3. Healthcare System

The National healthcare system in Serbia is provided through an established network of health centres and health stations (primary care). As a secondary and tertiary care, general hospitals, university clinical centres and specialised institutions are providing services. The private healthcare is not incorporated to the national healthcare system.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	100%	100%
Private insurance company	2%	5%
Private co-payment	2%	5%

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

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

It is mandatory the payment of 5% of the implant cost however, to a maximum amount of 200 Euros.

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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

There are National Guidelines (like NICE) for the most frequent diseases, but not obligatory neither for the physicians or for the medical service administration.

4. Education

National certification availability

Device therapy*	☒
Invasive electrophysiology	☐
None	☐

* Certification for Device therapy; The Certification for Device therapy is given by Working Group on cardiac pacing, Serbia Cardiology Society, after 6 months training in the National referral center in Clinical center of Serbia.

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐
National accreditation for cardiology	

National accreditation for centres	
Required for practice	☐
Not required for practice	☒
Accreditation not available	☐

For Device therapy, there is the National accreditation of referral pacemaker center in the Clinical center of Serbia.

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist; Surgeon required only for Paediatric pacemaker implants, but Cardiologist specialty required for Paediatric ICD and CRT implants.	

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

Required period of training to perform implantations	0,5 year
--	----------

Training centres availability	
Pacemaker	5
ICD implantation	4
CRT implantation	3
Electrophysiological studies and catheter ablation	2
Atrial fibrillation ablation	2

Number of medical faculties	4
-----------------------------	---

Percentage of academic facilities among practicing EP and implant centres	35%
---	-----



5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	18		18
Total Pacemaker units implanted	3.186		3.277
Thereof, New implants	not available		2.766
Thereof, Replacements	not available		491

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	6		6
Total CRT units implanted	137		293
Thereof, CRT pacemaker	73		226
Thereof, CRT ICD	64		67

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	8		8
Total ICD units implanted	282		322
Thereof, Single chamber	167		64
Thereof, Dual chamber	115		258
First implants	not available		not available
Replacements	not available		not available

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	11		11
Total loop recorders implanted	46		24

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	5	2011	5

Specialty performing extractions	
Cardiologists	80%
Surgeons	20%



10. Device specific

Availability of remote monitoring of devices	Yes
50 devices for National pilot project.	

National registry for	
ICD	☒
Pacing	☒
Electrophysiology	☒
None	☐
Referral Pacemaker center, Clinical center of Serbia	

Availability of a national quality insurance system or complication registry	Yes
Ministry of Health of Serbia	

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

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	3	3
Number of ablations performed	820	911
Mean number of ablations per centre	270	300
Number of AF ablations	52	55
Number of ablation centres (> 50 AF ablations)	1	1
Number of ablation centres (> 10 VT ablations on structural heart diseases)	2	2

Availability of a national registry for interventional electrophysiology	Yes
WG on Cardiac Pacing and Arrhythmias – Data base	

12. Guidelines

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

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

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒
Lack of referral	☐	☐	☐	☒	☐
Lack of trained personnel	☐	☒	☐	☐	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☒	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

Please, find all sources at the end of the EHRA White Book 2012.

SLOVAKIA



1. Statistics

Age pyramid for Slovakia



Healthcare data		
Hospitals (per 100.000 population)	2,5	2009
Beds (per 100.000 population)	650,5	2009
Density of physicians (per 1.000 population)	3,0	2007
Density of nurses (per 1.000 population)	not available	not available

Demographic information		
Population	5.477.038	2011
Population annual growth rate (%)	0,1	2011
Life expectancy at birth	76	2011
Death rate (per 1.000 population)	9,8	2009
Live births (per 1.000 population)	11,1	2010

Economic information		
Gross domestic product (U.S dollar-billions)	not available	2011
Gross domestic product per capita (U.S dollar-units)	17.888,68*	2011
Total expenditure on health as % of GDP	8,5	2009
General government expenditure on health as % of total expenditure on health	67,1	2008
Private expenditure on health as % of total expenditure on health	28,1	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	53%
2011	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
------------------------------	-----

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	67%	72%
Private insurance company	33%	28%
Private co-payment	0%	0%

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

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



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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☒
Restricted to certain number of treatments/budget	☒
Not funded	☐

Restricted budget plus strict adherence to guidelines of the Slovak Heart Rhythm Association / Slovak Society of Cardiology from 2007.

4. Education

National certification availability

Device therapy*	☒
Invasive electrophysiology**	☒
None	☐

* Certified medical activity: Implantation of impulse generators; ** Certified medical activity: catheter diagnostics and therapy of cardiac arrhythmias; Corresponding to legislative norm published by the Ministry of Health of the Slovak Republic in 2010, applicable starting September 2011.

National certification for physicians

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National accreditation for centres

Required for practice	☐
Not required for practice	☒
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☒
Society advises EHRA certification, but it's not homologated to national certification	☐
No	☐

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist, surgeon	

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
Ministry of Health of the Slovak Republic	

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

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

Number of medical faculties	4
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	85%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	13	13
Total Pacemaker units implanted	2.994	3.382
Thereof, New implants	2.561	2.905
Thereof, Replacements	433	477

Specialty performing implants	
Cardiologists	80%
Surgeons	20%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	5	4
Total CRT units implanted	406	329
Thereof, CRT pacemaker	89	78
Thereof, CRT ICD	317	251

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	4		4
Total ICD units implanted	495		545
Thereof, Single chamber	360		438
Thereof, Dual chamber	76		107
First implants	436		502
Replacements	59		43

Specialty performing implants	
Cardiologists	86%
Surgeons	14%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	3		4
Total loop recorders implanted	not available		not available

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	3	2011	3

Specialty performing extractions	
Cardiologists	90%
Surgeons	5%
Mixed team of cardiologists and surgeons	5%



10. Device specific

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

National registry for	
ICD*	☒
Pacing*	☒
Electrophysiology	☐
None	☐
* Slovimpulz	

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

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

State Institute for Drug Control

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	4	4
Number of ablations performed	959	972
Mean number of ablations per centre	240	243
Number of AF ablations	130	94
Number of ablation centres (> 50 AF ablations)	1	1
Number of ablation centres (> 10 VT ablations on structural heart diseases)	2	3

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

12. Guidelines

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

Necessity of guideline translation to national language	Yes
---	-----

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☐	☒	☐	☐	☐	6
Lack of reimbursement, limited financial resources	☐	☐	☐	☒	☐	1
Lack of referral	☐	☐	☒	☐	☐	4
Lack of trained personnel	☐	☐	☒	☐	☐	5
Low awareness of guidelines	☐	☐	☒	☐	☐	3
Lack of operators	☐	☐	☐	☒	☐	2

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

Please, find all sources at the end of the EHRA White Book 2012.

SLOVENIA



1. Statistics

Age pyramid for Slovenia





Healthcare data		
Hospitals (per 100.000 population)	1,4	2010
Beds (per 100.000 population)	459,7	2009
Density of physicians (per 1.000 population)	2,4	2009
Density of nurses (per 1.000 population)	8,0	2009

Demographic information		
Population	2.000.092	2011
Population annual growth rate (%)	-0,2	2011
Life expectancy at birth	77	2011
Death rate (per 1.000 population)	9,2	2009
Live births (per 1.000 population)	10,1	2009

Economic information		
Gross domestic product (U.S dollar-billions)	52,43*	2011
Gross domestic product per capita (U.S dollar-units)	25.939,29*	2011
Total expenditure on health as % of GDP	9,1	2009
General government expenditure on health as % of total expenditure on health	68,6	2008
Private expenditure on health as % of total expenditure on health	26,2	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	not available

3. Healthcare System

The healthcare system in Slovenia is based on the public system. The National health insurance institute is an autonomous fund.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality		
	2010	2011
Public insurance company	85%	not available
Private insurance company	13%	not available
Private co-payment	2%	not available

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

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



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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Internist or cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Surgeon or internist or cardiologist	

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

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

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

Number of medical faculties	2
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	40%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	5	5
Total Pacemaker units implanted	1.153	1.295
Thereof, New implants	937	1.023
Thereof, Replacements	216	272

Specialty performing implants	
Cardiologists	10%
Surgeons	89%
Internists in the intensive care unit	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	2	2
Total CRT units implanted	93	90
Thereof, CRT pacemaker	36	35
Thereof, CRT ICD	57	55

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	2		2
Total ICD units implanted	101		144
Thereof, Single chamber	73		105
Thereof, Dual chamber	28		39
First implants	not available		not available
Replacements	not available		not available

Specialty performing implants	
Cardiologists	14%
Surgeons	86%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	2		2
Total loop recorders implanted	44		22

Specialty performing implants	
Cardiologists	27%
Surgeons	68%
Intensivist	5%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	not available

Specialty performing extractions	
Cardiologists	0%
Surgeons	0%



10. Device specific

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

National registry for	
ICD	☒
Pacing	☒
Electrophysiology	☒
None	☐
Working Group on EP and Electrostimulation	

Availability of a national quality insurance system or complication registry	Yes
Agency for Medical Products and Medical Devices of the Republic of Slovenia	

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
Public Agency for Medicinal Products and Medical Devices of the Republic of Slovenia	

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	2	2
Number of ablations performed	262	324
Mean number of ablations per centre	131	162
Number of AF ablations	90	118
Number of ablation centres (> 50 AF ablations)	1	1
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	1

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

12. Guidelines

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

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☒	☐	☐	☐	☐	6
Lack of reimbursement, limited financial resources	☐	☐	☐	☒	☐	1
Lack of referral	☐	☐	☒	☐	☐	3
Lack of trained personnel	☐	☒	☐	☐	☐	5
Low awareness of guidelines	☐	☐	☐	☐	☒	2
Lack of operators	☐	☐	☐	☒	☐	4

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

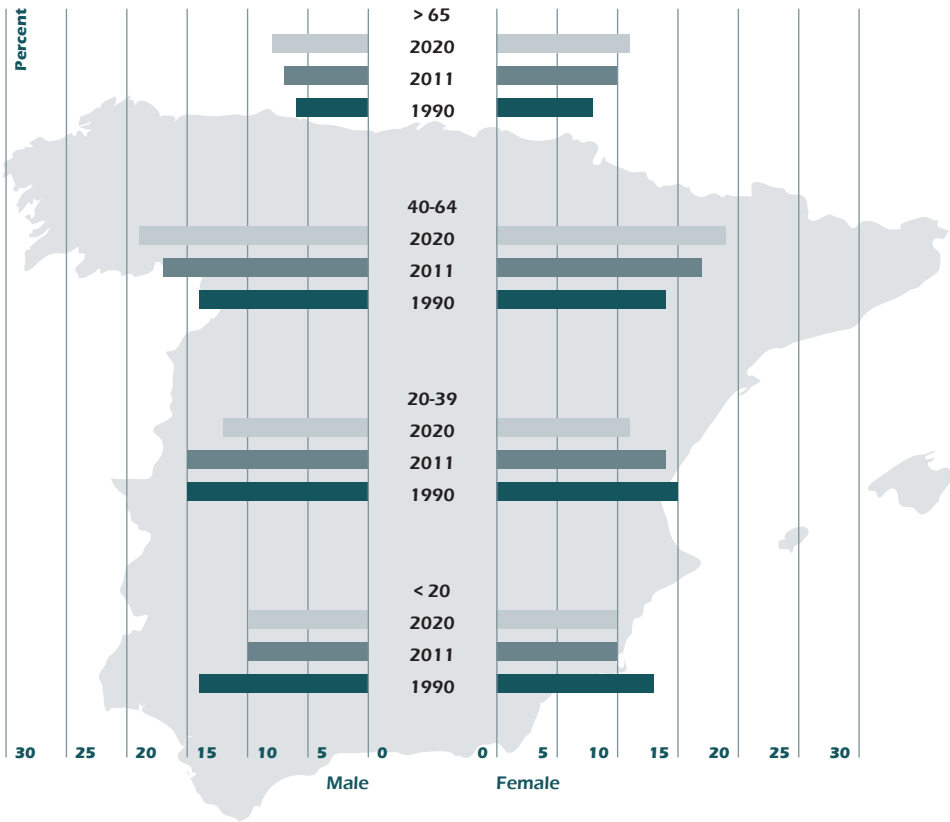
Please, find all sources at the end of the EHRA White Book 2012.

