Albania · Algeria · Armenia · Austria · Belarus · Belgium · Bosnia & Herzegovina · Bulgaria · Croatia Cyprus · Czech Republic · Denmark · Egypt · Estonia · Finland · Former Yugoslav Republic of Macedonia France · Georgia · Germany · Greece · Hungary · Iceland · Ireland · Israel · Italy · Kosovo · Latvia Lebanon · Libya · Lithuania · Luxembourg · Malta · Montenegro · Morocco · Netherlands · Norway · Poland Portugal · Republic of Moldova · Romania · Russian Federation · San Marino · Serbia · Slovakia Slovenia · Spain · Sweden · Switzerland · Syria · Tunisia · Turkey · Ukraine · United Kingdom

The EHRA White Book 2010

The Current Status of Cardiac Electrophysiology in ESC Member Countries

P. Vardas, A. Auricchio, C. Wolpert



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

Preface – The European White Book of Electrophysiology: The third edition

In 2008, the first EHRA White Book of Cardiac Electrophysiology in ESC was published. The project had been launched in an attempt to assess the status quo of treatment of arrhythmias in all ESC member countries and in order to have a platform for a progressive harmonisation of access to arrhythmia treatment in all ESC countries. The cooperation of the national societies was so enthusiastic, that we were able to report 37 countries in the first edition. With the two most recent editions the number of contributing countries has even increased.

With information from the White Book on insurance and reimbursement systems, the number of centres performing different interventions and implantations and other data, we were able to enjoy very interesting discussions on "Health Care Disparities in Europe: the case of arrhythmias" during our annual EHRA Summit last year. The book serves also as a continuous reference for all our initiatives and efforts in education and training.

As stated in the previous editions, data has been collected from various sources that are cited in the White Book and most importantly, all data from third parties have been confirmed and authorised by each chairman of the national society or working group, respectively. Due to the continuous update we always present the most recent data for each year. This is why data for 2008 may differ slightly from one edition to another. In addition, the online version of the White Book is updated each time the country reports new data.

It is part of the task and privilege of EHRA to foster scientific discussion, create standards for education and training and offer help wherever necessary to harmonize treatment and access to the treatment of arrhythmias within its hemisphere. We are grateful to each of you who have worked so hard to accomplish this third edition and now we are very confident that with this new White Book we have set the ground for a continuous EHRA annual book.

We would like to express our appreciation to the European Heart House staff and to the representatives of each of the national arrhythmia societies or working groups who made this project possible.

It is our sincere hope that all the different parties involved in patient care in the field of arrhythmias will find this book both helpful and interesting. Should you have any recommendations or feedback concerning the White Book, please do not hesitate to contact us.

We look forward to working with you again in 2011.

Panos Vardas, EHRA President (2009-2011)

Angelo Auricchio, EHRA President Elect

Christian Wolpert, Chairman National Societies

Table of Contents

1. Scope and Methodology

2. ESC Countries Overview	5
Albania	7
Algeria	9
Armenia	11
Austria	21
Belarus	31
Belgium	41
Bosnia & Herzegovina	51
Bulgaria	53
Croatia	63
Cyprus	73
Czech Republic	83
Denmark	93
Egypt	103
Estonia	113
Finland	123
Former Yugoslav Republic of Macedonia	133
France	143
Georgia	153
Germany	163
Greece	173
Hungary	183
Iceland	193
Ireland	195
Israel	205
Italy	215
Kosovo	225
Latvia	227
Lebanon	237

4

239

Libya

241
251
261
263
273
275
285
295
305
315
317
327
337
339
349
359
369
379
389
399
401
411
413
415
425

4. Appendix - EHRA Accreditation

431

1. Scope and Methodology

The EHRA White Book is in its third edition and this year it presents again the status of the cardiac rhythm management sector per country separated in eleven sections.

The book contains only countries which are members of the European Society of Cardiology.

The book is divided in eleven sections as follows:

- 1. Statistics and demographic information
- 2. Country
- 3. Healthcare system
- 4. Education
- 5. Pacemakers
- 6. Cardiac resynchronization therapy devices
- 7. Implantable cardiac defibrillator
- 8. Loop recorders
- 9. Device specifics
- 10. Interventional electrophysiology
- 11. Guidelines

Following similar methodology of the EHRA White Book 2008 and 2009, 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. In order to gather the data, the societies and working groups used 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.

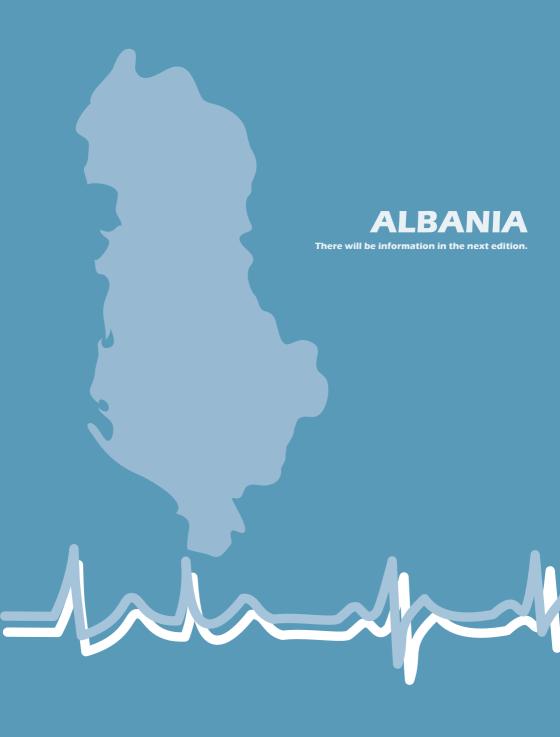
Some countries, however, did not have available data for all of the sections of the book.

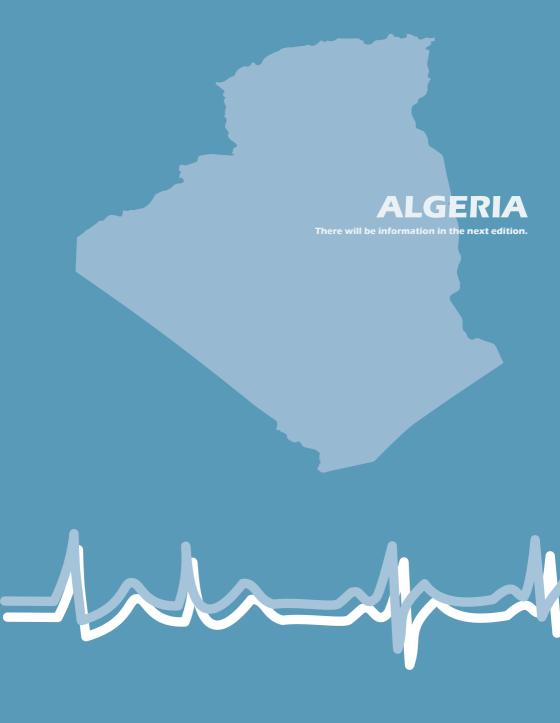
The primary and secondary research was undertaken from February 2010 until middle of May 2010.

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

2. ESC Countries Overview





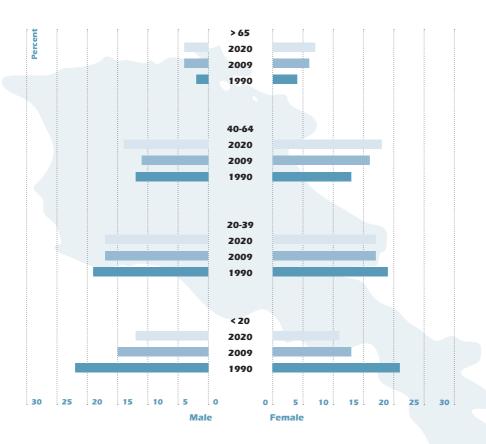


ARMENIA



1. Statistics

Age pyramid for Armenia



Healthcare data

Hospitals (per 100.000 population)	4,18	2007
Beds (per 100.000 population)	406,82	2007
Density of physicians (per 1.000 population)	3,44	2007
Density of nurses (per 1.000 population)	4,13	2007

Demographic information

Population annual growth rate (%)	0	2009
Life expectancy at birth	73,08	2003
Death rate (per 1.000 population)	8,42	2006
Live births (per 1.000 population)	12,42	2006

Economic information

Gross domestic product (U.S dollar-billions)	8,68*	2008
Gross domestic product per capita (U.S dollar-units)	2.658,05*	2008
Total expenditure on health as % of GDP	4,7	2006
General government expenditure on health		
as % of total expenditure on health	41,2	2006
Private expenditure on health		
as % of total expenditure on health	58,8	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	42.404 per 100.000 citizens
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	49,9%
2009	not available

3. Healthcare System

In Armenia, the National Health System fund covers all emergencies and children under seven years old and maternity care. The fund rises every year by average 10 to 12%. Unfortunately, the NHS fund does not cover any kind of heart rhythm management for children or adults, including pacemaker implants nor ablations for life threatening arrhythmias.

Basic insurance availability

No

Percentage of insured and uninsured citizens

Omnisured citizens		•	50	100
Uninsured citizens	65%			
Insured citizens	35%			

Distribution of insurance modality

		0	50	100
Private co-payment	65%			
Private insurance company	2%			
Public insurance company	33%			

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy	
ICD devices	✓
Pacemakers	✓
Ablation	✓
Patients and families are forced to pay for all hospital costs and for th not have a private insurance.	e devices if they do
Reimbursement availability	
Internal loop recorders	
ICD primary prevention	
ICD secondary prevention	
CRT devices	
Ablation	
Unlimited availability of treatment	
4. Education National accreditation availability	
Device therapy	
Invasive electrophysiology	
There is a course of arrhythmology in the general cardiology course.	
National accreditation for physicians	No
National accreditation for centres	Yes
National Society supporting EHRA accreditation system	Yes

Specialty required for ICD or pacemaker implants

No

Required period of training to perform implantations

No

Training centres availability

Pacemaker	3
ICD implantation	1
Electrophysiological studies and catheter ablation	1
CRT implantation	1
Atrial fibrillation ablation	0

Number of medical faculties

5

Percentage of academic facilities among practicing EP and implant centres

100%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

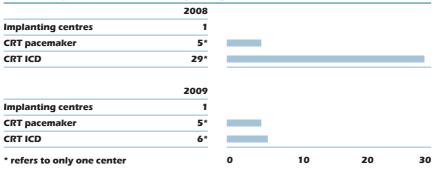
	2008				
Implanting centres	3				
New implants	231				
Replacements	67				
	2009				
Implanting centres	3				
New implants	164				
Replacements	47				
		0	100	200	300

Specialty performing implants

Cardiologists	97%
Surgeons	3%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

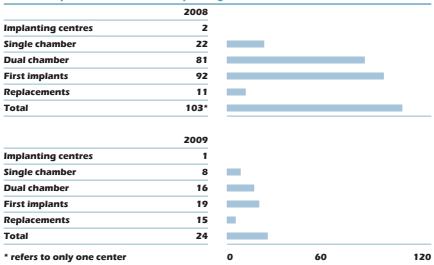


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders in	iplanted and number	of implanting centres
-------------------	---------------------	-----------------------

Loop recorders implanted and n	umber of implanting centres	
	2008	
Implanting centres	0	
Loop recorders	0	
	2009	
Implanting centres	0	
Loop recorders	0	
Specialty performing implants		
Cardiologists		100%
Surgeons		0%
Availability of remote monitoring	ng of devices	
ICD		
Pacing		
Electrophysiology		
Availability of a national quality	y insurance system or complication registry	y No
Availability of a national institu	tion coordinating and guiding device reca	IIs No

10. Interventional electrophysiology

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	179	146
Mean number (ablations/centres)	179	146
Number of AF ablations	0	1

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	ゼ
European	

Necessity of guideline translation to national language

Yes

1

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres	V				
Lack of reimbursement, limited financial resources				\checkmark	
Lack of referral			\checkmark		
Lack of trained personnel				\checkmark	
Low awareness of guidelines					\checkmark
Lack of operators				\checkmark	

1 = no obstacle

5 = great obstacle

Sources: Armenian Working Group of Arrhythmology – Chairman: Prof. Svetlana Grigoryan and Armenian Working Group on Cardiac Pacing and Electrophysiology – Chairman: Dr. Smbat Jamalyan

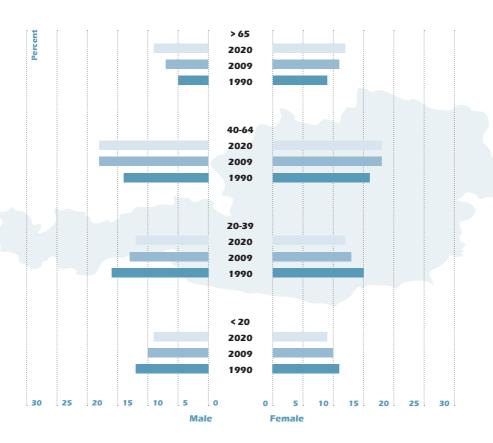
20 · The White Book 2010

AUSTRIA



1. Statistics

Age pyramid for Austria



Healthcare data

Hospitals (per 100.000 population)	3,25	2007
Beds (per 100.000 population)	776,34	2007
Density of physicians (per 1.000 population)	3,75	2007
Density of nurses (per 1.000 population)	6,35	2007

Demographic information

Population annual growth rate (%)	0,1	2009
Life expectancy at birth	80,74	2008
Death rate (per 1.000 population)	9,01	2008
Live births (per 1.000 population)	9,33	2008

Economic information

Gross domestic product (U.S dollar-billions)	374,41*	2009
Gross domestic product per capita (U.S dollar-units)	45.090,49*	2009
Total expenditure on health as % of GDP	9,9	2006
General government expenditure on health		
as % of total expenditure on health	77	2006
Private expenditure on health		
as % of total expenditure on health	23	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	400,7 per 100.000 citizens
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	44%
2009	not available

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 avai	labi	lity
-------	----------------	------	------

Yes

Percentage of insured and uninsured citizens

Insured citizens	97,6%			
Uninsured citizens	2,4%			
		0	50	100

Distribution of insurance modality

	•	50	10
0%			
15-20%			
80-85%			
	15-20%	15-20%	15-20%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	
ICD primary prevention	
ICD secondary prevention	
CRT devices	
Ablation	✓
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
Subspeciality Diploma Cardiologist ("Facharzt für Kardiologie")	
National accreditation for centres	No
Next and Contact and a FURA areas disease and an	W
National Society supporting EHRA accreditation system	Yes
Specialty required for eatherer ablation	Yes
Specialty required for catheter ablation Mostly cardiologists (EP doctors), few surgeons	res
mostly cardiologists (EF doctors), few surgeons	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist surgeon	103

Required period of training to perform implantations

No

Training centres availability*

not available
not available
not available
not available
not available

^{*} Training centres are available in the country, but the numbers are unknown.