SPAIN



1. Statistics

Age pyramid for Spain



Healthcare data		
Hospitals (per 100.000 population)	1,7	2009
Beds (per 100.000 population)	318,6	2009
Density of physicians (per 1.000 population)	3,8	2010
Density of nurses (per 1.000 population)	4,9	2010

Demographic information		
Population	46.754.784	2011
Population annual growth rate (%)	0,6	2011
Life expectancy at birth	81	2011
Death rate (per 1.000 population)	8,4	2009
Live births (per 1.000 population)	10,8	2009

Economic information		
Gross domestic product (U.S dollar-billions)	1.536,48*	2011
Gross domestic product per capita (U.S dollar-units)	33.297,54*	2011
Total expenditure on health as % of GDP	9,7	2009
General government expenditure on health as % of total expenditure on health	69,7	2008
Private expenditure on health as % of total expenditure on health	26,9	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	31,7%
2011	31,5%

3. Healthcare System

Spain's healthcare system is based on a national health system with autonomous community management of health related resources. Private insurance companies offer complementary healthcare coverage. The autonomous community decide how to organise and deliver health services and implement the national legislation. (Highlights on health. WHO 2004)

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	100%	95%
Private insurance company	20%	15%
Private co-payment	0%	15%

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

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



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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☐	☐	☒
CRT devices	☐	☐	☒	☐	☐	☒
Ablation	☐	☐	☒	☐	☐	☒

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

4. Education

National certification availability

Device therapy*	☒
Invasive electrophysiology**	☒
None	☐

* Cardiac Stimulation Accreditation (Acreditación en estimulación cardiaca); ** Acreditación de formación específica y excelencia para la práctica de Electrofisiología Cardíaca Intervencionista

National certification for physicians

Required for practice	☐
Not required for practice	☒
Accreditation not available	☐

National accreditation for centres

Required for practice	☐
Not required for practice	☒
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist, cardiac surgeon, intensive care physician	

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

Required period of training to perform implantations	No
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Training centres availability	
Pacemaker	43
ICD implantation	36
CRT implantation	37
Electrophysiological studies and catheter ablation	31
Atrial fibrillation ablation	14

Number of medical faculties	26
------------------------------------	-----------

Percentage of academic facilities among practicing EP and implant centres	40%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	123		180
Total Pacemaker units implanted	35.130		34.299
Thereof, New implants	not available		not available
Thereof, Replacements	not available		not available

Specialty performing implants	
Cardiologists	60%
Surgeons	30%
Other	10%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	63		100
Total CRT units implanted	1.905		2.606
Thereof, CRT pacemaker	574		726
Thereof, CRT ICD	1.330		1.880

Specialty performing implants	
Cardiologists	82,4%
Surgeons	11,6%
Other	1,72%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres		
	2010	2011
Implanting centres	145	167
Total ICD units implanted	3.266	3.481
Thereof, Single chamber	2.327	2.499
Thereof, Dual chamber	939	982
First implants	2.293	2.443
Replacements	973	1.038

Specialty performing implants	
Cardiologists	78,4%
Surgeons	15,42%
Other	2,67%

8. Loop recorders

Loop recorders implanted and number of implanting centres		
	2010	2011
Implanting centres	134	146
Total loop recorders implanted	1.821	1.756

Specialty performing implants	
Cardiologists	95%
Surgeons	2%
Other	3%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	16

Specialty performing extractions	
Cardiologists	10%
Surgeons	90%
Mixed team of cardiologists/surgeons	70%



10. Device specific

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

National registry for	
ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* Spanish ICD Registry (Registro Español de Desfibrilador Automático implantable); ** Spanish Pacemaker Registry (Registro Español de marcapasos); *** Spanish Catheter Ablation Registry (Registro Español de ablación con catéter)

Availability of a national quality insurance system or complication registry	Yes
Spanish Catheter Ablation Registry (Registro Español de ablación con catéter)	

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
Section of Electrophysiology and Arrhythmias (Sección de Electrofisiología y Arritmias - SEA); Management of recommendations documents.	

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	57	60
Number of ablations performed	8.762	8.812
Mean number of ablations per centre	154	161
Number of AF ablations	1.309	1.445
Number of ablation centres (> 50 AF ablations)	5	5
Number of ablation centres (> 10 VT ablations on structural heart diseases)	12	12

Availability of a national registry for interventional electrophysiology	Yes
Spanish Catheter Ablation Registry (Registro Español de ablación con catéter)	

12. Guidelines

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

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☐	☒	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☒	☐	☐	☐
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☒	☐	☐	☐
Lack of operators	☐	☒	☐	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

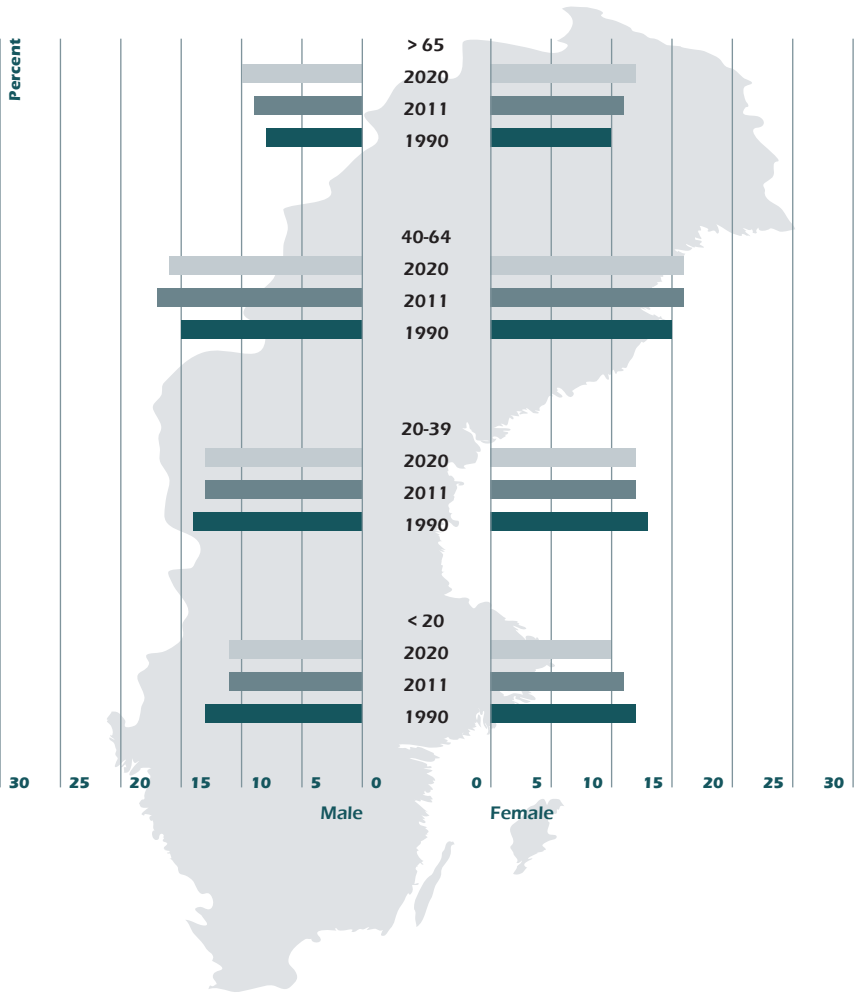
Please, find all sources at the end of the EHRA White Book 2012.

SWEDEN



1. Statistics

Age pyramid for Sweden



Healthcare data		
Hospitals (per 100.000 population)	0,9	2003
Beds (per 100.000 population)	275,9	2009
Density of physicians (per 1.000 population)	3,7	2008
Density of nurses (per 1.000 population)	11,0	2008

Demographic information		
Population	9.088.728	2011
Population annual growth rate (%)	0,2	2011
Life expectancy at birth	81	2011
Death rate (per 1.000 population)	9,7	2010
Live births (per 1.000 population)	12,3	2010

Economic information		
Gross domestic product (U.S dollar-billions)	57,16*	2011
Gross domestic product per capita (U.S dollar-units)	61.098,29*	2011
Total expenditure on health as % of GDP	9,9	2009
General government expenditure on health as % of total expenditure on health	78,1	2008
Private expenditure on health as % of total expenditure on health	16,8	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	40%
2011	not available

3. Healthcare System

National Health System, almost exclusively government funded and financed by taxes, operated by 21 county councils.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	100%	100%
Private insurance company	4,5%	5%
Private co-payment	4,5%	5%

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

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



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	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
Internal loop recorders	☐	☐	☒	☐	☒	☐
ICD primary prevention	☐	☐	☒	☐	☒	☐
ICD secondary prevention	☐	☐	☒	☐	☒	☐
CRT devices	☐	☐	☒	☐	☒	☐
Ablation	☐	☐	☒	☐	☒	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☒
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☒
No	☐

Specialty required for catheter ablation	No
Not formally, but all catheter ablation operators are cardiologists.	

Specialty required for ICD or pacemaker implants	No
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Official national competency guidelines for electrophysiological studies or catheter ablation	No
--	-----------

Required period of training to perform implantations	No
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Training centres availability	
Pacemaker	10
ICD implantation	10
CRT implantation	7
Electrophysiological studies and catheter ablation	9
Atrial fibrillation ablation	7

Number of medical faculties	7
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	78%/16%
78% for EP and 16% for implants	

5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	43	43
Total Pacemaker units implanted	9.123	not available
Thereof, New implants	6.493	not available
Thereof, Replacements	2.630	not available

Specialty performing implants	
Cardiologists	95%
Surgeons	4%
Other: Anaesthesiologists	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	22	not available
Total CRT units implanted	757	not available
Thereof, CRT pacemaker	369	not available
Thereof, CRT ICD	390	not available

Specialty performing implants	
Cardiologists	90%
Surgeons	10%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	30		not available
Total ICD units implanted	1.070		not available
Thereof, Single chamber	208*		not available
Thereof, Dual chamber	525*		not available
First implants	733		not available
Replacements	337		not available
* of first implants			

Specialty performing implants	
Cardiologists	80%
Surgeons	20%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		not available
Total loop recorders implanted	488		not available

Specialty performing implants	
Cardiologists	90%
Surgeons	10%

9. Lead extractions

Centres perform lead extractions			
2010	2	2011	2

Specialty performing extractions	
Cardiologists	50%
Surgeons	50%



10. Device specific

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

National registry for	
ICD*	☒
Pacing*	☒
Electrophysiology**	☒
None	☐

* Swedish ICD and Pacemaker register; ** Swedish Catheter Ablation Registry (Svenska Kateterablationsregistret)

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

The registries mentioned above track complication rates.