Number of medical faculties

4

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

5. Pacemakers

Pacemaker units implanted

		0	4.000	8.000
2009	7.930			
2008	7.570			

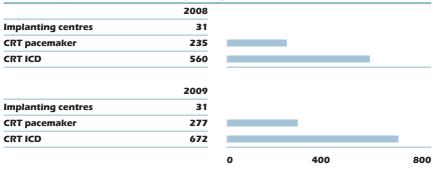
Pacemaker units implanted and number of implanting centres

Specialty performing implants

Cardiologists	30%
Surgeons	70%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	35%
Surgeons	65%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008			
Implanting centres	32			
Single chamber	561			
Dual chamber	539			
First implants	825			
Replacements	275		I	
Total	1.100			
	2009			
Implanting centres	32			
Single chamber	696			
Dual chamber	594			
First implants	not available			
Replacements	not available			
Total	1.290			
		0	700	1.4

Specialty performing implants

Cardiologists	25%
Surgeons	75%

8. Loop recorders

Loop recorders implanted and number of implanting centre	Loo	p recorders	s implanted	d and number	of implanti	ing centres
--	-----	-------------	-------------	--------------	-------------	-------------

	2008			
Implanting centres	not available			
Loop recorders	320			
	2009			
Implanting centres	not available			
Loop recorders	not available			
		0	200	400
Specialty performing imp	olants			
Cardiologists				90%
•				
9. Device specific	onitoring of devices			
9. Device specific Availability of remote me	onitoring of devices			
9. Device specific Availability of remote me National registry for ICD*	onitoring of devices			✓
9. Device specific Availability of remote me National registry for ICD* Pacing**	onitoring of devices			▼
9. Device specific Availability of remote me National registry for ICD* Pacing** Electrophysiology***				✓✓✓
9. Device specific Availability of remote me National registry for ICD* Pacing** Electrophysiology*** * In preparation (ÖBIG ** Austrian PM Registry	1			10%
9. Device specific Availability of remote me National registry for ICD* Pacing** Electrophysiology*** * In preparation (ÖBIG) gistry	/stem or comp	olication registry	✓ ✓

Availability of a national institution coordinating and guiding device recalls

GÖG, ÖBIG, BMGFJ (Ministry of Health)

Yes

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	1.362	1.400*
Mean number (ablations/centres)	97	100
Number of AF ablations	293	>300*

^{*} approx.

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	\checkmark
European	\checkmark

Necessity of guideline translation to national language

No

Obstacles to guideline implementation

2	3	4	5
V			
	V		
	\checkmark		
	V		
	V		
		abla	
	_		

1 = no obstacle

5 = great obstacle

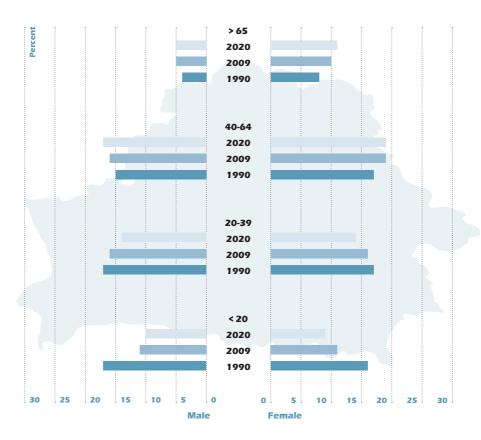
Sources: Austrian Working Group of Electrophysiology – Chairman: Dr. Bernhard Strohmer, Statistics Austria and National Ablation Registry

BELARUS



1. Statistics

Age pyramid for Belarus



Healthcare data

Hospitals (per 100.000 population)	7,24	2007
Beds (per 100.000 population)	1.122,87	2007
Density of physicians (per 1.000 population)	4,84	2007
Density of nurses (per 1.000 population)	11,98	2007

Demographic information

Population annual growth rate (%)	-0,4	2009
Life expectancy at birth	70,37	2007
Death rate (per 1,000 population)	13,71	2007
Live births (per 1,000 population)	11,14	2008

Economic information

Cross domestic and dest (U.S. dollar billions)	40.04*	2009
Gross domestic product (U,S dollar-billions)	49,04*	2009
Gross domestic product per capita (U.S dollar-units)	5.121,79*	2009
Total expenditure on health as % of GDP	6,4	2006
General government expenditure on health		
as % of total expenditure on health	74,9	2006
Private expenditure on health		
as % of total expenditure on health	25,1	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	732 per 100.000 citizens		
2009	760,9 per 100.000 citizens		

Proportion cardiac mortality over total mortality of the country

2008	52,6%
2009	54%

3. Healthcare System

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

Basic insurance availability				
Percentage of insured and unins	ured citizens			
Insured citizens	100%			
Uninsured citizens	0%			
		0	50	100
Distribution of insurance modal	ity			
Public insurance company	100%			
Private insurance company	1%	1		
Private co-payment	3%			
		0	50	100
Possibility of subscribing to priv	ate health in	surance plans	:	Yes
Co-payment necessary for the fo	llowing thera	ару		
ICD devices				
Pacemakers				
Ablation				

Reimbursement availability Internal loop recorders	✓
ICD primary prevention	
ICD secondary prevention	
CRT devices	
Ablation	
Unlimited availability of treatment	
There is a limited number of procedures per year, but everything is for free.	
4. Education	
National accreditation availability	
Device therapy	V
Invasive electrophysiology	\checkmark
Roentgen-endovascular surgery	
National accreditation for physicians	Yes
National accreditation for centres	Yes
National Society supporting EHRA accreditation system	No
Specialty required for catheter ablation	Yes
Rentgen-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

ICD implantation	1
Electrophysiological studies and catheter ablation	1
CRT implantation	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

		0	1.000	2.000
2009	1.892			
2008	1.586			

Pacemaker units implanted and number of implanting centres

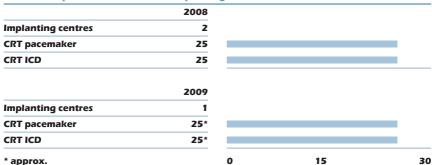
	2008
Implanting centres	8
New implants	not available
Replacements	not available
	2009
Implanting centres	8
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	0%
Surgeons	100%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	0%
Surgeons	100%

7. Implantable Cardiac Defibrillator

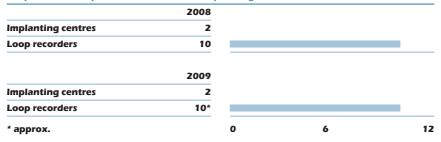
	2008		
Implanting centres	2		
Single chamber	not available		
Dual chamber	not available		
First implants	not available		
Replacements	not available		
Total	40		
	2009		
Implanting centres	2		
<u> </u>			
Single chamber	2		
Single chamber Dual chamber	2 not available		
Implanting centres Single chamber Dual chamber First implants Replacements	2 not available not available		
Single chamber Dual chamber First implants	not available not available not available		

Specialty performing implants

Cardiologists	99%
Surgeons	1%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	0%
Surgeons	100%

9. Device specific

J	Availability of	f remote monitorin	ıg ol	devices	

National registry for

ICD*	\checkmark
Pacing*	
Electrophysiology	

^{*} IPG-Registry

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

Yes

Republican Scientific and Practical Center of Cardiology and Ministry of Health

10. Interventional electrophysiology

Number of performing catheter ablation centres

 Z008
 2009

 Number of ablations performed
 170
 419

 Mean number (ablations/centres)
 85
 140

 Number of AF ablations
 14
 33

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	\checkmark
U.S.	
European	V

Necessity of guideline translation to national language

Yes

3

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres	V				
Lack of reimbursement, limited financial resources		\checkmark			
Lack of referral		\checkmark			
Lack of trained personnel		\checkmark			
Low awareness of guidelines		\checkmark			
Lack of operators		\checkmark			

1 = no obstacle

5 = great obstacle

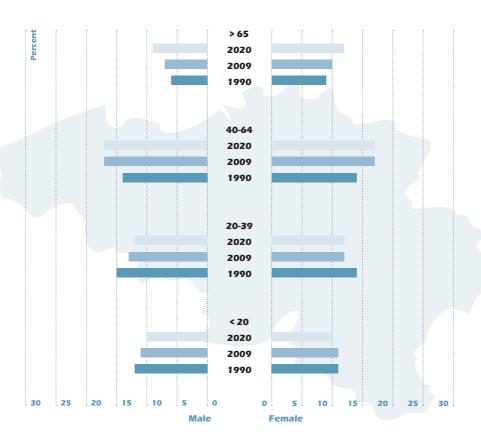
Sources: Scientific laboratory of heart arrhythmias - Chief: Prof. Alexander Mrochek

BELGIUM



1. Statistics

Age pyramid for Belgium



Healthcare data

Hospitals (per 100.000 population)	1,98	2007
Beds (per 100.000 population)	522,93	2007
Density of physicians (per 1.000 population)	4,18	2006
Density of nurses (per 1.000 population)	13,41	2004

Demographic information

D		2000
Population annual growth rate (%)	0,1	2009
Life expectancy at birth	79,0	2006
Death rate (per 1.000 population)	10,23	1999
Live births (per 1.000 population)	11,36	2007

Economic information

Gross domestic product (U.S dollar-billions)	461.48*	2009
Gross domestic product per capita (U.S dollar-units)	42.964,68*	2009
Total expenditure on health as % of GDP	9,5	2006
General government expenditure on health		
as % of total expenditure on health	71,1	2006
Private expenditure on health		
as % of total expenditure on health	28,9	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	not available
2009	not available

3. Healthcare System

Belgium has a compulsory healthcare system based on the social health insurance model. It is 99% insured via the 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

Insured citizens	99%			
Uninsured citizens	1%	<u> </u>		
		0	50	100

Distribution of insurance modality

Public insurance company	100%		
Private insurance company	20%		
Private co-payment	20%		
		0	50

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy	
ICD devices	✓
Pacemakers	\checkmark
Ablation	\checkmark
Minimal co-payment for pharmacy costs.	
Reimbursement availability	
Internal loop recorders	\checkmark
ICD primary prevention	
ICD secondary prevention	\checkmark
CRT devices	\checkmark
Ablation	✓
Unlimited availability of treatment	
Primary prevention with ICDs is limited to maximal 40% of all new ICD implants.	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres to perform EP	No
Accreditation is on a voluntary basis; different systems	
National Society supporting EHRA accreditation system	No
Specialty required for catheter ablation	Yes
Cardiologist	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist or surgeon	

BeHRA guidelines

Required period of training to perform implantations

No

Training centres availability

Pacemaker	50
ICD implantation	27
Electrophysiological studies and catheter ablation	42
CRT implantation	40
Atrial fibrillation ablation	25

^{*} approx.

Number of medical faculties

7

Percentage of academic facilities among practicing EP and implant centres

20%

5. Pacemakers

Pacemaker units implanted

* approx.		0	5.000	10.000
2009	9.249			
2008	9.000*			

Pacemaker units implanted and number of implanting centres

	2008
	2008
Implanting centres	110
New implants	not available
Replacements	not available
	2009
Implanting centres	106
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	65%
Surgeons	35%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	85%
Surgeons	15%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008		
Implanting centres	32		
Single chamber	not available		
Dual chamber	not available		
First implants	1.250		
Replacements	500		
Total	1.750*		
Implanting centres	2009		
Single chamber	not available		
Dual chamber	not available		
First implants	1.300		
Replacements	500		
Total	1.800*		

Specialty performing implants

Cardiologists	70%
Surgeons	30%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008			
Implanting centres	10			
Loop recorders	25			
	2009			
Implanting centres	20			
Loop recorders	50			
		0	25	50

 \checkmark

 \checkmark

Specialty performing implants

Cardiologists	95%
Surgeons	5%

9. Device specific

	_
Availability of remote monitoring of devices	✓
National registry for	
ICD*	✓

Electrophysiology**

* Riziv database

Pacing**

** BeHRA database

Availability of a national quality insurance system or complication registry	No
Availability of a national institution coordinating and guiding device recalls	Yes

FAGG

10. Interventional electrophysiology

Number	of	performina	catheter	ablation	centres

	2008	2009
Number of ablations performed	4.283	4.932
Mean number (ablations/centres)	101	117
Number of AF ablations	912	1.322

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	
European	lacksquare

Necessity of guideline translation to national language

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres	V				
Lack of reimbursement, limited financial resources					
Lack of referral					
Lack of trained personnel		\checkmark			
Low awareness of guidelines			\checkmark		
Lack of operators					

1 = no obstacle 5 = great obstacle

42

No

Sources: Belgian Heart Rhythm Association (BeHRA)

50 · The White Book 2010

BOSNIA & HERZEGOVINA

There will be information in the next edition.

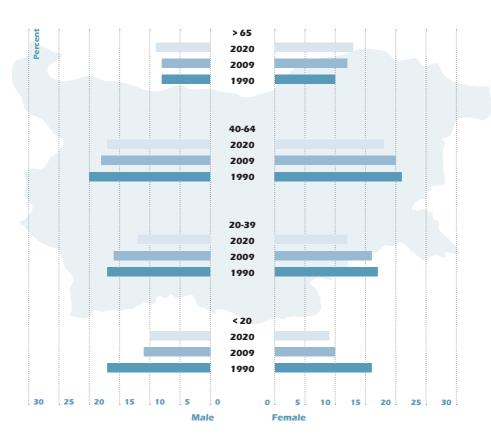


BULGARIA



1. Statistics

Age pyramid for Bulgaria



Healthcare data

Hospitals (per 100.000 population)	4,44	2007
Beds (per 100.000 population)	636,43	2007
Density of physicians (per 1.000 population)	3,64	2007
Density of nurses (per 1.000 population)	4,21	2007

Demographic information

Population annual growth rate (%)	-0,8	2009
Life expectancy at birth	72,77	2006
Death rate (per 1.000 population)	14,73	2006
Live births (per 1.000 population)	9,61	2006

Economic information

Gross domestic product (U.S dollar-billions)	44,77*	2009
Gross domestic product per capita (U.S dollar-units)	5.916,22*	2009
Total expenditure on health as % of GDP	6,9	2006
General government expenditure on health		
as % of total expenditure on health	59,8	2006
Private expenditure on health		
as % of total expenditure on health	40,2	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

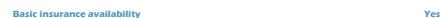
2008	988 per 100.000 citizens
2009	945 per 100.000 citizens

Proportion cardiac mortality over total mortality of the country

2008	68%
2009	66%

3. Healthcare System

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



Percentage of insured and uninsured citizens

		0	50	100
Uninsured citizens	14%			
Insured citizens	86%			

Distribution of insurance modality

		0	50	100
Private co-payment	37,1%			
Private insurance company	0,9%	1		
Public insurance company	62%			

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 all pacemakers except VVI type which is confund.	vered by the NHS
Reimbursement availability	
Internal loop recorders	
ICD primary prevention	
ICD secondary prevention	
CRT devices	
Ablation	\checkmark
Unlimited availability of treatment	
The NHS Fund does not cover ablation of atrial fibrillation.	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
The National standards for device therapy and invasive electrophysiolo	
of regulation	gy are in process
National accreditation for physicians	No
The National accreditation for physicians is in process of regulation.	
National accreditation for centres	No
The National accreditation for physicians is in process of regulation.	
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation	Yes
Cardiology	
Specialty required for ISD or accomplish implants	Yes
Specialty required for ICD or pacemaker implants	Yes
Cardiology, surgery	

Required period of training to perform implantations

2 years

Training centres availability

2
2
1
1
1

Number of medical faculties

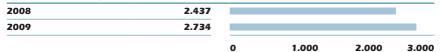
5

Percentage of academic facilities among practicing EP and implant centres

71,4%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

	2008				
Implanting centres	14				
New implants	2.159				
Replacements	278				
	2009				
Implanting centres	14				
New implants	2.323				
Replacements	411				
		0	800	1.600	2.4

Specialty performing implants

Cardiologists	82,4%
Surgeons	17,6%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

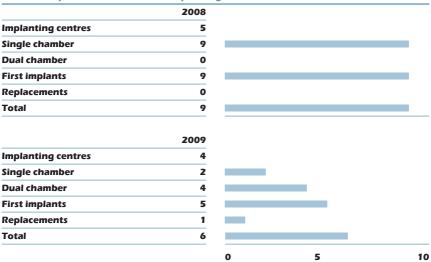
-		_			
	2008				
Implanting centres	6				
CRT pacemaker	62				
CRT ICD	15				
	2009				
Implanting centres	6				
CRT pacemaker	80				
CRT ICD	4				
		0	30	60	90

Specialty performing implants

Cardiologists	99%
Surgeons	1%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	99%
Surgeons	1%

8. Loop recorders

	2008			
Implanting centres	1			
Loop recorders	1			
	2009			
Implanting centres	1			
Loop recorders	1			
·		0	1	2
Specialty performing implant	s			4000
Cardiologists Surgeons				100%
9. Device specific Availability of remote monitor	oring of devices			☑
National registry for				
ICD				
ICD Pacing				
ICD Pacing Electrophysiology*				
ICD Pacing	Heart Hospital			

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	290	309
Mean number (ablations/centres)	290	309
Number of AF ablations	15	28

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	
European	\checkmark

Necessity of guideline translation to national language

Yes

1

Obstacles to guideline implementation

1	2	3	4	5
V				
				\checkmark
	\checkmark			
			\checkmark	

1 = no obstacle

5 = great obstacle

Sources: Bulgarian Working Group on Arrhythmias – Chairman: Dr. Svetoslav lovev and National Statistical Institute

62 · The White Book 2010

CROATIA



1. Statistics

Age pyramid for Croatia



Healthcare data

Hospitals (per 100.000 population)	1,73	2007
Beds (per 100.000 population)	534,6	2007
Density of physicians (per 1.000 population)	2,59	2007
Density of nurses (per 1.000 population)	5,24	2007

Demographic information

Population annual growth rate (%)	-0,1	2009
Life expectancy at birth	76,14	2008
Death rate (per 1.000 population)	11,76	2008
Live births (per 1.000 population)	9,87	2008

Economic information

Gross domestic product (U,S dollar-billions)	61,72*	2009
Gross domestic product per capita (U.S dollar-units)	13.913,10*	2009
Total expenditure on health as % of GDP	7,5	2006
General government expenditure on health		
as % of total expenditure on health	80,1	2006
Private expenditure on health		
as % of total expenditure on health	19,9	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	50%
2009	50%

3. Healthcare System

The Croatian healthcare system is based on the Health Insurance Institute in addition to private insurances.

Basic insurance availability				Yes
Percentage of insured and uninsular Insured citizens				
	90%			
Uninsured citizens	10%			
		0	50	10
Distribution of insurance modalit	ty			
Public insurance company	90%			
Private insurance company	3%			
Private co-payment	7 %			
		0	50	100
Possibility of subscribing to priva	ite health in:	surance plans		Yes
Co-payment necessary for the fol	lowing ther	ару		
ICD devices				
Pacemakers				

Ablation

Reimbursement availability	
Internal loop recorders	
ICD primary prevention	
ICD secondary prevention	
CRT devices	
Ablation	
Unlimited availability of treatment	
Number of implantations and of ablations is limited by budget.	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres	Yes
National Society supporting EHRA accreditation system	Yes
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	4
ICD implantation	4
Electrophysiological studies and catheter ablation	2
CRT implantation	4
Atrial fibrillation ablation	0

Number of medical faculties

4

Percentage of academic facilities among practicing EP and implant centres

60%

5. Pacemakers

Pacemaker units implanted

		0	800	1.600	2.400
2009	2.274				
2008	2.166				

Pacemaker units implanted and number of implanting centres

	2008			
Implanting centres	11			
New implants	1.794			
Replacements	372			
	2009			
Implanting centres	11			
New implants	not available			
Replacements	not available			
		0	1.000	2.0

Specialty performing implants

Cardiologists	70%
Surgeons	30%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

-		_			
	2008				
Implanting centres	4				
CRT pacemaker	21				
CRT ICD	2				
	2009				
Implanting centres	7				
CRT pacemaker	18				
CRT ICD	17				
		0	8	16	24

Specialty performing implants

Cardiologists	30%
Surgeons	70%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



		and the second
Specialty	performing	implants

Cardiologists	70%
Surgeons	30%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008		
Implanting centres	0		
Loop recorders	0		
	2009		
Implanting centres	2009		

Specialty performing implants

Cardiologists	not available
Surgeons	not available

9. Device specific

Availability of remote monitoring of devices	L	_
--	---	---

National registry for

ICD	\checkmark
Pacing	
Electrophysiology	✓

Croatian Registry on Cardiac Pacing, ICD and Electrophysiology

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

Yes

Croatian Ministry of Health

10. Interventional electrophysiology

Number of performing catheter ablation centres

Z008Z009Number of ablations performed264not availableMean number (ablations/centres)68not availableNumber of AF ablations0not available

11. 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

	1	2	3	4	5
Lack of centres		V			
Lack of reimbursement, limited financial resources					V
Lack of referral			\checkmark		
Lack of trained personnel			\checkmark		
Low awareness of guidelines	V				
Lack of operators			\checkmark		

1 = no obstacle

5 = great obstacle

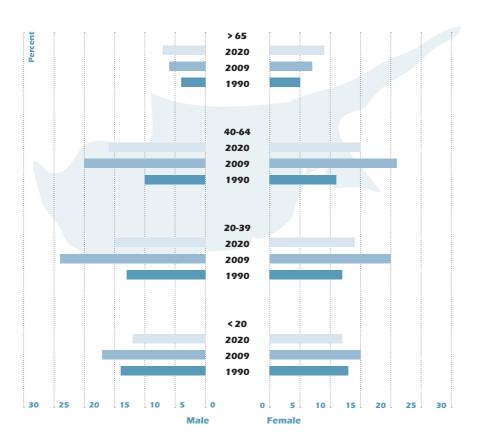
Sources: Working Group on Arrhythmias and Cardiac Pacing of the Croatian Cardiac Society – Chairman: Prof. Dubravko Petrac, Croatian Registry on Cardiac Pacing, ICD and Electrophysiology

CYPRUS



1. Statistics

Age pyramid for Cyprus



Healthcare data

Hospitals (per 100.000 population)	1,3	2006
Beds (per 100.000 population)	300	2006
Density of physicians (per 1.000 population)	2,53	2006
Density of nurses (per 1.000 population)	4,36	2006

Demographic information

Population annual growth rate (%)	1,7	2009
Life expectancy at birth	80,44	2007
Death rate (per 1.000 population)	6,39	2007
Live births (per 1.000 population)	10,19	2007

Economic information

Gross domestic product (U.S dollar-billions)	23,22*	2009
Gross domestic product per capita (U.S dollar-units)	30.238,56*	2009
Total expenditure on health as % of GDP	6,3	2006
General government expenditure on health		
as % of total expenditure on health	44,8	2006
Private expenditure on health		
as % of total expenditure on health	55,2	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	720 per 100.000 citizens
2009	720 per 100.000 citizens

Proportion cardiac mortality over total mortality of the country

2008	29%
2009	29%

3. Healthcare System

In Cyprus, free medical care is provited based on income criteria to above 85% of the population.

Private care is also available in the country.

Basic	insurance	availab	oilit	У
-------	-----------	---------	-------	---

No

Percentage of insured and uninsured citizens

Distribution of insurance modality

		0	50	100
Private co-payment	not available			
Private insurance company	30%			
Public insurance company	70%			ı

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

CD devices	Co-payment necessary for the following therapy	
Ablation	ICD devices	
Income criteria apply Reimbursement availability Internal loop recorders ICD primary prevention ICD secondary prevention ICD secondary prevention ICD secondary prevention Income criteria apply 4. Education National accreditation availability Device therapy Invasive electrophysiology Invasive electrophysiology National accreditation for physicians Yes National Society supporting EHRA accreditation system Yes Specialty required for catheter ablation Yes Cardiologist	Pacemakers	
Reimbursement availability Internal loop recorders	Ablation	
Internal loop recorders ICD primary prevention ICD secondary prevention CRT devices Ablation Unlimited availability of treatment Income criteria apply 4. Education National accreditation availability Device therapy Invasive electrophysiology National accreditation for physicians National accreditation for centres No National Society supporting EHRA accreditation system Yes Specialty required for catheter ablation Cardiologist Specialty required for ICD or pacemaker implants Yes	Income criteria apply	
Internal loop recorders ICD primary prevention ICD secondary prevention CRT devices Ablation Unlimited availability of treatment Income criteria apply 4. Education National accreditation availability Device therapy Invasive electrophysiology National accreditation for physicians National accreditation for centres No National Society supporting EHRA accreditation system Yes Specialty required for catheter ablation Cardiologist Specialty required for ICD or pacemaker implants Yes		
Internal loop recorders ICD primary prevention ICD secondary prevention CRT devices Ablation Unlimited availability of treatment Income criteria apply 4. Education National accreditation availability Device therapy Invasive electrophysiology National accreditation for physicians National accreditation for centres No National Society supporting EHRA accreditation system Yes Specialty required for catheter ablation Cardiologist Specialty required for ICD or pacemaker implants Yes		
ICD primary prevention CRT devices CRT d		
ICD secondary prevention CRT devices Ablation Unlimited availability of treatment Income criteria apply 4. Education National accreditation availability Device therapy Invasive electrophysiology National accreditation for physicians National accreditation for centres No National accreditation for centres No National Society supporting EHRA accreditation system Yes Specialty required for catheter ablation Yes Cardiologist Specialty required for ICD or pacemaker implants Yes		
CRT devices Ablation Unlimited availability of treatment Income criteria apply 4. Education National accreditation availability Device therapy Invasive electrophysiology National accreditation for physicians Yes National accreditation for centres No National Society supporting EHRA accreditation system Yes Specialty required for catheter ablation Yes Cardiologist Specialty required for ICD or pacemaker implants Yes		
Ablation		
Unlimited availability of treatment Income criteria apply 4. Education National accreditation availability Device therapy Invasive electrophysiology Invasive electrophysiology National accreditation for physicians Yes National accreditation for centres No National Society supporting EHRA accreditation system Yes Specialty required for catheter ablation Cardiologist Specialty required for ICD or pacemaker implants Yes	CRT devices	
A. Education National accreditation availability Device therapy	Ablation	
4. Education National accreditation availability Device therapy Invasive electrophysiology National accreditation for physicians Yes National accreditation for centres No National Society supporting EHRA accreditation system Yes Specialty required for catheter ablation Yes Cardiologist Yes	Unlimited availability of treatment	
National accreditation availability Device therapy	Income criteria apply	
National accreditation availability Device therapy		
National accreditation availability Device therapy		
Device therapy	4. Education	
Device therapy		
Invasive electrophysiology National accreditation for physicians No National accreditation for centres No National Society supporting EHRA accreditation system Yes Specialty required for catheter ablation Yes Cardiologist Specialty required for ICD or pacemaker implants Yes	<u>-</u>	
National accreditation for physicians No National accreditation for centres No National Society supporting EHRA accreditation system Yes Specialty required for catheter ablation Cardiologist Specialty required for ICD or pacemaker implants Yes		
National accreditation for centres No National Society supporting EHRA accreditation system Yes Specialty required for catheter ablation Yes Cardiologist Specialty required for ICD or pacemaker implants Yes	Invasive electrophysiology	
National accreditation for centres No National Society supporting EHRA accreditation system Yes Specialty required for catheter ablation Yes Cardiologist Specialty required for ICD or pacemaker implants Yes		
National accreditation for centres No National Society supporting EHRA accreditation system Yes Specialty required for catheter ablation Yes Cardiologist Specialty required for ICD or pacemaker implants Yes		
National Society supporting EHRA accreditation system Specialty required for catheter ablation Cardiologist Specialty required for ICD or pacemaker implants Yes	National accreditation for physicians	Yes
National Society supporting EHRA accreditation system Specialty required for catheter ablation Cardiologist Specialty required for ICD or pacemaker implants Yes		
National Society supporting EHRA accreditation system Specialty required for catheter ablation Cardiologist Specialty required for ICD or pacemaker implants Yes		
Specialty required for catheter ablation Yes Cardiologist Specialty required for ICD or pacemaker implants Yes	National accreditation for centres	No
Specialty required for catheter ablation Yes Cardiologist Specialty required for ICD or pacemaker implants Yes		
Specialty required for catheter ablation Yes Cardiologist Specialty required for ICD or pacemaker implants Yes		
Cardiologist Specialty required for ICD or pacemaker implants Yes	National Society supporting EHRA accreditation system	Yes
Cardiologist Specialty required for ICD or pacemaker implants Yes		
Cardiologist Specialty required for ICD or pacemaker implants Yes		
Specialty required for ICD or pacemaker implants Yes		Yes
	Cardiologist	
	Specialty required for ICD or presmatter implants	Vac
		Yes