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

Läkemedelsverket (Equivalent to the FDA)

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	10	10
Number of ablations performed	3.541	4.089
Mean number of ablations per centre	354	409
Number of AF ablations	1.142	1.428
Number of ablation centres (> 50 AF ablations)	8 not available	
Number of ablation centres (> 10 VT ablations on structural heart diseases)	4 not available	

Availability of a national registry for interventional electrophysiology	Yes
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Swedish Catheter Ablation Registry (Svenska Kateterablationsregistret)

12. Guidelines

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

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☒	☐	☐	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☒	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

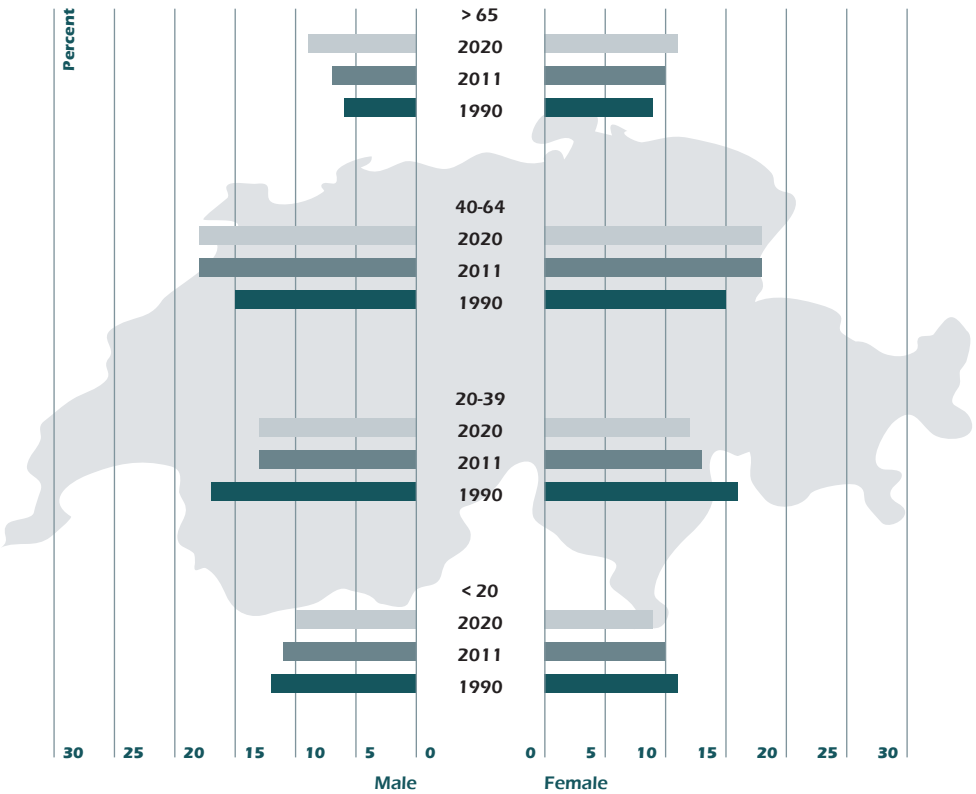
Please, find all sources at the end of the EHRA White Book 2012.

SWITZERLAND



1. Statistics

Age pyramid for Switzerland



Healthcare data		
Hospitals (per 100.000 population)	4,1	2009
Beds (per 100.000 population)	522,3	2009
Density of physicians (per 1.000 population)	3,9	2009
Density of nurses (per 1.000 population)	15,6	2009

Demographic information		
Population	7.639.961	2011
Population annual growth rate (%)	0,2	2011
Life expectancy at birth	81	2011
Death rate (per 1.000 population)	8,1	2007
Live births (per 1.000 population)	10,2	2008

Economic information		
Gross domestic product (U.S dollar-billions)	665,90*	2011
Gross domestic product per capita (U.S dollar-units)	84.983,33*	2011
Total expenditure on health as % of GDP	11,3	2009
General government expenditure on health as % of total expenditure on health	59,1	2008
Private expenditure on health as % of total expenditure on health	40,9	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	35,5%
2011	35,5%

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.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality		
	2010	2011
Public insurance company	not available	72%
Private insurance company	not available	0%
Private co-payment	not available	28%

All citizens have a compulsory public insurance and can add private insurances. All insurance companies are run privately.

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

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

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	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
Internal loop recorders	☒	☐	☐	☒	☐	☐
ICD primary prevention	☒	☐	☐	☒	☐	☐
ICD secondary prevention	☒	☐	☐	☒	☐	☐
CRT devices	☒	☐	☐	☒	☐	☐
Ablation	☒	☐	☐	☒	☐	☐

Treatment availability

No restrictions	☒
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

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 www.pacemaker.ch

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

National accreditation for centres

Required for practice	☐
Not required for practice	☒
Accreditation not available	☐

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☒
Society advises EHRA certification, but it's not homologated to national certification	☐
No	☐
The Guidelines 2011 of the Swiss Working Group for Pacing and Electrophysiology accepted by the Swiss Society of Cardiology advise EHRA certification.	

Specialty required for catheter ablation	Yes
Cardiologist; Guidelines edited by the Working Group for Pacing and Electrophysiology of the Swiss Society of Cardiology.	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist, surgeon; Guidelines edited by the Working Group for Pacing and Electrophysiology of the Swiss Society of Cardiology.	

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
Working group for Pacing and Electrophysiology of the Swiss Society of Cardiology.	

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

Training centres availability	
Pacemaker	10
ICD implantation	8
CRT implantation	8
Electrophysiological studies and catheter ablation	5
Atrial fibrillation ablation	5

Number of medical faculties	5
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Percentage of academic facilities among practicing EP and implant centres	23%/7%/14%
EP 23%, Pacemaker 7% and ICD 14%.	



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	73	76
Total Pacemaker units implanted	5.679	6.044
Thereof, New implants	4.176	4.458
Thereof, Replacements	1.503	1.586

Specialty performing implants	
Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	26	28
Total CRT units implanted	562	567
Thereof, CRT pacemaker	158	238
Thereof, CRT ICD	404	329

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	30		37
Total ICD units implanted	1.599		1.088
Thereof, Single chamber	not available		not available
Thereof, Dual chamber	not available		not available
First implants	1.093		668*
Replacements	466		420

* 1 chamber 370, 2 chamber 298. Then numbers of 2010 included CRT-D.

Specialty performing implants	
Cardiologists	97%
Surgeons	3%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		not available
Total loop recorders implanted	319		350

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

9. Lead extractions

Centres perform lead extractions			
2010	10	2011	10

Specialty performing extractions	
Cardiologists	50%
Surgeons	50%



10. Device specific

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

National registry for	
ICD	☒
Pacing	☒
Electrophysiology	☒
None	☐
CHPACEWEB	

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

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

Swissmedic (National Institution)

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	20	21
Number of ablations performed	3.920	4.679
Mean number of ablations per centre	196	223
Number of AF ablations	1.263	1.595
Number of ablation centres (> 50 AF ablations)	8	10
Number of ablation centres (> 10 VT ablations on structural heart diseases)	8	6

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

CHPACEWEB, annually published on www.pacemaker.ch

12. Guidelines

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

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

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐
Lack of referral	☒	☐	☐	☐	☐
Lack of trained personnel	☒	☐	☐	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☒	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

Please, find all sources at the end of the EHRA White Book 2012.



SYRIA

Pending data submission.

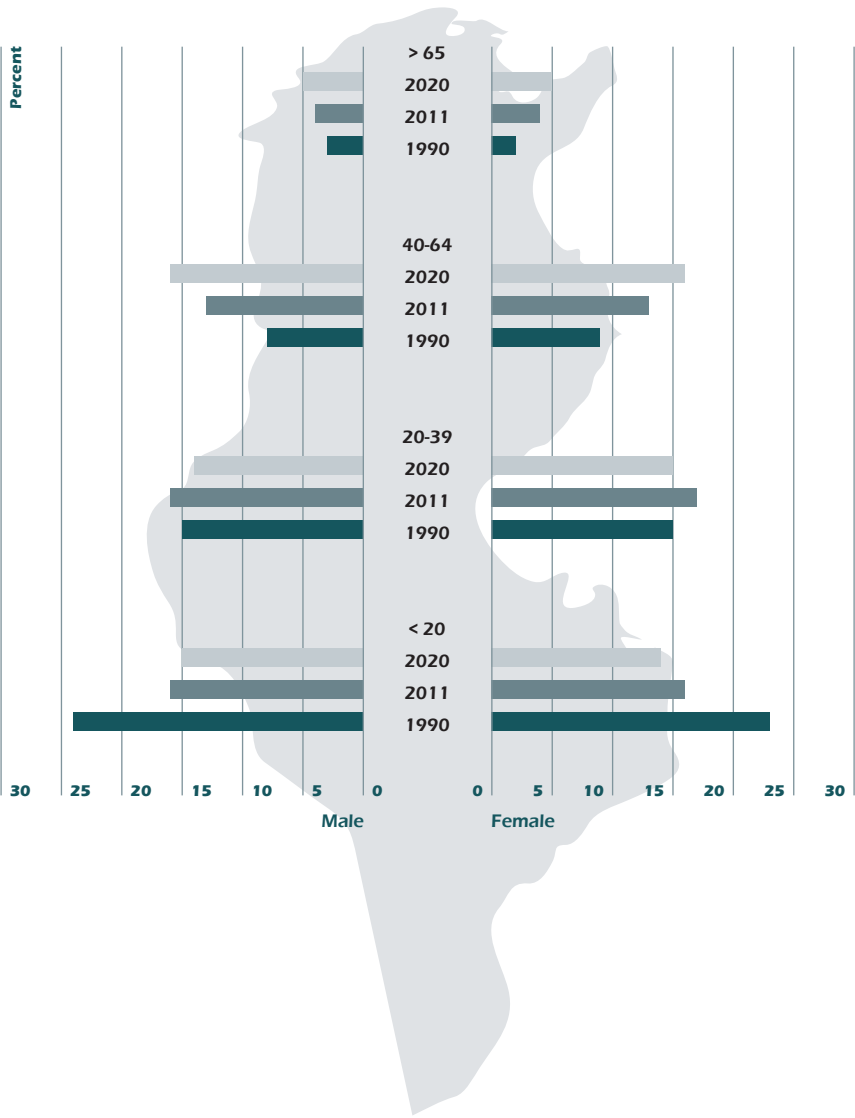


TUNISIA



1. Statistics

Age pyramid for Tunisia



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	10.629.186	2011
Population annual growth rate (%)	1,0	2011
Life expectancy at birth	75	2011
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)	48.93*	2011
Gross domestic product per capita (U.S dollar-units)	4'592.60*	2011
Total expenditure on health as % of GDP	not available	not available
General government expenditure on health as % of total expenditure on health	54.1	2008
Private expenditure on health as % of total expenditure on health	45.9	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	not available

3. Healthcare System

Both basic preventive and curative services are available to almost the entire population, regardless of their socioeconomic status. Almost 90 percent of the population has access to health care through either a health insurance scheme or a medical assistance program. The coverage of the illness risk is ensured through many mechanisms and funding sources. These mechanisms include: a social protection scheme managed by a National Fund for Illness Insurance (Caisse Nationale d'Assurance Maladie), a free medical access and reduced tariffs for poor and mutual and private health insurance schemes. Preventive care and public health programs are freely provided for the whole population. Despite the wide coverage of the Tunisian population by social security and the implementation of mechanisms insuring the coverage of illness risk for the poor, the Tunisian health system is still mainly funded through direct households' contribution which is dramatically increasing and it is estimated at 43% during the last five years.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	not available	93%
Uninsured citizens	not available	7%

Distribution of insurance modality		
	2010	2011
Public insurance company	not available	93%
Private insurance company	not available	not available
Private co-payment	not available	not available

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



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

	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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability	
No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☒
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐

4. Education

National certification availability	
Device therapy	☒
Invasive electrophysiology	☒
None	☐
CEC de Rythmologie	

National certification for physicians	
Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

National accreditation for centres	
Required for practice	☐
Not required for practice	☐
Accreditation not available	☒

ICDs are implanted only in Public Hospitals.