Required period of training to perform implantations

No

Training centres availability

Pacemaker	2
ICD implantation	1
Electrophysiological studies and catheter ablation	1
CRT implantation	1
Atrial fibrillation ablation	0

Number of medical faculties*

Percentage of academic facilities among practicing EP and implant centres

0%

5. Pacemakers

Pacemaker units implanted

)	100	200	300
2009	200				
2008	250				

Pacemaker units implanted and number of implanting centres

	2008
Implanting centres	4
New implants	not available
Replacements	not available
	2009
Implanting centres	5
New implants	not available
Replacements	not available

^{*} Medical school to be established in 2012

Specialty performing implants

Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2008				
Implanting centres	2				
CRT pacemaker	not available				
CRT ICD	24				
	2009				
Implanting centres	2				
CRT pacemaker	not available				
CRT ICD	22				
		0	10	20	30

Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008	
Implanting centres	3	
Single chamber	0	
Dual chamber	35	
First implants	30	
Replacements	5	
Total	35	
	2009	
Implanting centres	3	
Single chamber	0	
Dual chamber	36	
First implants	30	
Replacements	6	
Total	36	

Specialty performing implants

Cardiologists	100%
Surgeons	0%

 $\overline{\mathbf{A}}$

No

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008			
Implanting centres	2			
Loop recorders	7			
	2009			
Implanting centres	2			
Loop recorders	6			
		0	4	8

Specialty performing implants

Availability of remote monitoring of devices

Cardiologists	100%
Surgeons	0%

9. Device specific

National registry for	
ICD	
Pacing	
Electrophysiology	
Availability of a national quality insurance system or complication registry	No

Availability of a national institution coordinating and guiding device recalls

10. Interventional electrophysiology

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	12	20
Mean number (ablations/centres)	6	10
Number of AF ablations	0	0

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	
European	✓

Necessity of guideline translation to national language

Yes

2

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres		\checkmark			
Lack of reimbursement, limited financial resources				\checkmark	
Lack of referral			\checkmark		
Lack of trained personnel			\checkmark		
Low awareness of guidelines		\checkmark			
Lack of operators		\checkmark			

1 = no obstacle

5 = great obstacle

Sources: Cyprus Working Group in Arrhythmia and Cyprus Society of Cardiology –

President: Loizos Antoniades MD PhD FESC FACC

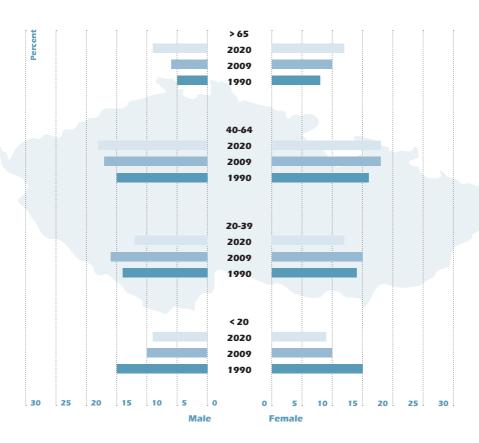
82 · The White Book 2010

CZECH REPUBLIC



1. Statistics

Age pyramid for Czech Republic



Healthcare data

Hospitals (per 100.000 population)	3,34	2007
Beds (per 100.000 population)	810,52	2007
Density of physicians (per 1.000 population)	3,57	2007
Density of nurses (per 1.000 population)	8,43	2007

Demographic information

Population annual growth rate (%)	-0,1	2009
Life expectancy at birth	77,42	2008
Death rate (per 1.000 population)	10,06	2008
Live births (per 1.000 population)	11,46	2008

Economic information

Gross domestic product (U.S dollar-billions)	189,66*	2009
Gross domestic product per capita (U.S dollar-units)	18.193,65*	2009
Total expenditure on health as % of GDP	6,8	2006
General government expenditure on health		
as % of total expenditure on health	87,9	2006
Private expenditure on health		
as % of total expenditure on health	12,1	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	511,1 per 100.000 citizens
2009	515,7 per 100.000 citizens*

^{*} approx.

Proportion cardiac mortality over total mortality of the country

2008	49,8%
2009	50,3%*

^{*} approx.

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 copayment. (Source: Health Care System in Transition: Czech Republic. European Observatory on Health Systems and Policies, 2005)

Basic insurance availability	1
-------------------------------------	---

Yes

Percentage of insured and uninsured citizens

Insured citizens	99,9 %			
Uninsured citizens	0,1%	1		
		0	50	100

Distribution of insurance modality

Public insurance company	99,8%			
Private insurance company	0,1%	1		
Private co-payment	0,1%			
		0	50	100

Possibility of subscribing to private health insurance plans

No

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	
ICD primary prevention	✓
ICD secondary prevention	✓
CRT devices	
Ablation	
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy*	☑
Invasive electrophysiology**	
* ICD and PM Accreditation	
** EP Accreditation	
National accreditation for physicians	Yes
National accreditation for centres	Yes
National Society supporting EHRA accreditation system	not available
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	

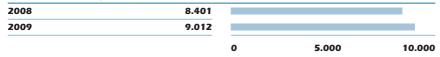
57%

Czech Society of Cardiology – Working Group on Arrhythytmias and Cardiac Pacing

Required period of training to perform implantations No* * Requires certain number of implantations **Training centres availability** Pacemaker 15 **ICD** implantation 15 Electrophysiological studies and catheter ablation 15 15 **CRT** implantation 7 Atrial fibrillation ablation Number of medical faculties 7

5. Pacemakers

Pacemaker units implanted



Percentage of academic facilities among practicing EP and implant centres

Pacemaker units implanted and number of implanting centres

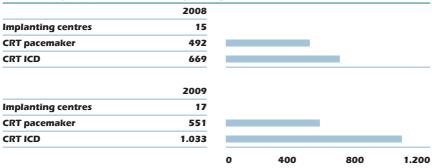
	2008			
Implanting centres	39			
New implants	6.440			
Replacements	1.961		-	
	2009			
Implanting centres	39			
New implants	6.774			
Replacements	2.238			
		0	4.000	8.000

Specialty performing implants

Cardiologists	90%
Surgeons	10%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	98%
Surgeons	2%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008	
Implanting centres	15	
Single chamber	674	
Dual chamber	334	
First implants	1.677	
Replacements	336	
Total	2.013	
	2009	
Implanting centres	15	
Single chamber	865	
Dual chamber	359	
First implants	2.112	
Replacements	349	
Total	2.461	

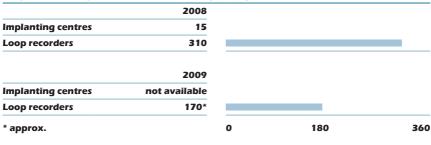
Specialty performing implants

Cardiologists	95%
Surgeons	5%

8. Loop recorders

Loop recorders implanted and number of implanting centres

note monitoring of devices



Specialty performing implants

Cardiologists	90%
Surgeons	10%

9. Device specific

 Availability of remote monitoring of devices	<u> </u>

National registry for

ICD*	\checkmark
Pacing**	lacksquare
Electrophysiology***	✓
* ICD registry	

- * ICD registry
- ** PM registry
- *** Ablation 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

Yes

State institute for drug control

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	3.470	3.980
Mean number (ablations/centres)	204	221
Number of AF ablations	902	1.215

11. 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

	1	2	3	4	5
Lack of centres	\checkmark				
Lack of reimbursement, limited financial resources		\checkmark			
Lack of referral		\checkmark			
Lack of trained personnel					
Low awareness of guidelines		\checkmark			
Lack of operators	\checkmark				

1 = no obstacle

5 = great obstacle

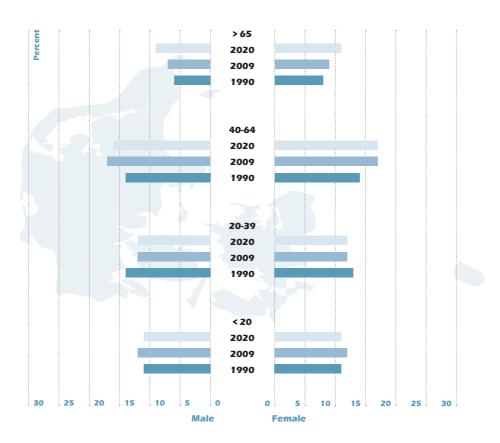
Sources: National Working Group on Arrhythmias and Cardiac Pacing, Czech Republic – Chairman: Cihák Robert , MD, PhD

DENMARK



1. Statistics

Age pyramid for Denmark



Healthcare data

Hospitals (per 100.000 population)	1,09	2005
Beds (per 100.000 population)	349,48	2007
Density of physicians (per 1.000 population)	3,2	2006
Density of nurses (per 1.000 population)	9,61	2006

Demographic information

Population annual growth rate (%)	0,3	2009
Life expectancy at birth	78,51	2006
Death rate (per 1.000 population)	10,25	2006
Live births (per 1.000 population)	11,96	2006

Economic information

Gross domestic product (U,S dollar-billions)	308,32*	2009
Gross domestic product per capita (U.S dollar-units)	55.942,17*	2009
Total expenditure on health as % of GDP	9,5	2006
General government expenditure on health		
as % of total expenditure on health	84	2006
Private expenditure on health		
as % of total expenditure on health	16	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	not available
2009	not available

3. Healthcare System

Denmark has a National healthcare system which provides universal coverage for all residents. Hospital care, general practicioner services and healthcare services are free at the point of use. The private healthcare section is also a growing section in the country. (Highlights on health in Denmark, WHO, 2004)

Basic insurance availability	Y	2
------------------------------	---	---

Percentage of insured and uninsured citizens

Distribution of insurance modality

Public insurance company	100%			
Private insurance company	not available			
Private co-payment	not available			
		o	50	100

Possibility of subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	✓
ICD primary prevention	✓
ICD secondary prevention	✓
CRT devices	✓
Ablation	✓
Unlimited availability of treatment	✓
4. Education	
National accreditation availability	
Device therapy	✓
Invasive electrophysiology	✓
The Danish National Board of Health	
National accreditation for physicians	Yes
National accreditation for centres	Yes
Next and Contact and a FUDA areas district and an	
National Society supporting EHRA accreditation system	No
Consinity required for anthotox oblition	Yes
Specialty required for catheter ablation Cardiologist with special electrophysiology training	res
Cardiologist with special electrophysiology training	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist with special electrophysiology training	163

Danish Society of Cardiology

Required period of training to perform implantations

5 years

Training centres availability

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

Number of medical faculties

3

Percentage of academic facilities among practicing EP and implant centres

83%/40%*

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

	2008			
Implanting centres	14			
New implants	2.984			
Replacements	1.063			
	2009			
Implanting centres	14			
New implants	2.955			
Replacements	982			
		0	1.500	3.000

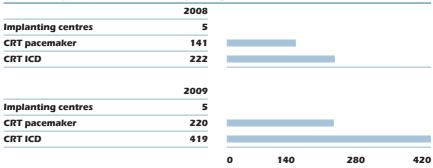
^{* 83%} for EP and 40% for implantations

Specialty performing implants

Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008			
Implanting centres	5			
Single chamber	663			
Dual chamber	592			
First implants	966			
Replacements	289			
Total	1.225			
Implanting centres	2009			
Single chamber	not available			
Dual chamber	not available			
First implants	770			
Replacements	231			
Total	1.025			
		0	700	

Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008			
Implanting centres	9			
Loop recorders	134			
	2009			
Implanting centres	9			
Loop recorders	181			
		0	100	20

Specialty performing implants

Cardiologists	100%
Surgeons	0%

9. Device specific

|--|

National registry for	
ICD*	
Pacing**	
Electrophysiology***	
* Danish ICD register	

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

Availability of a national quality insurance system or complication registry

Yes

 $\overline{\mathbf{V}}$

Danish ICD and pacemaker register Infection, lead displacement, reoperation

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	2.315	2.684
Mean number (ablations/centres)	385	447
Number of AF ablations	1.100	1.237

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	
European	

Necessity of guideline translation to national language

No

6

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres	V				
Lack of reimbursement, limited financial resources	V				
Lack of referral	V				
Lack of trained personnel	V				
Low awareness of guidelines	V				
Lack of operators	V				

1 = no obstacle

5 = great obstacle

Sources: Danish Working group for Electrophysiology – President: Prof. Sam Riahi, Department of Cardiology, Aalborg Hospital, Århus University Hospital

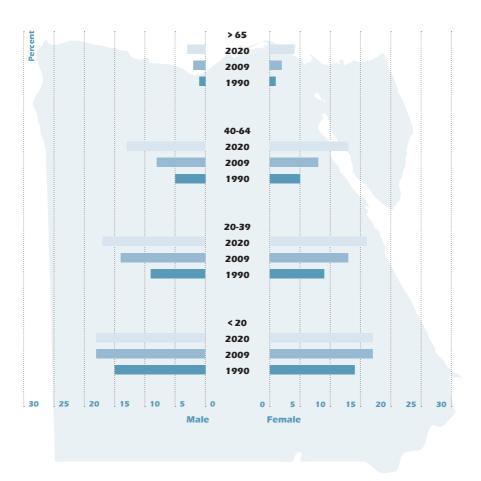
102 · The White Book 2010

EGYPT



1. Statistics

Age pyramid for Egypt



Healthcare data

Hospitals (per 100.000 population)	not available	2005
Beds (per 100.000 population)	220	2005
Density of physicians (per 1.000 population)	2,4	2005
Density of nurses (per 1.000 population)	3,4	2005

Demographic information

Population annual growth rate (%)	2	2009
Life expectancy at birth	68	2006
Death rate (per 1.000 population)	5,6	2006
Live births (per 1.000 population)	24	2007

Economic information

Gross domestic product (U.S dollar-billions)	187,95*	2009
Gross domestic product per capita (U.S dollar-units)	2.450,41*	2009
Total expenditure on health as % of GDP	6,3	2006
General government expenditure on health		
as % of total expenditure on health	40,7	2006
Private expenditure on health		
as % of total expenditure on health	59,3	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	1.100 per 1.000.000 citizens
2009	1.100 per 1.000.000 citizens

Proportion cardiac mortality over total mortality of the country

2008	not available
2009	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.