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it's not homologated to national certification	☐
No	☒

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist and cardiovascular surgeon	

Official national competency guidelines for electrophysiological studies or catheter ablation	No
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Required period of training to perform implantations	2 years
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Training centres availability	
Pacemaker	19
ICD implantation	10
CRT implantation	10
Electrophysiological studies and catheter ablation	10
Atrial fibrillation ablation	2

Number of medical faculties	4
------------------------------------	----------

Percentage of academic facilities among practicing EP and implant centres	50%
--	------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres			
	2010		2011
Implanting centres	19		19
Total Pacemaker units implanted	1.500		1.650
Thereof, New implants	not available		not available
Thereof, Replacements	not available		not available

Specialty performing implants	
Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres			
	2010		2011
Implanting centres	8		8
Total CRT units implanted	80		80
Thereof, CRT pacemaker	50		50
Thereof, CRT ICD	30		30

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	8		8
Total ICD units implanted	89		90
Thereof, Single chamber	not available		30
Thereof, Dual chamber	not available		30
First implants	not available		not available
Replacements	not available		not available

Specialty performing implants	
Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		not available
Total loop recorders implanted	not available		not available

Specialty performing implants	
Cardiologists	not available
Surgeons	not available

9. Lead extractions

Centres perform lead extractions			
2010	1	2011	1

Specialty performing extractions	
Cardiologists	80%
Surgeons	0%
Mixed team of cardiologists and cardiovascular surgeons	20%



10. Device specific

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

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

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

	2010	2011
Number of ablation centres	10	10
Number of ablations performed	500	600
Mean number of ablations per centre	50	60
Number of AF ablations	20	20
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	☐
U.S.	☐
European	☒

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☐	☐	☒	☐	☐	2
Lack of reimbursement, limited financial resources	☐	☐	☒	☐	☐	3
Lack of referral	☐	☐	☒	☐	☐	5
Lack of trained personnel	☐	☐	☒	☐	☐	1
Low awareness of guidelines	☐	☐	☒	☐	☐	6
Lack of operators	☐	☐	☒	☐	☐	4

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

Please, find all sources at the end of the EHRA White Book 2012.

TURKEY

Pending data submission.

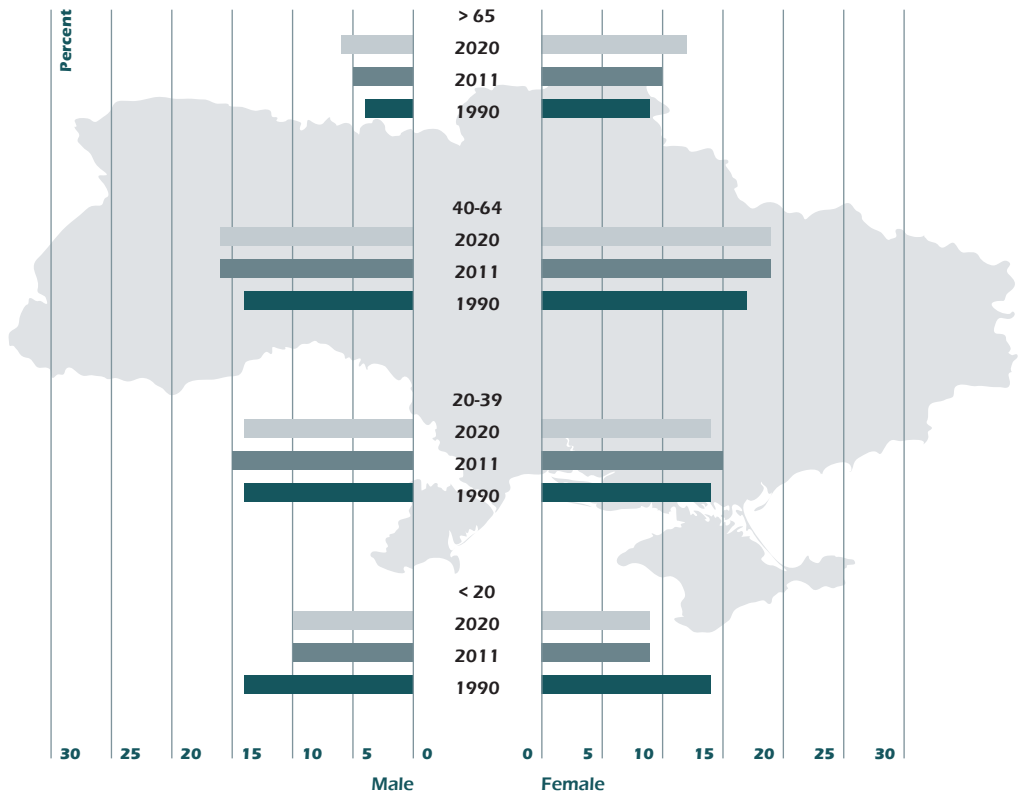


UKRAINE



1. Statistics

Age pyramid for Ukraine





Healthcare data		
Hospitals (per 100.000 population)	5,4	2009
Beds (per 100.000 population)	865,8	2009
Density of physicians (per 1.000 population)	3,2	2009
Density of nurses (per 1.000 population)	7,9	2009

Demographic information		
Population	45.134.707	2011
Population annual growth rate (%)	-0,6	2011
Life expectancy at birth	69	2011
Death rate (per 1.000 population)	15,3	2010
Live births (per 1.000 population)	10,9	2010

Economic information		
Gross domestic product (U.S dollar-billions)	162,85*	2011
Gross domestic product per capita (U.S dollar-units)	3.574,91*	2011
Total expenditure on health as % of GDP	7,0	2009
General government expenditure on health as % of total expenditure on health	55,9	2008
Private expenditure on health as % of total expenditure on health	44,1	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	66,6%
2011	not available

3. Healthcare System

Ministry of Public Health of Ukraine, Medical Academy of Sciences of Ukraine (National Scientific Centres – 36 in total), profile institutions hospitals (hospital of the Ministry of Internal Affairs, hospital of the Ministry of Defence so on). National health system provides all citizens of Ukraine with the free medical and preventive help in accordance to acting legislation by: outpatient (ambulatory-polyclinic and emergency) help, stationary (general profile and specialized) help.

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	0,16%*	not available
Uninsured citizens	99,84%*	not available

* According to patients hospitalized in NSS the «M.D. Strazhesko Institute of Cardiology» of NAMS of Ukraine in 2009 and 2010 years.

Distribution of insurance modality		
	2010	2011
Public insurance company	not available	not available
Private insurance company	not available	not available
Private co-payment	not available	not available

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

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

Co-payment is not necessary when NHS funds are available in a hospital. In any other case, the patient must cover all funds 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	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
Internal loop recorders	☐	☐	☒	☒	☐	☐
ICD primary prevention	☐	☐	☒	☒	☐	☐
ICD secondary prevention	☐	☐	☒	☒	☐	☐
CRT devices	☐	☐	☒	☒	☐	☐
Ablation	☐	☐	☒	☒	☐	☐

Treatment availability

No restrictions	☐
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☒
Not funded	☐

4. Education

National certification availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

There is no specialization for invasive electrophysiology or device therapy. These procedures are mainly performed by cardiovascular surgeon or cardiologists who passed on post graduate training in the main centres of invasive arrhythmology.

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

Rate of accreditation for physicians: once every 5 years.

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐

Rate of national accreditation for centres: once every 3 years.

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☒
Society advises EHRA certification, but it's not homologated to national certification	☐
No	☐

Specialty required for catheter ablation	Yes
Cardiovascular surgeon or cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Cardiovascular surgeon or cardiologist	

Official national competency guidelines for electrophysiological studies or catheter ablation	No
Рекомендації Асоціації кардіологів України / Recommendation of Association of Cardiologists of Ukraine	

Required period of training to perform implantations	No
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Training centres availability	
Pacemaker	6
ICD implantation	1
CRT implantation	1
Electrophysiological studies and catheter ablation	3
Atrial fibrillation ablation	3

Number of medical faculties	19
------------------------------------	-----------

Percentage of academic facilities among practicing EP and implant centres	11,4%
--	--------------



5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	35	36
Total Pacemaker units implanted	4.661	5.064
Thereof, New implants	4.138	4.325
Thereof, Replacements	523	739

Specialty performing implants	
Cardiologists	2,77%
Surgeons	97,23%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	7	8
Total CRT units implanted	46	54
Thereof, CRT pacemaker	45	49
Thereof, CRT ICD	1	6

Specialty performing implants	
Cardiologists	0%
Surgeons	100%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	8		8
Total ICD units implanted	29		45
Thereof, Single chamber	28		43
Thereof, Dual chamber	1		2
First implants	not available		44
Replacements	not available		1

Specialty performing implants	
Cardiologists	0%
Surgeons	100%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		2
Total loop recorders implanted	not available		15

Specialty performing implants	
Cardiologists	0%
Surgeons	100%

9. Lead extractions

Centres perform lead extractions			
2010	10	2011	10

Specialty performing extractions	
Cardiologists	0%
Surgeons	100%



10. Device specific

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

It is available only in a few private centres due to restricted budget.

National registry for	
ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

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

	2010	2011
Number of ablation centres	10	13
Number of ablations performed	1.854	2.139
Mean number of ablations per centre	185,4	164,5
Number of AF ablations	431	513
Number of ablation centres (> 50 AF ablations)	5	4
Number of ablation centres (> 10 VT ablations on structural heart diseases)	1	2

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

12. Guidelines

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

Necessity of guideline translation to national language	Yes
---	-----

Obstacles to guideline implementation	Ranking of importance*					
	1	2	3	4	5	
Lack of centres	☐	☐	☒	☐	☐	5
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒	1
Lack of referral	☐	☐	☐	☐	☒	3
Lack of trained personnel	☐	☐	☐	☐	☒	2
Low awareness of guidelines	☐	☐	☐	☒	☐	3
Lack of operators	☐	☐	☐	☐	☒	3
Other: Absence of specializa- tion on invasive arrhythmology	☐	☐	☒	☐	☐	4

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

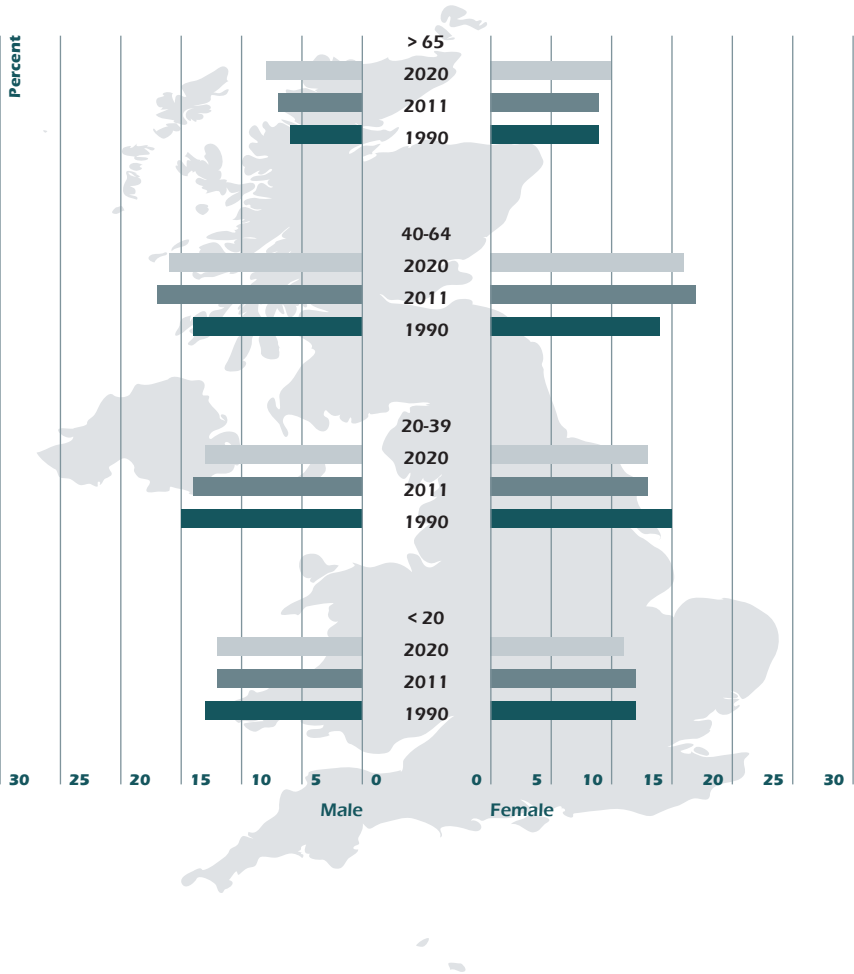
Please, find all sources at the end of the EHRA White Book 2012.

UNITED KINGDOM



1. Statistics

Age pyramid for United Kingdom





Healthcare data		
Hospitals (per 100.000 population)	3,9	1989
Beds (per 100.000 population)	329,1	2009
Density of physicians (per 1.000 population)	2,7	2009
Density of nurses (per 1.000 population)	9,5	2009

Demographic information		
Population	62.698.362	2011
Population annual growth rate (%)	0,6	2011
Life expectancy at birth	80	2011
Death rate (per 1.000 population)	9,1	2009
Live births (per 1.000 population)	12,8	2009

Economic information		
Gross domestic product (U.S dollar-billions)	2.480,98*	2011
Gross domestic product per capita (U.S dollar-units)	39.604,29*	2011
Total expenditure on health as % of GDP	9,3	2009
General government expenditure on health as % of total expenditure on health	82,6	2008
Private expenditure on health as % of total expenditure on health	17,4	2008

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2010	not available
2011	not available

3. Healthcare System

In United Kingdom, a National Health System (NHS) covers 100% of the population. It is mainly funded through national taxation. All legal residents of the United Kingdom, residents of the European economic area and citizens of other countries with which the UK has reciprocal agreements are covered under the United Kingdom NHS. Therefore, the subscription to private health insurance is very low. (WHO 2004)the UK has reciprocal agreements are covered under the United Kingdom NHS. Therefore, the subscription to private health insurance is very low. (WHO 2004)to private health insurance is very low. (WHO 2004)

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

Percentage of insured and uninsured citizens		
	2010	2011
Insured citizens	10%	10%
Uninsured citizens	90%	90%

Distribution of insurance modality		
	2010	2011
Public insurance company	90%	90%
Private insurance company	10%	10%
Private co-payment	0%	0%

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

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

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	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
Internal loop recorders	☐	☐	☒	☐	☐	☒
ICD primary prevention	☐	☐	☒	☐	☐	☒
ICD secondary prevention	☐	☐	☒	☐	☐	☒
CRT devices	☐	☐	☒	☐	☐	☒
Ablation	☐	☐	☒	☐	☐	☒

Treatment availability

No restrictions	☒
No restrictions, but the indications have to follow the ESC guidelines	☐
No restrictions, but the indications have to follow the National guidelines	☐
Restricted to certain number of treatments/budget	☐
Not funded	☐
It is variable from region to region.	

4. Education

National certification availability

Device therapy	☒
Invasive electrophysiology	☒
None	☐
Heart Rhythm UK	

National certification for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐
General Medical Council	

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐
Care Quality Commission	

National Cardiac Society supporting EHRA certification system	
Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it 's not homologated to national certification	☐
No	☒

Specialty required for catheter ablation	Yes
Cardiologist	

Specialty required for ICD or pacemaker implants	Yes
Cardiologist	

Official national competency guidelines for electrophysiological studies or catheter ablation	Yes
Heart Rhythm UK	

Required period of training to perform implantations	6 years
--	---------

Training centres availability	
Pacemaker	70
ICD implantation	35
CRT implantation	30
Electrophysiological studies and catheter ablation	35
Atrial fibrillation ablation	30

Number of medical faculties	35
-----------------------------	----

Percentage of academic facilities among practicing EP and implant centres	not available
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5. Pacemakers

Pacemaker units implanted and number of implanting centres		
	2010	2011
Implanting centres	219	207
Total Pacemaker units implanted	37.200	38.239
Thereof, New implants	28.091	29.482
Thereof, Replacements	9.103	8.757

Specialty performing implants	
Cardiologists	99%
Surgeons	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres		
	2010	2011
Implanting centres	119	123
Total CRT units implanted	6.521	6.595
Thereof, CRT pacemaker	2.366	2.864
Thereof, CRT ICD	4.155	3.731

Specialty performing implants	
Cardiologists	not available
Surgeons	not available

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres			
	2010		2011
Implanting centres	114		123
Total ICD units implanted	5.175		5.404
Thereof, Single chamber	not available		1.783
Thereof, Dual chamber	not available		3.621
First implants	3.275		4.403
Replacements	1.900		1.001

Specialty performing implants	
Cardiologists	99%
Surgeons	1%

8. Loop recorders

Loop recorders implanted and number of implanting centres			
	2010		2011
Implanting centres	not available		not available
Total loop recorders implanted	4.500*		5.000*

* Estimation

Specialty performing implants	
Cardiologists	99%
Surgeons	1%

9. Lead extractions

Centres perform lead extractions			
2010	not available	2011	not available

Specialty performing extractions	
Cardiologists	not available
Surgeons	not available



10. Device specific

Availability of remote monitoring of devices	Yes
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National registry for	
ICD	☒
Pacing	☒
Electrophysiology	☒
None	☐
CRM Central Cardiac Audit Database	

Availability of a national quality insurance system or complication registry	Yes
Central Cardiac Audit Database	

Availability of a national institution coordinating and guiding device recalls and complications related to lead extractions	Yes
Medical Healthcare Regulatory Agency (MHRA)	

11. Interventional electrophysiology

	2010	2011
Number of ablation centres	48	49
Number of ablations performed	14.222	15.078
Mean number of ablations per centre	268	314
Number of AF ablations	3.715	4.654
Number of ablation centres (> 50 AF ablations)	25	28
Number of ablation centres (> 10 VT ablations on structural heart diseases)	16	17

Availability of a national registry for interventional electrophysiology	Yes
CRM Central Cardiac Audit Database	

12. Guidelines

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

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

Obstacles to guideline implementation	Ranking of importance*				
	1	2	3	4	5
Lack of centres	☐	☐	☐	☒	☐
Lack of reimbursement, limited financial resources	☐	☐	☒	☐	☐
Lack of referral	☐	☐	☐	☐	☒
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☐	☒	☐	☐	☐

1 = no obstacle

5 = great obstacle

* (1 = top; 7 = lowest)

Please, find all sources at the end of the EHRA White Book 2012.

4. Sources



4. Sources

Main Sources

All data in the EHRA White Book 2012 has been collected and authorised for publication by the National Societies and National Working groups. The National Societies and National Working groups that participated in this 2012 edition are listed below*.

Armenia

Sources: Ministry of Health Armenia, Yerevan Cardiology Institute from 2012 become a National Center

for Guidelines and Training by the Health Minister, Ministry of Health and Ministry of High Education,

Working group of Arrhythmology, EHRA White Book 2011

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

Armenian Cardiology Association, Working group of Arrhythmology

Austria

Sources: National Institute of Statistics, Federal Ministry of Health, Austrian ablation registry, EHRA White Book 2011

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

Austrian Rhythmology Working group

Azerbaijan

Sources: Azerbaijan Society of Cardiology, Azerbaijan Medical University, EHRA White Book 2011

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

Azerbaijan Society of Cardiology, Arrhythmia Working Group

Belarus

Sources: EHRA White Book 2011

Name of National Society, National Working Group or arrhythmia body: Belarus Heart Rhythm Association

Belgium

Sources: <http://statbel.fgov.be>, Conseil d'accord INAMI (National health system), Registry of the Belgian Heart Rhythm Association, EHRA White Book 2011

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

Belgian Heart Rhythm Association (BeHRA)

Main Sources

Bosnia and Herzegovina

Sources: WHO, Insurance companies of Federation of Bosnia and Herzegovina and Insurance company

of Republic of Srpska, University Clinical Center Banjaluka (Pacemaker Center), Clinical Center Tuzla

(Clinic for Cardiovascular Disease), EHRA White Book 2011

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

Association of Cardiologists and Angiologists of Bosnia and Herzegovina; Working group cardiac Pacing

Bulgaria

Sources: Bulgarian Society of Cardiology, EHRA White Book 2011

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

Bulgarian Cardiology society – Bulgarian Working Group of Electrophysiology

Croatia

Sources: Croatian National Institute for Public Health, Croatian Registry on pacing and EP procedures, EHRA White Book 2011

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

Working Group on Arrhythmias, Cardiac Pacing and Electrophysiology of the Croatian Cardiac Society