No

Percentage of insured and uninsured citizens

Insured citizens	54%			
Uninsured citizens	46%			
		0	50	100

Distribution of insurance modality

60-65%		
60-65%		
	1% 60-65%	

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	lacksquare
Ablation	
Co-payments for DDI and others	
Reimbursement availability	
Internal loop recorders	
ICD primary prevention	
ICD secondary prevention	
CRT devices	
Ablation	lacksquare
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres	No
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation	Yes
Cardiologist, subspecialty electrophysiologist	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist, subspecialty electrophysiologist	

Required period of training to perform implantations

4 years

Training centres availability

Pacemaker	12
ICD implantation	8
Electrophysiological studies and catheter ablation	6
CRT implantation	8
Atrial fibrillation ablation	4

Number of medical faculties

22

Percentage of academic facilities among practicing EP and implant centres

60%

5. Pacemakers

Pacemaker units implanted

2008	2.200*				
2009	2.300*				
* approx.		0	1.000	2.000	3.000

Pacemaker units implanted and number of implanting centres

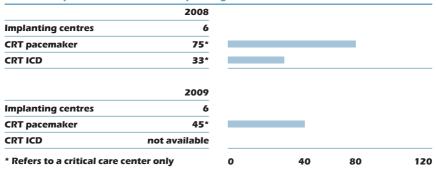
	2008				
Implanting centres	5				
New implants	not available				
Replacements	not available				
	2009				
Implanting centres	15				
New implants	not available				
Replacements	not available				
		0	100	200	300

Specialty performing implants

Cardiologists	80%
Surgeons	0%
Other: Critical care physicians	20%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	80%
Surgeons	0%
Other: Critical care physicians	20%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008	
Implanting centres	8	
Single chamber	12	
Dual chamber	7	
First implants	not available	
Replacements	not available	
Total	19*	
	2009	
Implanting centres	2009	
<u> </u>		
Single chamber	8	
Implanting centres Single chamber Dual chamber First implants	8 not available	
Single chamber Dual chamber	8 not available not available	
Single chamber Dual chamber First implants	not available not available not available	

Specialty performing implants

Cardiologists	80%
Surgeons	0%
Other: Critical care physicians	20%

8. Loop recorders

Loop recorders implanted and number of implanting centres

Implanting centres 2 Loop recorders 2 2009 Implanting centres 2 Loop recorders not available 0 2 Specialty performing implants Cardiologists Surgeons 9. Device specific Availability of remote monitoring of devices National registry for ICD Pacing Electrophysiology Availability of a national quality insurance system or complication registry				2008	
Z009 Implanting centres				2	Implanting centres
Implanting centres Loop recorders not available 0 2 Specialty performing implants Cardiologists Surgeons 9. Device specific Availability of remote monitoring of devices National registry for ICD Pacing Electrophysiology				2	Loop recorders
Implanting centres Loop recorders not available 0 2 Specialty performing implants Cardiologists Surgeons 9. Device specific Availability of remote monitoring of devices National registry for ICD Pacing Electrophysiology					
Loop recorders not available 0 2 Specialty performing implants Cardiologists Surgeons 9. Device specific Availability of remote monitoring of devices National registry for ICD Pacing Electrophysiology				2009	
Specialty performing implants Cardiologists Surgeons 9. Device specific Availability of remote monitoring of devices National registry for ICD Pacing Electrophysiology				2	Implanting centres
Specialty performing implants Cardiologists Surgeons 9. Device specific Availability of remote monitoring of devices National registry for ICD Pacing Electrophysiology				not available	Loop recorders
Cardiologists Surgeons 9. Device specific Availability of remote monitoring of devices National registry for ICD Pacing Electrophysiology	4	2	0		
Surgeons 9. Device specific Availability of remote monitoring of devices National registry for ICD Pacing Electrophysiology				ants	Specialty performing impl
9. Device specific Availability of remote monitoring of devices National registry for ICD Pacing Electrophysiology	100%				Cardiologists
Availability of remote monitoring of devices National registry for ICD Pacing Electrophysiology	0%				Surgeons
ICD Pacing Electrophysiology					
Pacing Electrophysiology					
Electrophysiology					
Availability of a national quality insurance system or complication registry					Electrophysiology
Availability of a national quality insurance system or complication registry					
	No	plication registry	stem or	uality insurance sy	Availability of a national o
Availability of a national institution coordinating and guiding device recalls	No				

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	850*	859*
Mean number (ablations/centres)	141	143
Number of AF ablations	not available	not available

^{*} approx.

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	\checkmark
U.S.	
European	

Necessity of guideline translation to national language

Yes

Obstacles to guideline implementation

1	2	3	4	5
V				
		V		
V				

1 = no obstacle

5 = great obstacle

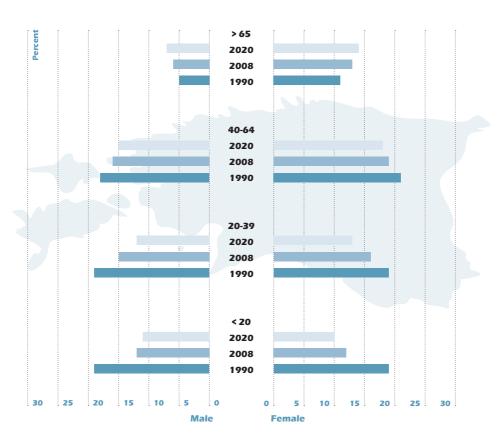
Sources: Egypcian Cardiac Rhythm Association (ECRA) – Chairman: Prof. Sherif M. Mokhtar and Egyptian Society of Cardiology – Vice President: Dr. Khairy Abdel Dayem, FRCP, PhD, FACC

ESTONIA



1. Statistics

Age pyramid for Estonia



Healthcare data

Hospitals (per 100.000 population)	4,25	2007
Beds (per 100.000 population)	556,99	2007
Density of physicians (per 1.000 population)	3,29	2006
Density of nurses (per 1.000 population)	6,55	2006

Demographic information

Population annual growth rate (%)	-0,6	2009
Life expectancy at birth	74,34	2008
Death rate (per 1.000 population)	12,44	2008
Live births (per 1.000 population)	11,96	2008

Economic information

Gross domestic product (U.S dollar-billions)	18,05*	2009
Gross domestic product per capita (U.S dollar-units)	13.509,10*	2009
Total expenditure on health as % of GDP	5,0	2006
General government expenditure on health		
as % of total expenditure on health	74,2	2006
Private expenditure on health		
as % of total expenditure on health	25,8	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

673 per 100.000 citi	izens
not avail	lable

Proportion cardiac mortality over total mortality of the country

2008	54%
2009	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. 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	avai	lability
-------	-----------	------	----------

Yes

Percentage of insured and uninsured citizens

Insured citizens	95%			
Uninsured citizens	5%			
		0	50	100

Distribution of insurance modality

Public insurance company	95%			
Private insurance company	1%	1		
Private co-payment	1%			
		0	50	100

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	✓
ICD primary prevention	✓
ICD secondary prevention	✓
CRT devices	✓
Ablation	✓
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres	Yes
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation	Yes
Cardiologist	
Specialty required for ICD or pacemaker implants	Yes

Cardiologist or cardiac surgeon

Required period of training to perform implantations

1 year

Training centres availability

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

Number of medical faculties

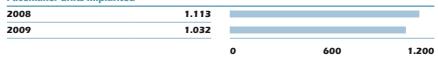
1

Percentage of academic facilities among practicing EP and implant centres

50%/20%*

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

	2008			
Implanting centres	5			
New implants	964			
Replacements	149			
	2009			
Implanting centres	5			
New implants	933			
Replacements	99			
		0	500	1.000

^{* 50%} from EP centers, 20% from implanting centers

Specialty performing implants

Cardiologists	53,4%
Surgeons	36,6%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2008			
Implanting centres	2			
CRT pacemaker	18			
CRT ICD	1			
	2009			
Implanting centres	2			
CRT pacemaker	18			
CRT ICD	2			
		0	10	20

Specialty performing implants

Cardiologists	83,3%
Surgeons	16,7%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008			
Implanting centres	2			
Single chamber	7			
Dual chamber	11			
First implants	18			
Replacements	0			
Total	18			
	2009			
Implanting centres	2			
Single chamber	5			
Dual chamber	15			
First implants	18			
Replacements	2			
Total	20			
		0	10	

Specialty performing implants

Cardiologists	75%
Surgeons	25%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008			
Implanting centres	1			
Loop recorders	1			
	2009			
Implanting centres	2			
Loop recorders	3			l
		0	2	4

Specialty performing implants

Cardiologists	67%
Surgeons	33%

9. Device specific

Availability of remote monitoring of devices	☑

National registry for

ICD.	<u>V</u>
Pacing*	\checkmark
Electrophysiology	

^{*} Estonian Pacermaker 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

Yes

"Ravimiamet", function of the State Agency of Medicines

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	497	420
Mean number (ablations/centres)	248	210
Number of AF ablations	93	97

11. 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

	1	2	3	4	5
Lack of centres	\checkmark				
Lack of reimbursement, limited financial resources			\checkmark		
Lack of referral				\checkmark	
Lack of trained personnel		\checkmark			
Low awareness of guidelines				V	
Lack of operators			V		

1 = no obstacle

5 = great obstacle

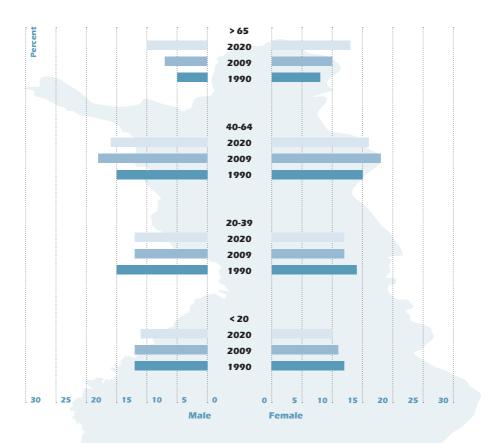
Sources: Estonian National Working Group of Arrhythmias – Chairman: Dr. Hasso Uuetoa and Estonian Pacemaker and ICD implantation registry

FINLAND



1. Statistics

Age pyramid for Finland



Healthcare data

Hospitals (per 100.000 population)	6,45	2007
Beds (per 100.000 population)	682,49	2007
Density of physicians (per 1.000 population)	3,31	2007
Density of nurses (per 1.000 population)	8,55	2006

Demographic information

Population annual growth rate (%)	0,1	2009
Life expectancy at birth	80,04	2008
Death rate (per 1,000 population)	9,24	2008
Live births (per 1,000 population)	11,2	2008

Economic information

Gross domestic product (U,S dollar-billions)	242,32*	2009
Gross domestic product per capita (U.S dollar-units)	45.876,38*	2009
Total expenditure on health as % of GDP	7,6	2006
General government expenditure on health		
as % of total expenditure on health	78,5	2006
Private expenditure on health		
as % of total expenditure on health	21,5	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	20,7%
2009	not available

3. Healthcare System

Finland has a compulsary health care system which is tax based. It provides comprehensive coverage for the entire population. The Ministry of Social Affairs and Health issues the legistlation 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

Distribution of insurance modality

		0	50	100
Private co-payment	18,7%			
Private insurance company	5,3%			
Public insurance company	76%			

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	\checkmark
ICD primary prevention	\checkmark
ICD secondary prevention	\checkmark
CRT devices	
Ablation	
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres	No
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation	No
There is no official specialty requirement, but in practice it is performed	only by cardiolo-
gists or pediatric cardiologist.	
Specialty required for ICD or pacemaker implants	No
There is no official specicalty requirement, but in practice it is performe	
pediatric cardiologist and occasionally also by surgeons or specialists of	internal medicine.