Cyprus

Sources: EHRA White Book 2011

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

Cyprus Society of Cardiology

Czech Republic

Sources: EHRA White Book 2011

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

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

Denmark

Sources: Danish Pacemaker and ICD registry, Helen H. Petersen, Christian Gerdes, Jens Brock Johansen, Jerzy Malczynski, Jens Haarbo, Regitze Videbæk, Tommy Bo Lindhart, Elsebeth Friis, Lene Svenstrup, Sam Riahi, EHRA White Book 2011

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

Danish Society of Cardiology, Working group for electrophysiology

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Main Sources

Egypt

Sources: EHRA White Book 2011

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

Egyptian cardiac rhythm association, Egyptian society of cardiology, Egyptian Electrophysiology working Group

Estonia

Sources: EHRA White Book 2011

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

Working Group of Arrhythmias of Estonian Society of Cardiology

Finland

Sources: Finnish Cardiac Society, EHRA White Book 2011

Name of National Society, National Working Group or arrhythmia body: Finnish Cardiac Society, WG of Arrhythmia and Pacing

France

Sources: French national registry, EHRA White Book 2011

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

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

Georgia

Sources: National Statistics Office of Georgia, Georgian Heart Rhythm Association, EHRA White Book 2011

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

Georgian College of Cardiology Georgian Heart Rhythm Association (GeHRA)

Germany

Sources: EHRA White Book 2011

Name of National Society, National Working Group or arrhythmia body: German Working Group on Cardiac Pacing and Arrhythmia

Greece

Sources: Implant cards from the companies, National Registry, EHRA White Book 2011

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

Working Group of Electrophysiology and Pacing

Main Sources

Hungary

Sources: Hungarian Central Statistical Office, National Health Insurance Fund, Working Group on Cardiac Arrhythmias and Pacing, Hungarian Society of Cardiology, EHRA White Book 2011
Name of National Society, National Working Group or arrhythmia body: Working Group on Cardiac Arrhythmias and Pacing, Hungarian Society of Cardiology

Iceland

Sources: Landspítali – The National University Hospital of Iceland Pacemaker Clinic, EHRA White Book 2011
Name of National Society, National Working Group or arrhythmia body:
The Icelandic Cardiac Society

Ireland

Sources: www.cso.ie, HSE, www.doh.ie, Subspecialty registry for cardiology run by RCPI, DK, EP Subgroup ICS, EHRA White Book 2011
Name of National Society, National Working Group or arrhythmia body:
EP Subgroup of Irish Cardiac Society

Israel

Sources: National ICD Registry, EHRA White Book 2011
Name of National Society, National Working Group or arrhythmia body: Israeli Working group on Pacing and Electrophysiology (IWGPE)

Italy

Sources: Recent available data (2010) about the rate of new implants and replacements from the „Registro Italiano Pacemaker e Defibrillatori“ (AIAC Registry), EHRA White Book 2011
Name of National Society, National Working Group or arrhythmia body:
Registro Italiano Pacemaker e Defibrillatori (AIAC Registry)
Italian association of Arrhythmias and Cardiac Pacing/AIAC

Latvia

Sources: National Ministry of Healthcare, Healthcare Economy Center, Latvian Centre of Cardiology, EHRA White Book 2011
Name of National Society, National Working Group or arrhythmia body:
Latvian National Society of Cardiology, Working Group on Arrhythmology and Cardiac Pacing

4. Sources

Main Sources

Lithuania

Sources: www.hi.lt, EHRA White Book 2011

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

Lithuanian WG on Cardiac Pacing and Electrophysiology

Luxembourg

Sources: L'Institut de Chirurgie Cardiaque et de Cardiologie Interventionnelle (INCCI), EHRA White Book 2011

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

Société Luxembourgeoise de Cardiologie

Macedonia FYR

Sources: Implant center data, Electrophysiology center data, EHRA White Book 2011

Name of National Society, National Working Group or arrhythmia body: WG of EPS and Pacing

Malta

Sources: EHRA White Book 2011

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

Maltese Cardiac Society

Montenegro

Sources: MONSTAT, The Register book from Operating theatre in Clinical Center of Montenegro, EHRA White Book 2011

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

National Society of Cardiology of Montenegro / Pacemaker Center And Center For Electrophysiology

Morocco

Sources: AMO, SMC, Governmental Source, National Medical Recencement, EHRA White Book 2011

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

Société Marocaine de Cardiologie (SMC) et sa Filiale de Rythmologie

Netherlands

Sources: National institute of Statistics, Netherlands Heart Rhythm Association, NHRA, EHRA White Book 2011

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

Netherlands Heart Rhythm Association

Main Sources

Norway

Sources: Norwegian Pacemaker Registry, EHRA White Book 2011

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

Norwegian Working Group of arrhythmias

Poland

Sources: Central Statistical Office, National Health Fund, EHRA White Book 2011

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

Working Group on Heart Rhythm of the Polish Cardiac Society

Portugal

Sources: PORDATA, National Institute of Statistics, Ministry of Health, Portuguese Heart Rhythm Association, APAPE, EHRA White Book 2011

Name of National Society, National Working Group or arrhythmia body: Associação Portuguesa de Arritmologia, Pacing e Electrofisiologia (APAPE)(Portuguese Heart Rhythm Association)

Romania

Sources: AHA Heart Disease and Stroke Statistics—2012 Update, Official accredited number from Ministry of Education, National Devices registry on the site of Romanian Working Group on Arrhythmia, EHRA White Book 2011

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

Working Group of Arrhythmia, Romanian Society of Cardiology

Russian Federation

Sources: NMX, EHRA White Book 2011

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

RUSSIAN SOCIETY OF ARRHYTHMOLOGY (RSSA), Clinical Electrophysiology, Arrhythmology and Cardiac Pacing

San Marino

Sources: National HS, PM Data Base, ICD Data Base, Hospital Data Base, EHRA White Book 2011

Name of National Society, National Working Group or arrhythmia body: San Marino Society of Cardiology

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Main Sources

Serbia

Sources: National Institute for Statistics, Working Group on Cardiac Pacing and Arrhythmias - Data base, EHRA White Book 2011

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

Working Group on Cardiac Pacing and Arrhythmias, Serbian Cardiology Society

Slovakia

Sources: Slovak Heart Rhythm Association (SHRA), EHRA White Book 2011

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

Slovak Heart Rhythm Association (SHRA), in Slovak language: Slovenská asociácia srdcových arytmií (SASA)

Slovenia

Sources: EHRA White Book 2011

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

Working Group on EP and Electrostimulation, Slovenian Society of Cardiology

Spain

Sources: Statistics National Institute, National registry, EHRA White Book 2011

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

Sociedad española de Cardiología. Sección de Arritmias

Sweden

Sources: Swedish Board of Health and Welfare national statistics, The Swedish Social Insurance Agency, Swedish Insurance Federation, National registries for pacing/ICD and catheter ablation, Swedish National Agency for Higher Education, National registries for pacing/ICD and catheter ablation, The Swedish ICD and Pacemaker Register, The Swedish Catheter Ablation Registry, EHRA White Book 2011

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

Arbetsgruppen för arytm, Swedish Society of Cardiology

Switzerland

Sources: Eidgenössisches bundesamt für Statistik, Stand 1.12.2011, cardiovascular mortality 2009 ,<http://www.bfs.admin.ch/bfs/portal/de/index/themen>, Eidgenössisches Bundesamt für Statistik, www.santesuisse.ch, www.pacemaker.ch, Swiss Working Group, EHRA White Book 2011

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

Swiss working group for Cardiac Pacing and electrophysiology

Main Sources

Tunisia

Sources: INS, STCCCV, MSP, WGA, EHRA White Book 2011

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

TUNISIAN SOCIETY OF CARDIOLOGY AND CARDIOVASCULAR SURGERY / Working group on arrhythmias

Ukraine

Sources: State Statistic Service of Ukraine, „M.D. Strazhesko Institute of Cardiology“ of NAMS of Ukraine, Sychov O.S., Dorogoi A.P., Borodai A.A., Kryachok I.V., Stychinskii A.S., Zalevskii V.P., Kravchuk B.B. / 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, 01-02.03.2012, official site of the Ministry of Public Health of Ukraine: www.moz.gov.ua/ua/portal/mtbr_eduinstitutions/, EHRA White Book 2011

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

All-Ukrainian Non-Governmental Organization “Association of arrhythmologists of Ukraine”

United Kingdom

Sources: CRM Central Cardiac Audit Database, EHRA White Book 2011

Name of National Society, National Working Group or arrhythmia body: Heart Rhythm UK

4. Sources

Demographic data sources

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<http://www.who.int/whosis/en/>
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- International Monetary Fund (IMF), Washington DC, USA.
<http://www.imf.org>

5. Appendix



5. Appendix



EHRA Certification

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

ANDERSON	Mark H	United Kingdom	2011
ANGUERA CAMOS	Ignacio	Spain	2009
ARBELO LAINEZ	Elena	Spain	2009
ATTA	Salah Eldin Sayed	Saudi Arabia	2011
AVELLA	Andrea	Italy	2009
BARRERA CORDERO	Alberto	Spain	2006
AYALA PAREDES	Felix	Canada	2009
BELOTTI	Giuseppina	Italy	2008
BENCSIK	Gabor	Hungary	2009
BERRUEZO SANCHEZ	Antonio	Spain	2010
BERTOMEU-GONZALEZ	Vicente	Spain	2012
BRUGADA TERRADELLAS	Josep	Spain	2009
BUERKLE	Gerd	Austria	2011
BURRI	Haran	Switzerland	2008
CANO PEREZ	Oscar	Spain	2011
CASTRO URDA	Victor	Spain	2012
CATANCHIN	Andrei	Australia	2012
DAVOODI	Gholamreza	Iran	2008
DE GROOT	Joris R	Netherlands	2012
DURAY	Gabor Zoltan	Germany	2008
EISENBERGER	Martin	Belgium	2012

EHRA EP Certified professionals

FERNANDEZ LOZANO	Ignacio	Spain	2006
FONTENLA	Adolfo	Spain	2012
FRANCK	Harald	Germany	2011
GARCIA MORAN	Emilio	Spain	2007
GONZALEZ VASSEROT	Maria del Mar	Spain	2009
GRECU	Mihaela	Romania	2007
GUGUCHEV	Pavel	USA	2010
HERNANDEZ-MADRID	Antonio	Spain	2009
HERREROS GUILARTE	Benito	Spain	2006
HUYBRECHTS	Wim	Belgium	2009
IVO PETRUS TRINES	Serge Alexander	Netherlands	2008
JANSEN	Ward	Netherlands	2010
JASTRZEBSKI	Marek	Poland	2008
JILEK	Clemens	Germany	2012
JONES	David Gareth	United Kingdom	2012
KEMME	Michiel	Netherlands	2009
KILISZEK	Marek	Poland	2010
KUHNE	Michael	Switzerland	2012
LAURENZI	Francesco	Italy	2009
LETSAS	Konstantinos	Greece	2009
LUBINSKI	Andrzej	Poland	2007
MADRID	Antonio	Spain	2009
MARINI	Massimiliano	Italy	2011
MARTINEK	Martin	Austria	2010
MARTINEZ ALDAY	Jesus	Spain	2006
MATIA FRANCES	Roberto	Spain	2011
MAZUR	Alexander	Italy	2006
MORENO PLANAS	Javier	Spain	2006
MOYA I. MITJANS	Angel	Spain	2006
ESTEVAO MATIELLO	Maria Elisa	Spain	2011
NAVARETE CASAS	Antonio Javier	USA	2008
ORMAETXE MERODIO	José Miguel	Spain	2006
OSCA ASENSI	Joaquin	Spain	2010
PAPIASHVILI	Giorgi	Georgia	2009