Required period of training to perform implantations

No

Training centres availability

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

Number of medical faculties

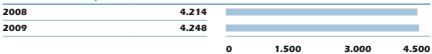
5

Percentage of academic facilities among practicing EP and implant centres

71%/20%*

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

	2008			
Implanting centres	25			
New implants	3.161			
Replacements	1.053			
	2009			
Implanting centres	25			
New implants	3.133			
Replacements	1.115			
		0	1.600	3.2

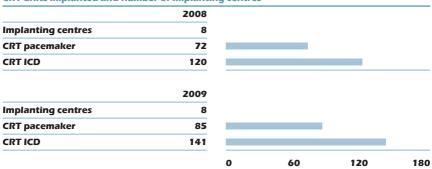
^{* 71%} of the EP and 20% of the implanting centers

Specialty performing implants

Cardiologists	95%
Surgeons	5%
Other: Internal medicine	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	95%
Surgeons	5%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008			
Implanting centres	16			
Single chamber	330			
Dual chamber	253			
First implants	418			
Replacements	165			
Total	583			
Implanting centres	2009			
Single chamber	330			
Dual chamber	311			
First implants	467			
Replacements	174			
Total	641			
		0	400	

Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008			
Implanting centres	16			
Loop recorders	293			
	2009			
Implanting centres	16			
Loop recorders	218			
		0	150	30

Yes

Cardiologists	95%
Surgeons	5%
9. Device specific	
Availability of remote monitoring of devices	₹
Availability of remote monitoring of devices	₹
Availability of remote monitoring of devices National registry for	☑
National registry for	
National registry for	
National registry for ICD Pacing	

National Agency for Medicines and Medical Devices Department

Availability of a national institution coordinating and guiding device recalls

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	1.205	1.307
Mean number (ablations/centres)	172	186
Number of AF ablations	252	345

11. 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

		3	4	•
\checkmark				
abla				
			V	
	V			
		V		
	V			

1 = no obstacle

5 = great obstacle

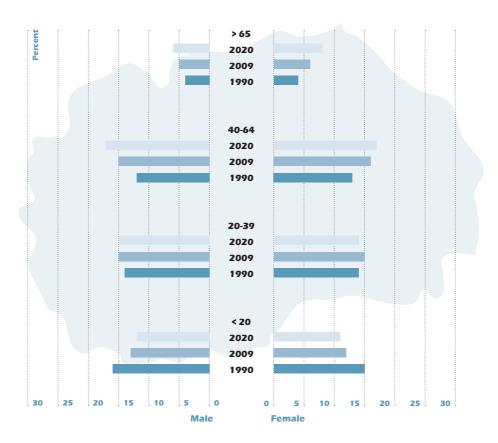
Sources: Finnish Working Group on Arrhythmias and Cardiac Pacing – Dr. Antti Hedman and Dr. Pekka Raatikainen

MACEDONIA FYR



1. Statistics

Age pyramid for Macedonia FYR



Healthcare data

Hospitals (per 100.000 population)	2,69	2007
Beds (per 100.000 population)	462,69	2006
Density of physicians (per 1.000 population)	2,54	2006
Density of nurses (per 1.000 population)	2,54	2006

Demographic information

Population annual growth rate (%)	0,3	2009
Life expectancy at birth	73	2006
Death rate (per 1,000 population)	8,88	2003
Live births (per 1,000 population)	11,04	2005

Economic information

Gross domestic product (U,S dollar-billions)	8,82*	2009
Gross domestic product per capita (U.S dollar-units)	4.281,46*	2009
Total expenditure on health as % of GDP	8,2	2006
General government expenditure on health		
as % of total expenditure on health	71,6	2006
Private expenditure on health		
as % of total expenditure on health	28,4	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	not available
2009	not available

3. Healthcare System

The healhcare 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 oversse health services. Private healthcare system is also available. (Healthcare systems in transition, 2000)

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

Insured citizens	90%			
Uninsured citizens	10%			
		0	50	100

Distribution of insurance modality

		0	50	100
Private co-payment	0%			
Private insurance company	10%			
Public insurance company	90%			

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Private medical sector requires payment which in major part is refunde System.	d by the Healthcare
Reimbursement availability	
Internal loop recorders	
ICD primary prevention	
ICD secondary prevention	
CRT devices	
Ablation	
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres	No
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation	Yes
Cardiologist	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist	

Required period of training to perform implantations

No

Training centres availability

Pacemaker	2
ICD implantation	2
Electrophysiological studies and catheter ablation	2
CRT implantation	2
Atrial fibrillation ablation	0

Number of medical faculties

2

Percentage of academic facilities among practicing EP and implant centres

50%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

	2008			
Implanting centres	1			
New implants	181			
Replacements	43			
	2009			
Implanting centres	1			
New implants	185			
Replacements	59			
		0	100	200

Specialty performing implants

Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

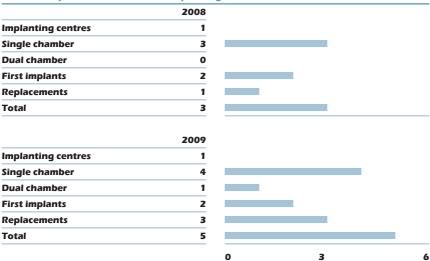
-		_		
	2008			
Implanting centres	1			
CRT pacemaker	10			
CRT ICD	2			
	2009			
Implanting centres	1			
CRT pacemaker	15			
CRT ICD	4			
		0	10	20

Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008
Implanting centres	1
Loop recorders	0
	2009
Implanting centres	1
Loop recorders	0

No

No

Specialty performing implants Cardiologists 100% Surgeons 0% 9. Device specific **Availability of remote monitoring of devices** In very few centers **National registry for** ICD Pacing Electrophysiology **APAPE National Registry**

Availability of a national quality insurance system or complication registry

Availability of a national institution coordinating and guiding device recalls

10. Interventional electrophysiology

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	51	69
Mean number (ablations/centres)	51	69
Number of AF ablations	0	0

1

No

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	
European	

Necessity of guideline translation to national language

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres	V				
Lack of reimbursement, limited financial resources					\checkmark
Lack of referral		\checkmark			
Lack of trained personnel		\checkmark			
Low awareness of guidelines		\checkmark			
Lack of operators		\checkmark			

1 = no obstacle 5 = great obstacle

Working Group on Electrophysiology and Cardiac Pacing – Former Yugoslav Republic of Macedonia – President: Assist. Prof. Nikola Gjorgov

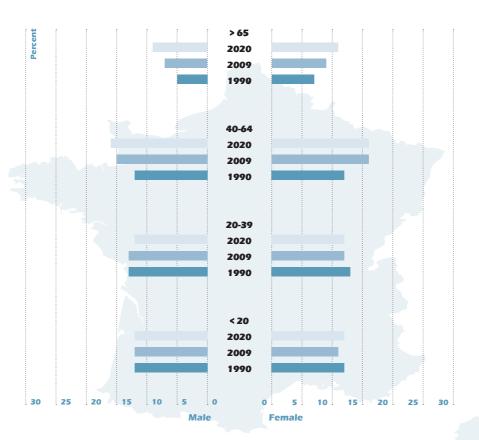
142 · The White Book 2010

FRANCE



1. Statistics

Age pyramid for France



Healthcare data

Hospitals (per 100.000 population)	4,68	2005
Beds (per 100.000 population)	716,78	2006
Density of physicians (per 1.000 population)	3,42	2007
Density of nurses (per 1.000 population)	7,8	2007

Demographic information

Population annual growth rate (%)	0,5	2009
Life expectancy at birth	81,48	2007
Death rate (per 1.000 population)	8,4	2007
Live births (per 1.000 population)	12,69	2007

Economic information

Gross domestic product (U.S dollar-billions)	2.634,81*	2009
Gross domestic product per capita (U.S dollar-units)	42.091,32*	2009
Total expenditure on health as % of GDP	11,1	2006
General government expenditure on health		
as % of total expenditure on health	79,7	2006
Private expenditure on health		
as % of total expenditure on health	20,3	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	not available
2009	not available

3. Healthcare System

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

Basic insurance availability				Yes
Percentage of insured and unins	ured citizens	:		
Insured citizens	100%			
Uninsured citizens	0%			
		0	50	100
Distribution of insurance modali				
Public insurance company	100%			
Private insurance company	0%			
Private co-payment	40%			
		0	50	100
Possibility of subscribing to priva	ate health in	surance plans		No
Co-payment necessary for the fo	llowing ther	ару		
ICD devices				
Pacemakers				
Ablation				

Internal loop recorders	▽
ICD primary prevention	
ICD secondary prevention	
CRT devices	▼
Ablation	V
Unlimited availability of treatment	V
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	No
National accreditation for centres to perform EP	Yes
For CRT and ICD	
National Society supporting EHRA accreditation system	Yes
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

Recommandations de la Société Française de Cardiologie

National DIU

Training centres availability

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

Number of medical faculties

not available

Percentage of academic facilities among practicing EP and implant centres

50%

5. Pacemakers

Pacemaker units implanted

2008	63.000*			
2009	63.400			
* approx.		0	35.000	70.000

Pacemaker units implanted and number of implanting centres

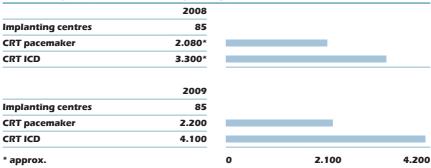
	2008			
Implanting centres	520			
New implants	54.400			
Replacements	12.600		I	
	2009			
Implanting centres	520			
New implants	not available			
Replacements	not available			
		0	30.000	60.00

Specialty performing implants

Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

6.000

ICD units implanted and number of implanting centres

	2008
Implanting centres	80
Single chamber	2.500*
Dual chamber	2.300*
First implants	not available
Replacements	not available
Total	4.800*
* approx.	
	2009
Implanting centres	80
Single chamber	not available
Dual chamber	not available
First implants	not available
Replacements	not available
Total	5.470

Specialty performing implants

Cardiologists	100%
Surgeons	0%

3.000

8. Loop recorders

* approx.

Loop recorders implanted and number of implanting centres

	2008			
Implanting centres	not available			
Loop recorders	not available			
	2009			
Implanting centres	not available			
Loop recorders	1.350			
		0	700	1.40

Yes

Specialty performing implants	
Cardiologists	100%
Surgeons	0%
9. Device specific	
Availability of remote monitoring of devices	✓
National registry for	
ICD	V
Pacing	V
Electrophysiology	
Stidefix	
Availability of a national quality insurance system or complication registry	No
Availability of a national quality insurance system of complication registry	140

Availability of a national institution coordinating and guiding device recalls

AFSSAPS

10. Interventional electrophysiology

Number of performing catheter ablation centres

not available

	2008	2009
Number of ablations performed	not available	not available
Mean number (ablations/centres)	not available	not available
Number of AF ablations	not available	not available

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	abla
European	

Necessity of guideline translation to national language

Yes

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres		\checkmark			
Lack of reimbursement, limited financial resources	\checkmark				
Lack of referral				V	
Lack of trained personnel		\checkmark			
Low awareness of guidelines				V	
Lack of operators		V			

1 = no obstacle

5 = great obstacle

Source: Groupe de travail de Rythmologie et stimulation cardiaque – Chairman: Dr. Philippe Mabo

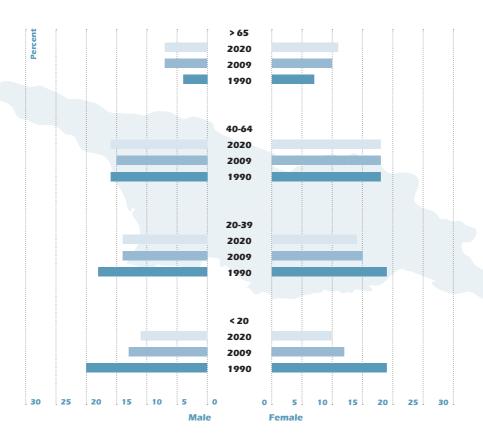
152 · The White Book 2010

GEORGIA



1. Statistics

Age pyramid of Georgia



Healthcare data

Hospitals (per 100.000 population)	6,04	2007
Beds (per 100.000 population)	331,9	2007
Density of physicians (per 1.000 population)	4,55	2007
Density of nurses (per 1.000 population)	3,63	2007

Demographic information

Population annual growth rate (%)	-0,3	2009
Life expectancy at birth	73,1	2005
Death rate (per 1.000 population)	11,8	2006
Live births (per 1.000 population)	10,66	2005

Economic information

Gross domestic product (U.S dollar-billions)	10,98*	2009
Gross domestic product per capita (U.S dollar-units)	2.495,62*	2009
Total expenditure on health as % of GDP	8,4	2006
General government expenditure on health		
as % of total expenditure on health	21,5	2006
Private expenditure on health		
as % of total expenditure on health	78,5	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	332 per 100.000 citizens
2009	367 per 100.000 citizens

Proportion cardiac mortality over total mortality of the country

2008	35%
2009	38%

3. Healthcare System

In Georgia, the healthcare system is organised through the NHS Fund, private insurance companies and private payments.



No

Percentage of insured and uninsured citizens

		0	50	100
Uninsured citizens	60%			
Insured citizens	40%			

Distribution of insurance modality

		0	50	100
Private co-payment	50%			
Private insurance company	35%			
Public insurance company	15%			

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy	
ICD devices	<u> </u>
Pacemakers	V
Ablation	V
Reimbursement availability	
Internal loop recorders	☑
ICD primary prevention	
ICD secondary prevention	
CRT devices	
Ablation	
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres	Yes
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation	Yes
Cardiologist	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist, surgeon	
Official national competency guidelines for	No

Training centres availability

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

		0	100	200	300
2009	265				
2008	278				

Pacemaker units implanted and number of implanting centres

	2008
Implanting centres	5
New implants	not available
Replacements	not available
	2009
Implanting centres	5
New implants	not available

Specialty performing implants

Cardiologists	90%
Surgeons	10%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

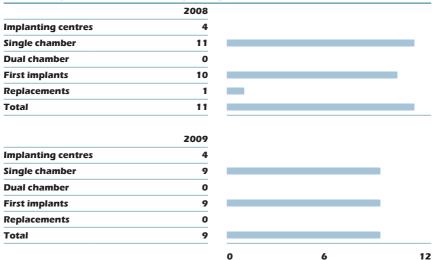
•		_		
	2008			
Implanting centres	3			
CRT pacemaker	0			
CRT ICD	6			
	2009			
Implanting centres	3			
CRT pacemaker	3			
CRT ICD	6			
		0	3	6

Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008		
Implanting centres	0		
Loop recorders	0		
	2009		
Implanting centres	2009		

Specialty performing implants

Cardiologists	not available
Surgeons	not available

9. Device speci-

fic

Availability of re	emote monitoring of devices		

National registry for

ICD	L
Pacing	
Electrophysiology	

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

Number of performing catheter ablation centres

 Z008
 Z009

 Number of ablations performed
 108
 150

 Mean number (ablations/centres)
 35
 37

 Number of AF ablations
 0
 4

11. 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

	1	2	3	4	5
Lack of centres			\checkmark		
Lack of reimbursement, limited financial resources					\checkmark
Lack of referral					\checkmark
Lack of trained personnel					\checkmark
Low awareness of guidelines					V
Lack of operators				\checkmark	

1 = no obstacle

5 = great obstacle

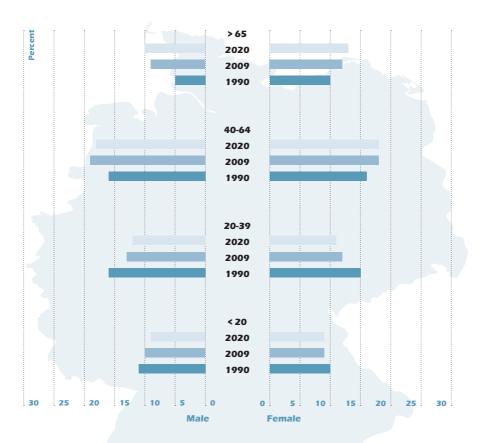
Sources: Working Group on Arrhythmias of the Georgian College of Cardiology – Chairman: Giorgi Papiashvili, EP practicing centers and the Ministry of Labour, Health and Social Affairs of Georgia

GERMANY



1. Statistics

Age pyramid for Germany



Healthcare data

Hospitals (per 100.000 population)	4,07	2006
Beds (per 100.000 population)	829,09	2006
Density of physicians (per 1.000 population)	3,48	2007
Density of nurses (per 1.000 population)	7,81	2006

Demographic information

Population annual growth rate (%)	-0,1	2009
Life expectancy at birth	79,86	2006
Death rate (per 1,000 population)	9,97	2006
Live births (per 1,000 population)	8,16	2006

Economic information

Gross domestic product (U,S dollar-billions)	3.235,46*	2009
Gross domestic product per capita (U.S dollar-units)	39.442,44*	2009
Total expenditure on health as % of GDP	10,4	2006
General government expenditure on health		
as % of total expenditure on health	76,6	2006
Private expenditure on health		
as % of total expenditure on health	23,4	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

434 per 100.000 citizens	2008
not available	2009

Proportion cardiac mortality over total mortality of the country

2008	43,4%
2009	not available

3. Healthcare System

Germany has a universal multi-payer system with two main types of health insurance. Currently, 85% of the population is covered by a basic health insurance plan provided by statute, which provides a standard level of coverage. The remaining opt for private health insurance, which frequently offers additional benefits.

Basic insurance availability Yes

Percentage of insured and uninsured citizens

Insured citizens	99,88%			
Uninsured citizens	0,12%			
		0	50	100

Distribution of insurance modality

		0	EO	
Private co-payment	not available			
Private insurance company	10,5%			
Public insurance company	89,5%			

•	50	

Possibility of subscribing to private health insurance plans

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Patients with public insurance do not have to pay co-payments. Deductibles in privainsured patients depends on the contract.	ite
Reimbursement availability	
Internal loop recorders	V
ICD primary prevention	✓
ICD secondary prevention	V
CRT devices	V
Ablation	√
Unlimited availability of treatment	√
4. Education National accreditation availability Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres	No
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation	Yes
Cardiologist Specialty required for ICD or passmaker implants	Vo
Specialty required for ICD or pacemaker implants	Yes
Cardiologist, Surgeon	

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

5-7 years*

* 5-6 years as a surgeon, 5 years as a cardiologist or 7 years through global internal medicine. A prespecified number of implants is needed to receive the level of competency.

Training centres availability

Pacemaker	1.048
ICD implantation	561
Electrophysiological studies and catheter ablation	300*
CRT implantation	371
Atrial fibrillation ablation	30*

^{*} approx.

Number of medical faculties

36

Percentage of academic facilities among practicing EP and implant centres

20%*

^{*} approx.

5. Pacemakers

Pacemaker units implanted

2008	98.300				
2009	102.177				
		0	40.000	80.000	120.000

Pacemaker units implanted and number of implanting centres

2008 Implanting centres 1.035
Implanting centres 1.035
pianting centures
New implants not available
Replacements not available
2009
Implanting centres 1.048
New implants not available

Specialty performing implants

Cardiologists	58%
Surgeons	30%
Other: Cardiac surgeons, pediatric surgeons, pediatric cardiologists	12%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2008				
Implanting centres	332				
CRT pacemaker	1.040				
CRT ICD	8.400				
	2009				
Implanting centres	371				
CRT pacemaker	1.200				
CRT ICD	10.516				
		0	4.000	8.000	12.0

Specialty performing implants

Cardiologists	45%
Surgeons	5%
Other: Both together	50%

7. Implantable Cardiac Defibrillator

ICD units implanted and	number of implantin	g centres
	2008	
Implanting centres	360	
Single chamber	13.700	
Dual chamber	7.900	
First implants	not available	
Replacements	not available	
Total	21.600	
	2009	
Implanting centres	568	
Single chamber	14.740	
Dual chamber	8.834	
First implants	not available	
Replacements	not available	

0 12.000 24.000

Specialty performing implants

Cardiologists	30%
Surgeons	50%
Other: Both speciality together	20%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008
Implanting centres	not available
Loop recorders	not available
	2009
Implanting centres	2009 not available

Specialty performing implants

Cardiologists	not available
Surgeons	not available

9. Device speci-

fic

Availability of remote monitoring of devices
--

National registry for

ICD*	abla
Pacing*	<u> </u>
Electrophysiology*	V

^{*} Pacemaker and 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

Yes

Federal Institute for Drugs and Medical Devices, Bonn

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.

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	39.500	not available
Mean number (ablations/centres)	207	not available
Number of AF ablations	10.000	not available

11. 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

	1	2	3	4	5
Lack of centres	V				
Lack of reimbursement, limited financial resources		\checkmark			
Lack of referral		\checkmark			
Lack of trained personnel		\checkmark			
Low awareness of guidelines		\checkmark			
Lack of operators			\checkmark		

1 = no obstacle

5 = great obstacle

Sources: German Working Group on Cardiac Pacing and Arrhythmia – Chairman:

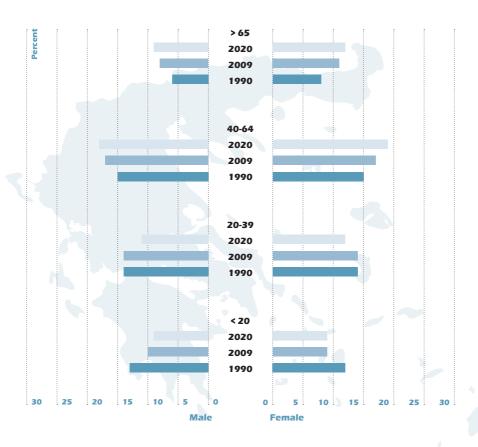
Prof. Dr. Stephan Willems and MMF (Interventional Electrophysiology)

GREECE



1. Statistics

Age pyramid for Greece



Healthcare data

Hospitals (per 100.000 population)	2,84	2006
Beds (per 100.000 population)	481,69	2006
Density of physicians (per 1.000 population)	5,35	2006
Density of nurses (per 1.000 population)	3,27	2006

Demographic information

Deculation annual arouth rate (0/1	0.1	3000
Population annual growth rate (%)	0,1	2009
Life expectancy at birth	80,13	2008
Death rate (per 1.000 population)	9,61	2008
Live births (per 1.000 population)	10,53	2008

Economic information

Gross domestic product (U.S dollar-billions)	338,25*	2009
Gross domestic product per capita (U.S dollar-units)	30.304,74*	2009
Total expenditure on health as % of GDP	9,9	2006
General government expenditure on health		
as % of total expenditure on health	42,5	2006
Private expenditure on health		
as % of total expenditure on health	57,5	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	not available
2009	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 offers 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

Insured citizens	95%			
Uninsured citizens	5%			
		0	50	100

Distribution of insurance modality

		0	50	100
Private co-payment	1%			
Private insurance company	10%			
Public insurance company	89%			

Possibility of subscribing to private health insurance plans

Yes

ICD devices Pacemakers	
Pacemakers	
racemakers	
Ablation	
Devices and ablation catheters are covered by insurance.	
Reimbursement availability	
Internal loop recorders	\checkmark
ICD primary prevention	V
ICD secondary prevention	✓
CRT devices	\checkmark
Ablation	✓
Unlimited availability of treatment	✓
4. Education	
National accreditation availability	
National accreditation availability	
National accreditation availability Device therapy	
National accreditation availability Device therapy Invasive electrophysiology Only for pacemakers, there is the requirement of minimum one year of training at	
National accreditation availability Device therapy Invasive electrophysiology Only for pacemakers, there is the requirement of minimum one year of training at implanting center.	t an
National accreditation availability Device therapy Invasive electrophysiology Only for pacemakers, there is the requirement of minimum one year of training at implanting center. National accreditation for physicians	t an

In principle yes, although most centers do not qualify as training centers according to EHRA's requirements, especially for AF ablation.

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
Electrophysiological studies and catheter ablation	8
CRT implantation	8
Atrial fibrillation ablation	6
Number of medical faculties	7
Percentage of academic facilities among practicing EP and implant centres	35%

5%

5. Pacemakers

Surgeons

Pacemaker units implanted

2009	6.891	3.000	6.000	
2008	7.627 6.891			

Specialty performing implants Cardiologists					95%
		0	2.000	4.000	6.000
Replacements	1.522				
New implants	5.369				
Implanting centres	61				
	2009				
Replacements	2.030				
New implants	5.597				
Implanting centres	67				
	2008				
Pacemaker units implanted and n	umber of in	planting	centres		

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	_		
2008			
14			
90			
272			
2009			
16			
386			
429			
	0	250	50
	2008 14 90 272 2009 16 386	2008 14 90 272 2009 16 386 429	2008 14 90 272 2009 16 386 429

Specialty performing implants

Cardiologists	98%
Surgeons	2%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

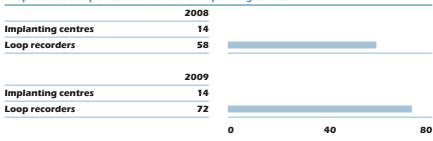
	2008			
Implanting centres	23			
Single chamber	164			
Dual chamber	562			
First implants	812			
Replacements	186			
Total	998			
Implanting centres	2009			
Implanting centres	24			
Single chamber	185			
Dual chamber	970			
First implants	979			
Replacements	176			
Total	1.155			
		0	600	1.2

Specialty performing implants

Cardiologists	99%
Surgeons	1%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

9. Device specific

Availability of remote monitoring of devices

Not as a routine, only part of investigational protocols

National registry for

ICD	\checkmark
Pacing	\checkmark
Electrophysiology	✓

National registration center

Availability of a national quality insurance system or complication registry

No

 ∇

Under proposal to the Ministry of Health by the Working Group

Availability of a national institution coordinating and guiding device recalls

Yes

EFET

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	1.213	1.192
Mean number (ablations/centres)	53	52
Number of AF ablations	164	204

11. 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

	1	2	3	4	5
Lack of centres	\checkmark				
Lack of reimbursement, limited financial resources		\checkmark			
Lack of referral		\checkmark			
Lack of trained personnel		\checkmark			
Low awareness of guidelines			\checkmark		
Lack of operators		\checkmark			

1 = no obstacle

5 = great obstacle

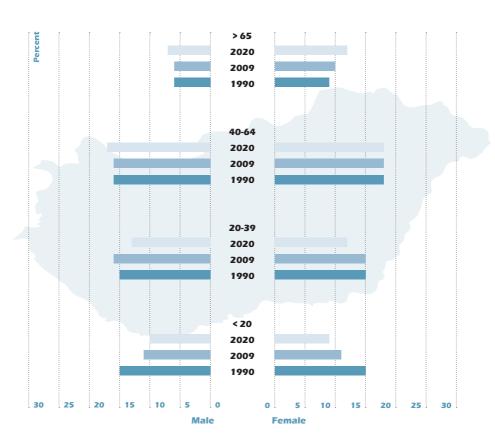
Sources: Hellenic Working Group on Electrophysiology and Pacing – Chairman: Dr. M. Manios and Former Chairman: Dr. V. Vassilikos

HUNGARY



1. Statistics

Age pyramid for Hungary



Healthcare data

Hospitals (per 100.000 population)	1,76	2007
Beds (per 100.000 population)	712,55	2007
Density of physicians (per 1.000 population)	2,78	2007
Density of nurses (per 1.000 population)	9,04	2007

Demographic information

Population annual growth rate (%)	-0,3	2009
Life expectancy at birth	74,23	2008
Death rate (per 1.000 population)	12,95	2008
Live births (per 1.000 population)	9,88	2008

Economic information

Gross domestic product (U.S dollar-billions)	124,24*	2009
Gross domestic product per capita (U.S dollar-units)	12.385,73*	2009
Total expenditure on health as % of GDP	7,6	2006
General government expenditure on health		
as % of total expenditure on health	70,8	2006
Private expenditure on health		
as % of total expenditure on health	29,2	2006

^{*} IMF estimative

2. Country

2008

2009

Proportion of deaths resulting from cardiovascular disease

2008	350 per 100.000 citizens
2009	not available
Proportion cardiac mortality over total mortality of the coun	ntry

49,8%

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 unins	ured citizens	:		
Insured citizens	98%			
Uninsured citizens	2%			
		0	50	100
Distribution of insurance modali	ty			
Public insurance company	99%			
Private insurance company	0%			
Private co-payment	1%			
		0	50	100
Possibility of subscribing to priva	nte health in	surance plans	;	Yes
Co-payment necessary for the fol	llowing ther	apv		
ICD devices	3			
Pacemakers				
Ablation				

Reimbursement availability Internal loop recorders \Box **ICD** primary prevention $\overline{\mathsf{V}}$ **ICD** secondary prevention $\overline{\mathsf{V}}$ **CRT** devices $\overline{\mathsf{V}}$ **Ablation** $\overline{\mathsf{V}}$ **Unlimited availability of treatment** There is a total volume limit for each tender-year of National Health Insurance Fund 4. Education **National accreditation availability** Device therapy* $\overline{\mathsf{V}}$ Invasive electrophysiology** abla* Arrhythmologist Licence for Pacemaker/ICD/CRT (Device Therapy) ** Arrhythmologist Licence for Electrophysiology and Ablation EHRA acreditation is welcome, endorsed **National accreditation for physicians** Yes In internal medicine, cardiology, an amount of 250 credit points are to be collected during 5 years period by CME; EHRA acreditation is endorsed **National accreditation for centres** No It is planned and is under establishment by the Hungarian Ministry of Healthcare and WG of Arrhythmias and Cardiac Pacing, Hungarian Society of Cardiology **National Society supporting EHRA accreditation system** Yes Specialty required for catheter ablation Yes Cardiologist / cardiologist fellow

Cardiologist / cardiologist fellow, heart surgeon, anesthesiologist

Specialty required for ICD or pacemaker implants

Yes

Hungarian Society of Cardiology

Required period of training to perform implantations

2 years

Training centres availability

Pacemaker	8
ICD implantation	6
Electrophysiological studies and catheter ablation	6
CRT implantation	6
Atrial fibrillation ablation	6

Number of medical faculties

4

Percentage of academic facilities among practicing EP and implant centres*

25%/26%*

5. Pacemakers

Pacemaker units implanted*

2008	4.674			
2009	5.328			
* Pacemakers for bradycardia indication,		0	3.000	6.000
excluding CRT.				