5. Appendix

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Invasive Cardiac Electrophysiology

EHRA EP Certified professionals

PASTOR FUENTES	Augustin	Spain	2006
PEINADO	Rafael	Spain	2007
PEREZ CASTELLANO	Nicasio	Spain	2006
PEREZ VILLACASTIN	Julian	Spain	2006
POZZETTI	Daniela	Italy	2007
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
SCHOONDERWOERD	Bas	Netherlands	2012
SEOW	Swee-Chong	Singapore	2007
SMIT	Jaap Jan	Netherlands	2009
STUEHLINGER	Markus	Austria	2010
TOQUERO RAMOS	Jorgue	Spain	2006
TRAYKOV	Vassil B	Hungary	2011
TRINES	Serge Alexander Ivo Petrus	Netherlands	2008
TZEIS	Stylios	Greece	2010
VAN CASTEREN	Lieve	Belgium	2012
VATASESCU	Radu-Gabriel	Romania	2009
VITALE	Raffaele	Italy	2012
VOSS	Frederik	Germany	2009
VUKAJLOVIC	Dejan	Serbia	2009
ZOPPO	Franco	Italy	2008
ZUCCHELLI	Giulio	Italy	2012

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
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
BARRERA CORDERO	Alberto	Spain	2005
AYALA PAREDES	Felix	Canada	2007
BALTA	Osman	Germany	2010
BAYRAK	Duhan Fatih	Belgium	2011
BEDNAREK	Jacek	Poland	2011
BELOTTI	Giuseppina	Italy	2006
BENCSIK	Gabor	Hungary	2009
BERRUEZO SANCHEZ	Antonio	Spain	2006
BERTOMEU-GONZALEZ	Vicente	Spain	2010
BLAAUW	Yuri	Netherlands	2011
BONANNO	Carlo	Italy	2011
BOULLIN	Julian Paul	United Kingdom	2010
BRUGADA TERRADELLAS	Josep	Spain	2007
BUERKLE	Gerd	Austria	2008
BURRI	Haran	Switzerland	2007
CALVO CUERVO	David	Spain	2010
CALVO GALIANO	Naiara	Spain	2011
CAMPOS GARCIA	Bieito	Spain	2010
CANO PEREZ	Oscar	Spain	2009
CASTRO URDA	Victor	Spain	2009

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EHRA Certification



Invasive Cardiac Electrophysiology

EP Certification candidates successful to exam

CATANCHIN	Andrei	Australia	2008
CHATTERJEE	Debjit	United Kingdom	2010
CHONG	Daniel	Singapore	2011
CLEMENTY	Nicolas	France	2010
COZAR LEON	Rocio	Spain	2011
DATINO	Tomas	Spain	2011
DAVOODI	Gholamreza	Iran	2007
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
DJAJADISASTRA	Achmad Iskandar	Germany	2011
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
FERNANDEZ LOZANO	Ignacio	Spain	2005
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 VASSEROT	Maria del Mar	Spain	2007
GONZALEZ-ENRIQUEZ	Susana	Spain	2008
GOPALAMURUGAN	A B	United Kingdom	2011
GRANIER	Mathieu	France	2011
GRECU	Mihaela	Romania	2006

EP Certification candidates successful to exam

GUGUCHEV	Pavel	USA	2010
GUY-MOYAT	Benoit	France	2010
HEMELS	Martin	Netherlands	2011
HERCZKU	Csaba	Hungary	2009
HERNANDEZ-MADRID	Antonio	Spain	2005
HERREROS GUILARTE	Benito	Spain	2005
HLIVÁK	Peter	Slovakia	2010
HOBBS	William	United Kingdom	2007
HOGLUND	Niklas	Sweden	2008
HOOFT VAN HUYSDUYNEN	Bart	Netherlands	2011
HUYBRECHTS	Wim	Belgium	2008
IVO PETRUS TRINES	Serge Alexander	Netherlands	2005
INFUSINO	Tommaso	Italy	2011
JANDA	Igor	Germany	2009
JANSEN	Ward	Netherlands	2009
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
KACZMAREK	Krzysztof	Portugal	2010
KANDIL	Mehmet	Germany	2011
KARDOS	Attila	Hungary	2010
KEMME	Michiel	Netherlands	2008
KILISZEK	Marek	Poland	2009
KONSTANTINIDOU	Melanie	Germany	2011
KOOPMAN	Pieter	Belgium	2011
KUHNE	Michael	Switzerland	2011
LAURENZI	Francesco	Italy	2008
LERCHER	Peter	Austria	2010
LETSAS	Konstantinos	Greece	2008
LUBINSKI	Andrzej	Poland	2005
MADRID	Antonio	Spain	2008
MAKOWSKI	Karol	Portugal	2010
MARINI	Massimiliano	Italy	2010

5. Appendix

EHRA Certification



Invasive Cardiac Electrophysiology

EP Certification candidates successful to exam

MARTINEK	Martin	Austria	2008
MARTINEZ ALDAY	Jesus	Spain	2005
MARTINEZ SANDE	Jose Luis	Spain	2009
MASSIN	Francois	Spain	2009
MATIA FRANCES	Roberto	Spain	2009
MAZUR	Alexander	Italy	2005
MORENO PLANAS	Javier	Spain	2005
MOYA I. MITJANS	Angel	Spain	2005
ESTEVAO MATIELLO	Maria Elisa	Spain	2007
MCCREADY	James	United Kingdom	2010
MEYER	Christian	Germany	2011
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
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
PEINADO	Rafael	Spain	2005
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
POZZETTI	Daniela	Italy	2007
PUCHOL	Alberto	Hungary	2009
RAMANNA	Hemanth	Netherlands	2008
REBELLATO	Luca	Italy	2009
RIVAS	Nuria	Spain	2010

EP Certification candidates successful to exam

ROCA LUQUE	Ivo	Spain	2011
RORDORF	Roberto	Italy	2009
ROSSI	Andrea	Italy	2011
ROTEN	Laurent	Switzerland	2008
ROUX	Antoine	France	2010
SABATE DE LA CRUZ	Xavier	Spain	2005
SALGUERO BODES	Rafael	Spain	2007
SAMO AYOU	Romeo	Sweden	2010
SANDILANDS	A	United Kingdom	2010
SAUSE	Armin	Germany	2008
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
SIELSKI	Slawomir	Poland	2007
SILISTE	Calin	Italy	2011
SKODA	Jan	Czech Republic	2008
SMIT	Jaap Jan	Netherlands	2008
SPADACINI	Gianmario	Italy	2006
STUEHLINGER	Markus	Austria	2010
SUMAN HORDUNA	Irina	United Kingdom	2008
SZABO	Albin Arpad	Hungary	2010
SZEPLAKI	Gabor	Hungary	2011
TOQUERO RAMOS	Jorgue	Spain	2005
TOMLINSON	D	United Kingdom	2008
TRAYKOV	Vassil B	Hungary	2010
TREGUER	Frederic	France	2009
TRINES	Serge Alexander Ivo Petrus	Netherlands	2006
TZEIS	Stylianios	Greece	2009
UCER	Ekrem	Germany	2011
URBAN	Lubos	Slovakia	2009
VALVERDE ANDRE	Irene	Spain	2010
VAN CASTEREN	Lieve	Belgium	2010

5. Appendix

EHRA Certification



Invasive Cardiac Electrophysiology

EP Certification candidates successful to exam

VATASESCU	Radu-Gabriel	Romania	2007
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
WINTER	Siegmund	Austria	2010
ZELLERHOFF	Stephan	Germany	2011
ZOPPO	Franco	Italy	2006
ZUCCHELLI	Giulio	Italy	2008

Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

CP Certified professionals

ACEÑA RAMOS	Marta	Spain	2012
AL BUNNI	Muhamad	Italy	2007
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
BAYRAK	Duhan Fatih	Belgium	2012
BELOTTI	Giusepina	Italy	2006
BENCSEK	Gabor	Hungary	2009
BERTOMEU-GONZALEZ	Vicente	Spain	2012
BISSINGER	Andrzej	Poland	2007
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

CP Certified professionals

BREULS	Nico	Netherlands	2010
BROERS	Bernard	Netherlands	2010
BUERKLE	Gerd	Austria	2012
BURRI	Haran	Switzerland	2006
CALZOLARI	Vittorio	Italy	2007
CROSATO	Martino	Italy	2009
CURNIS	Antonio	Italy	2007
DAVOODI	Gholamreza	Iran	2006
DE DOELDER	Marieke	Netherlands	2012
DE GROOT	Joris R	Netherlands	2011
DE LA FUENTE	Sam	Spain	2011
DICHTL	Wolfgang	Austria	2012
DILAVERIS	Polychronis	Greece	2007
DURAY	Gabor Zoltan	Germany	2009
EISENBERGER	Martin	Belgium	2011
EIVINDSON	Gunvald	Norway	2009
ENGBERS	Jos G	Netherlands	2011
FOLEY	Paul William Xavier	United Kingdom	2012
FOLKERINGA	Richard	Netherlands	2009
FONTENLA	Adolfo	Spain	2012
FRANCK	Harald	Germany	2011
FRANCOIS	Bart	Belgium	2012
GARCIA BOLAO	José Ignacio	Spain	2006
GARCIA MORAN	Emilio	Spain	2007
GIANNOLA	Gabriele	Italy	2012
GJESTVANG	Finn Tore	Norway	2009
GRADAUS	Rainer	Germany	2007
GRECU	Mihaela	Romania	2009
GUGUCHEV	Pavel	USA	2011
HAZELEGER	Ronald	Netherlands	2012
HEIB	KlausDieter	Germany	2010
HERREROS GUILARTE	Benito	Spain	2006
HJORTSHOJ	Soren	Denmark	2010
HORNSTEN	Jonas	Sweden	2007
HURLIMANN	David	Switzerland	2012

5. Appendix

EHRA Certification



Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

CP Certified professionals

HUYBRECHTS	Wim	Belgium	2010
IOANNIDIS	Panagiotis	Greece	2007
IORGULESCU	Corneliu Nicolae	Romania	2012
JAMALYAN	Smbat	Armenia	2011
JANSEN	Annemieke HM	Netherlands	2011
JASTRZEBSKI	Marek	Poland	2007
JONES	David Gareth	United Kingdom	2012
KARABINOS	Ilias K	Greece	2009
KEMME	Michiel	Netherlands	2009
KETELS	Stefan	Belgium	2009
KLEIN	Gunnar	Germany	2008
KOEPFLI	Pascal	Switzerland	2010
KOEPP	Ulf	Norway	2009
KORANTZOPOULOS	Panagiotis	Greece	2011
KOSTOPOULOU	Anna	Greece	2012
KOULOURIS	Spyridon	Greece	2010
KRAVCHUK	Borys	Ukraine	2012
KRUPA	Wojciech	Poland	2010
LIPCHENCA	Igor Ariel	Israel	2009
LITTERFELDT	Ingrid	Sweden	2011
LUEDORFF	Guido	Germany	2009
MAC GILLAVRY	Melvin	Netherlands	2011
MACIAG	Aleksander	Poland	2009
MADEIRA	Joao	Portugal	2012
MARINI	Massimiliano	Italy	2008
MARTINEK	Martin	Austria	2009
MASCIOLI	Giosue	Italy	2007
MASSA	Thomas	Germany	2011
MEINE	Mathias	Netherlands	2010
MERKELY	Bela	Hungary	2007
MICHAELSEN	Jochen	Germany	2011
MITROWSKI	Przemyslaw	Poland	2006
MORENO PLANAS	Javier	Spain	2006
MUNDEL	Markus Mathias	Germany	2011
NEVEN	Kars	Germany	2008

CP Certified professionals

OSMAN	Faizel	United Kingdom	2007
PAULUSSEN	Guido	Netherlands	2007
PENA HERNANDEZ	Jose Luis	Spain	2011
PEREZ CASTELLANO	Nicasio	Spain	2006
PEREZ DIEZ	Diego	Spain	2012
PINDADO RODRIGUEZ	Javier	Spain	2010
PORRO	Rosa	Spain	2010
POZZETTI	Daniela	Italy	2007
PRZYBYLSKI	Andrzej	Poland	2008
PUGH	Peter	United Kingdom	2009
RAO	Archana	United Kingdom	2009
REBELLATO	Luca	Italy	2012
ROTEN	Laurent	Switzerland	2009
ROUKAS	Kriton-Ioannis	Greece	2012
SCHEFFER	Michael G	Netherlands	2011
SCHOONDERWOERD	Bas	Netherlands	2012
SEOW	Swee-Chong	Singapore	2008
SGARITO	Giuseppe	Italy	2007
SIMEONIDOU	Eftihia	Greece	2007
SJOBLOM	Johanna	Sweden	2009
SPIERENBURG	Han	Netherlands	2009
STATESCU	Cristian	Romania	2012
STEFAN	Liliana	Czech Republic	2011
STERLINSKI	Marciej	Poland	2009
SZAMLEWSKI	Piotr	Sweden	2011
TRAYKOV	Vassil B	Bulgaria	2011
TUININGA	Ype	Netherlands	2011
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

5. Appendix

EHRA Certification



Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

CP Certified professionals

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
VOSS	Frederik	Germany	2009
WESTENDORP	Iris	Netherlands	2009
WILLEMS	Albert	Netherlands	2012
ZAKY	Hosam	United Arab Emirates	2007
ZALEVSKYI	Valerii	Ukraine	2011
ZERVOPOULOS	George	Greece	2007
ZOPPO	Franco	Italy	2007

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
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
ANNE	Wim	Belgium	2008
APOSTOLOPOULOS	Theodoros	Greece	2006

CP Certification candidates successful to exam

ARIAS PALOMARES	Miguel Angel	Spain	2010
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
BELOTTI	Giusepina	Italy	2005
BENCSEK	Gabor	Hungary	2008
BERTOMEU-GONZALEZ	Vicente	Spain	2010
BIJSTERVELD	Nick	Netherlands	2009
BISSINGER	Andrzej	Poland	2006
BLAAUW	Y	Netherlands	2009
BLICHARZ	Jaroslav	Poland	2011
BOHM	Adam	Hungary	2008
BOOS	Christopher	United Kingdom	2008
BORGER VAN DER BURG	Alida Elisabeth	Netherlands	2007
BORRELLI	Alessio	Italy	2009
BOUWELS	Leon H.R.	Netherlands	2007
BRAAM	Richard	Netherlands	2010
BREULS	Nico	Netherlands	2009
BROERS	Bernard	Netherlands	2009
BUERKLE	Gerd	Austria	2008
BULUT	Suat	Netherlands	2010
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

5. Appendix

EHRA Certification



Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

CP Certification candidates successful to exam

CHONG	Daniel	Singapore	2011
CHRISTOPHE	Arnd	Germany	2011
COSER	Alessio	Italy	2011
CROSATO	Martino	Italy	2008
CSONTOS	Pal	Hungary	2009
CURNIS	Antonio	Italy	2006
DAVOODI	Gholamreza	Iran	2005
DE DOELDER	Marieke	Netherlands	2010
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 MEYER	Grim	Belgium	2010
DE POTTER	Tom	Belgium	2008
DE RIVA SILVA	Marta	Spain	2011
DE WAARD	Daan	Netherlands	2007
DE WEERD	Gerjan	Netherlands	2009
DEMONIERE	Fabrice	Martinique	2011
DIAB	Ihab Goma	United Kingdom	2009
DIAZ BUSCHMANN	Isabel	Spain	2011
DICHTL	Wolfgang	Austria	2010
DIDENKO	Maxim	Russia	2010
DILAVERIS	Polychronis	Greece	2006
DOMENICHINI	Giulia	Spain	2011
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

CP Certification candidates successful to exam

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
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
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
GIANNOLA	Gabriele	Italy	2008
GIL	Ricardo	Portugal	2010
GIL ORTEGA	Ignacio	Spain	2011
GJESTVANG	Finn Tore	Norway	2008
GONZALEZ-ENRIQUEZ	Susana	Spain	2008
GRADAUS	Rainer	Germany	2006
GRECU	Mihaela	Romania	2006

5. Appendix

EHRA Certification



Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

CP Certification candidates successful to exam

GUGUCHEV	Pavel	USA	2010
GUTLEBEN	Klaus Juergen	Germany	2011
HAMEL	JohnJohn	Switzerland	2010
HAMRAOUI	Karim	Netherlands	2010
HARTOG	Johannes	Netherlands	2011
HAUER	Herbert	Netherlands	2009
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
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
JASTRZEBSKI	Marek	Poland	2006
JAUREGUI ABULARACH	Miguel Eduardo	Spain	2010
JELANI	Anwar D	Canada	2010
JOHANSSON	Peter	Sweden	2008
JOHAR	Sofian	United Kingdom	2011
JONES	David Gareth	United Kingdom	2009
JONSSON	Jon Erik	Sweden	2010
KACZMAREK	Krzysztof	Poland	2010

CP Certification candidates successful to exam

KALLIANOS	Christos	Greece	2011
KARABINOS	Ilias K	Greece	2007
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	Chistophe	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
KRAVCHUK	Borys	Ukraine	2007
KRONBORG	Mads Brix	Denmark	2011
KRUPA	Wojciech	Poland	2006
KUIJPER	Aaf	Netherlands	2011
LERCHER	Peter	Austria	2010
LERNER	Martin Robert	Sweden	2010
LIEUW-A-FA	Mariska	Netherlands	2009
LINDELL	Peter	Sweden	2007
LINDGREEN	Ulf	Denmark	2008
LIPCHENCA	Igor Ariel	Israel	2008
LIPOLDOVA	Jolana	Czech Republic	2009
LITTERFELDT	Ingrid	Sweden	2008
LUBBERTVERBERKMOES	Addy	Netherlands	2010
LUEDORFF	Guido	Germany	2008
LUTHJE	Lars	Germany	2011

5. Appendix

EHRA Certification



Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

CP Certification candidates successful to exam

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
MITROWSKI	Przemyslaw	Poland	2005
MIHALCZ	Attila	Austria	2011
MLCOCHOVA	Hanka	Czech Republic	2009
MOLHOEK	Sander G	Netherlands	2008
MONNARD	Simon	Switzerland	2011
MONNINK	Stefan	Netherlands	2011
MORENO PLANAS	Javier	Spain	2005
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

CP Certification candidates successful to exam

NERI	Gianfilippo	Italy	2007
NEVEN	Kars	Germany	2007
NG	Sunanto	Netherlands	2011
NICASTIA	Deborah	Netherlands	2009
NICOLAIDES	Eleftherios	United Kingdom	2007
NOVAK	Jan	Switzerland	2011
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
PAISEY	John	United Kingdom	2008
PARAVOLIDAKIS	Konstantinos	Greece	2008
PASCALE	Patrizio	Switzerland	2009
PATWALA	Ashish	United Kingdom	2010
PAULUSSEN	Guido	Netherlands	2006
PENA HERNANDEZ	Jose Luis	Spain	2008
PEREZ ALVAREZ	Luisa	Spain	2010
PEREZ CASTELLANO	Nicasio	Spain	2005
PEREZ DIEZ	Diego	Spain	2009
PERIK	Patrick	Netherlands	2010
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

5. Appendix

EHRA Certification



Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

CP Certification candidates successful to exam

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
RIVAS GANDARA	Nuria	Spain	2010
ROBLES DE MEDINA	Ramon Mariano	Netherlands	2011
ROCA LUQUE	Ivo	Spain	2011
ROSA	Antonio	Switzerland	2011
ROSSI	Andrea	Italy	2011
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
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

CP Certification candidates successful to exam

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
SPIERENBURG	Han	Netherlands	2008
STATESCU	Cristian	Romania	2009
STEEN	Torkel	Norway	2007
STEFAN	Liliana	Czech Republic	2010
STEFAN NICOLEA	Bogdan	Romania	2009
STERLINSKI	Marciej	Poland	2006
STEVENHAGEN	Jeroen	Netherlands	2008
STOCKBURGER	Martin	Germany	2011
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
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

5. Appendix

EHRA Certification



Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)

CP Certification candidates successful to exam

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
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 HEIJDEN	Dirk	Netherlands	2010
VAN DER HEIJDEN	Robert	Netherlands	2010
VAN DER HEIJDEN	Jeroen	Netherlands	2011
VAN DER KLEY	Tim	Netherlands	2011
VAN DER WAL	Henriette	Netherlands	2010
VAN DER WEERDT	Arno Peter	Netherlands	2007
VAN DOORN	Dirk Jan	Netherlands	2011
VAN EMPEL	Vanessa	Netherlands	2010
VAN ES	Robert	Netherlands	2011
VAN GASTEL	Henk Christiaan	Netherlands	2010
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 SCHAIKVAN DER WIELEN	Marie-Louise	Netherlands	2009
VAN VLIES	Bob	Netherlands	2010
VAN WOERKENS	Leon	Netherlands	2011

CP Certification candidates successful to exam

VASILOPOULOS	Charalambos	Greece	2006
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
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



Allied Professionals

Certified Allied Professionals

ANTENBRINK	Johannes Fredericus	Netherlands	2011
ARTS	Germaine	Netherlands	2011
BIJVOET	Eleonora	Netherlands	2011
EDENS	Joran	Netherlands	2011
HOP	Henri Marco	Netherlands	2011
LA GRAND	Reinalda	Netherlands	2011
LINSEN-ABEN	Maria Helena Hendrica	Netherlands	2011
MUNOZ	Julio	Spain	2011
PISCEDDA	Valerio	Belgium	2011
SOARES	Filipe	Germany	2011
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	Yoei Walter	Netherlands	2011
VAN DOORN	Arjan	Netherlands	2011

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European Heart Rhythm Association

2035 Route des Colles
Les Templiers - BP 179
06903 Sophia Antipolis Cedex
France
Tel: +33 (0)4 92 94 76 00
Fax: +33 (0)4 92 94 86 46
Email: EHRA@escardio.org
www.escardio.org/EHRA

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