Pacemaker units implanted and number of implanting centres

	2008	
Implanting centres	15	
New implants	not available	
Replacements	not available	
	2009	
Implanting centres	15	
New implants	not available	
Replacements	not available	

^{* 25%} of the EP and 26% of the implanting centers

Specialty performing implants

Cardiologists	90%
Surgeons	5%
Other: Anesthesiologist	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centre

	2008			
Implanting centres	12			
CRT pacemaker	304			
CRT ICD	217			
	2009			
Implanting centres	12			
CRT pacemaker	389			
CRT ICD	281			
		0	200	40

Specialty performing implants

Cardiologists	93%
Surgeons	2%
Other: Anesthesiologist	3%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008	
Implanting centres	12	
Single chamber	368	
Dual chamber	171	
First implants	not available	
Replacements	not available	
Total	539	
	2009	
Implanting centres	12	
Single chamber	462	
Dual chamber	145	
First implants	not available	
Replacements	not available	
Total	607	

Specialty performing implants

Cardiologists	90%
Surgeons	5%
Other: Anesthesiologist	5%

8. Loop recorders

Loo	o recorders	implanted	and numb	er of in	nolantina	centres*
LUU	D I CCOI GCI 3	IIIIpiaiiteu	and mann	Jei oi iii	ipiaiitiiiq	Celluca

	2008			
Implanting centres	2			
Loop recorders	1			
	2009			
Implanting centres	4			
Loop recorders	2			
* Loop recorders are not covered by		0	1	
insurance in Hungary.				

Specialty performing implants

Cardiologists	100%
Surgeons	0%

9. Device specific

4	Availability of remote monitoring of devices	

National registry for

ICD*	
Pacing*	
Electrophysiology	

^{*} 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 centers

Availability of a national institution coordinating and guiding device recalls

Yes

National Health Insurance Fund

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	2.190	2.498
Mean number (ablations/centres)	219	249
Number of AF ablations	309	502*

^{*} RFA + CRYO

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	\square
U.S.	
European	✓

Necessity of guideline translation to national language

No

Obstacles to guideline implementation

1	2	3	4	5
		\checkmark		
	\checkmark			
		\checkmark		

1 = no obstacle

5 = great obstacle

Sources: Hungarian Working Group of Arrhythmia and Cardiac Pacing, Hungarian Society of Cardiology – President: Zoltan Csanadi MD, PhD, FESC and National Health Insurance Fund





IRELAND



1. Statistics

Age pyramid for Ireland



Healthcare data

Hospitals (per 100.000 population)	4,06	2007
Beds (per 100.000 population)	533,91	2006
Density of physicians (per 1.000 population)	3,03	2007
Density of nurses (per 1.000 population)	15,5	2007

Demographic information

Population annual growth rate (%)	1,1	2009
Life expectancy at birth	80,4	2008
Death rate (per 1,000 population)	6,14	2008
Live births (per 1,000 population)	16,98	2008

Economic information

Gross domestic product (U,S dollar-billions)	226,77*	2009
Gross domestic product per capita (U.S dollar-units)	51.128,49*	2009
Total expenditure on health as % of GDP	7,5	2006
General government expenditure on health		
as % of total expenditure on health	78,3	2006
Private expenditure on health		
as % of total expenditure on health	21,7	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	233.36 per 100.000 citizens
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	18.2%
2009	not available

3. 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. Category 2 – People without Medical Cards: People without medical cards can access a certain community and hospital health services, either free of charge or at reduced cost. Over 50 % of the population have private health insurance

Basic insurance availability No Percentage of insured and uninsured citizens Insured citizens >30% Uninsured citizens <70% 100 0 50 **Distribution of insurance modality** 32% **Public insurance company** Private insurance company 47.2% Private co-payment not available 100 0 50 Possibility of subscribing to private health insurance plans Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	\checkmark
ICD primary prevention	\checkmark
ICD secondary prevention	\checkmark
CRT devices	\checkmark
Ablation	\checkmark
Unlimited availability of treatment	\checkmark
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
CST – RCPI	
National accreditation for centres	Yes
RCPI and JCI	
National Society supporting EHRA accreditation system	No
All Irish EP doctors are trained in the United States	
Specialty required for catheter ablation	Yes
Cardiac electrophysiologist	
All EP doctors in Ireland have completed EP fellowship programs in the United States.	
Specialty required for ICD or pacemaker implants	No

Required period of training to perform implantations

No

But all cardiologists have completed more than 6 years training.

Training centres availability

Pacemaker	10
ICD implantation	10
Electrophysiological studies and catheter ablation	6
CRT implantation	10
Atrial fibrillation ablation	6

Number of medical faculties

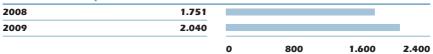
5

Percentage of academic facilities among practicing EP and implant centres

62.5%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

	2008
Implanting centres	16
New implants	not available
Replacements	not available
	2009
Implanting centres	16
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

2008 Implanting centres					
CRT pacemaker 40 CRT ICD 137 2009 Implanting centres 16 CRT pacemaker 52 CRT ICD 163		2008			
2009	Implanting centres	16			
2009 Implanting centres 16 CRT pacemaker 52 CRT ICD 163	CRT pacemaker	40			
Implanting centres 16 CRT pacemaker 52 CRT ICD 163	CRT ICD	137			
CRT pacemaker 52 CRT ICD 163		2009			
CRT ICD 163	Implanting centres	16			
<u> </u>	CRT pacemaker	52			
0 100	CRT ICD	163			
			0	100	200

Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008
Implanting centres	13
Single chamber	not available
Dual chamber	not available
First implants	not available
Replacements	not available
Total	772

	2009
Implanting centres	16
Single chamber	not available
Dual chamber	not available
First implants	not available
Replacements	not available
Total	644

0 400 800

Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008
Implanting centres	12
Loop recorders	not available
	2009
Implanting centres	16
Loop recorders	not available

Yes

Cardiologists	100%
Surgeons	0%
9. Device specific	
Availability of romoto manifesing of devices	₩
Availability of remote monitoring of devices	<u>IV</u>
National registry for	
National registry for	
National registry for ICD Pacing	
National registry for	
National registry for ICD Pacing	

Availability of a national institution coordinating and guiding device recalls

Irish Medicines Board

10. Interventional electrophysiology

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	700	800
Mean number (ablations/centres)	63,6	72.7
Number of AF ablations	300	350

11

No

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	
European	

Necessity of guideline translation to national language

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres		\checkmark			
Lack of reimbursement, limited financial resources					
Lack of referral		\checkmark			
Lack of trained personnel	\checkmark				
Low awareness of guidelines	\checkmark				
Lack of operators		\checkmark			

1 = no obstacle 5 = great obstacle

Sources: Electrophysiology Subgroup of ICS - Chairman: David Keane

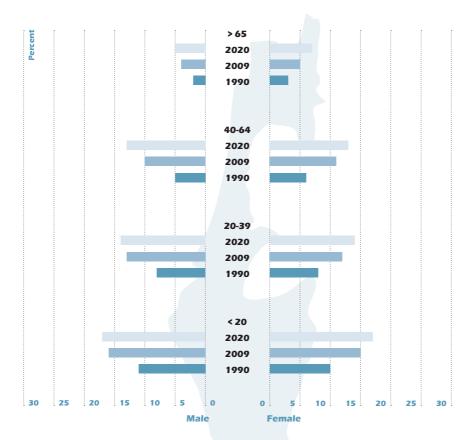
204 · The White Book 2010

ISRAEL



1. Statistics

Age pyramid for Israel



Healthcare data

Hospitals (per 100.000 population)	5,25	2007
Beds (per 100.000 population)	583,15	2007
Density of physicians (per 1.000 population)	3,53	2007
Density of nurses (per 1.000 population)	5,79	2007

Demographic information

Population annual growth rate (%)	1,7	2009
Life expectancy at birth	80,7	2007
Death rate (per 1,000 population)	5,56	2007
Live births (per 1,000 population)	21,12	2007

Economic information

Gross domestic product (U,S dollar-billions)	215,20*	2009
Gross domestic product per capita (U.S dollar-units)	2.967,58*	2009
Total expenditure on health as % of GDP	7,8	2006
General government expenditure on health		
as % of total expenditure on health	65,3	2006
Private expenditure on health		
as % of total expenditure on health	34,8	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	not available
2009	not available

3. Healthcare System

Israel's health system is financed through social insurance and taxation. It is based on regulated competition among health plans. A National Health Insurance (NHI) was introduced in Israel in 1995 and achieved universal coverage. The Ministry of Health has overall responsibility for the health of the population as well as for the functioning of the health system. (Source: Highlights on health, WHO 2004) A private medical insurance may be purchased in addition.

Basic insurance availability Y	r es
--------------------------------	-------------

Percentage of insured and uninsured citizens

Insured citizens	99%			
Uninsured citizens	1%	1		
		0	50	100

Distribution of insurance modality

Public insurance company	94%			
Private insurance company	1%	1		
Private co-payment	5%			
		0	50	100

Possibility of subscribing to private health insurance	plans Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
All the public Health Insurance Companies will authorize payment for in prevention but, some will require to meet the MADIT-I criteria and will implantations based on MADIT-II/SCD-HeFT criteria.	
Reimbursement availability	
Internal loop recorders	\checkmark
ICD primary prevention	\checkmark
ICD secondary prevention	\checkmark
CRT devices	\checkmark
Ablation	\checkmark
Unlimited availability of treatment	
The largest Public Health Fund Insurance will cover ICD for patients ful criteria but not for patients fulfilling MADIT-II criteria (i.e., positive EPS coverage for primary prevention indications). Similarly, in order to imp of CRT-P, a positive EPS may be required.	is requried for ICD
criteria but not for patients fulfilling MADIT-II criteria (i.e., positive EPS coverage for primary prevention indications). Similarly, in order to imp of CRT-P, a positive EPS may be required. 4. Education	is requried for ICD
criteria but not for patients fulfilling MADIT-II criteria (i.e., positive EPS coverage for primary prevention indications). Similarly, in order to imp of CRT-P, a positive EPS may be required. 4. Education National accreditation availability	is requried for ICD lant a CRT-D instead
criteria but not for patients fulfilling MADIT-II criteria (i.e., positive EPS coverage for primary prevention indications). Similarly, in order to imp of CRT-P, a positive EPS may be required. 4. Education National accreditation availability Device therapy	is requried for ICD lant a CRT-D instead
criteria but not for patients fulfilling MADIT-II criteria (i.e., positive EPS coverage for primary prevention indications). Similarly, in order to imp of CRT-P, a positive EPS may be required. 4. Education National accreditation availability	is requried for ICD
criteria but not for patients fulfilling MADIT-II criteria (i.e., positive EPS coverage for primary prevention indications). Similarly, in order to imp of CRT-P, a positive EPS may be required. 4. Education National accreditation availability Device therapy Invasive electrophysiology	s is requried for ICD lant a CRT-D instead
criteria but not for patients fulfilling MADIT-II criteria (i.e., positive EPS coverage for primary prevention indications). Similarly, in order to imp of CRT-P, a positive EPS may be required. 4. Education National accreditation availability Device therapy Invasive electrophysiology National accreditation for physicians	is requried for ICD lant a CRT-D instead

Specialty required for ICD or pacemaker implants

No

Required period of training to perform implantations

No

Training centres availability

Pacemaker	17
ICD implantation	17
Electrophysiological studies and catheter ablation	12
CRT implantation	12
Atrial fibrillation ablation	7

Number of medical faculties

Percentage of academic facilities among practicing EP and implant centres

90%

5. Pacemakers

Pacemaker units implanted

		0	1.500	3.000	4 500
2009	4.242				
2008	3.249				

Pacemaker units implanted and number of implanting centres

	2008
Implanting centres	17
New implants	not available
Replacements	not available
	2009
Implanting centres	17
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

		_			
	2008				
Implanting centres	12				
CRT pacemaker	123				
CRT ICD	699				
	2009				
Implanting centres	12				
CRT pacemaker	154				
CRT ICD	838				
		0	300	600	900

Specialty performing implants

Cardiologists	90%
Surgeons	10%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008	
Implanting centres	17	
Single chamber	263	
Dual chamber	506	
First implants	538*	
Replacements	231*	
Total	769	
	2009	
Implanting centres	17	
Single chamber	247	
Dual chamber	571	
First implants	573*	
Replacements	245*	
Total	818	
* approx.		

Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008			
Implanting centres	12			
Loop recorders	not available			
	2009			
Implanting centres	12			
Loop recorders	90			
		0	50	10

No

Specialty performing implants

Cardiologists	100%
Surgeons	0%
9. Device specific	
Availability of remote monitoring of devices	✓
National registry for	
ICD*	☑
ICD* Pacing	V
ICD*	
ICD* Pacing	

Availability of a national institution coordinating and guiding device recalls

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	1.900	not available
Mean number (ablations/centres)	158	not available
Number of AF ablations	200	not available

11. 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

	1	2	3	4	5
Lack of centres	V				
Lack of reimbursement, limited financial resources				\checkmark	
Lack of referral				\checkmark	
Lack of trained personnel		\checkmark			
Low awareness of guidelines		\checkmark			
Lack of operators		\checkmark			

1 = no obstacle 5 = great obstacle

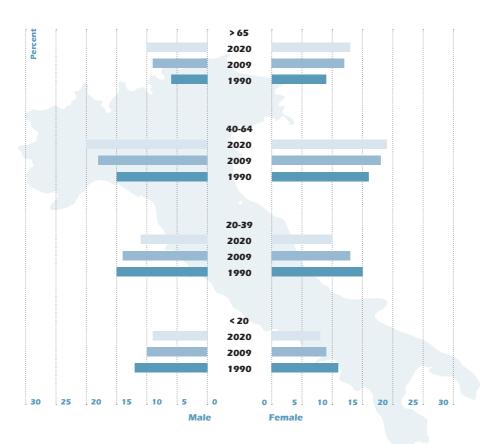
Sources: Israel Working Group of Cardiac Pacing and Electrophysiology – Secretary: Prof. Sami Viskin

ITALY



1. Statistics

Age pyramid for Italy



Healthcare data

Hospitals (per 100.000 population)	2,18	2006
Beds (per 100.000 population)	393,9	2006
Density of physicians (per 1.000 population)	3,65	2006
Density of nurses (per 1.000 population)	7,01	2006

Demographic information

Population annual growth rate (%)	0	2009
Life expectancy at birth	81,7	2007
Death rate (per 1.000 population)	9,65	2008
Live births (per 1.000 population)	9,51	2007

Economic information

Gross domestic product (U.S dollar-billions)	2.089,55*	2009
Gross domestic product per capita (U.S dollar-units)	34.954,89*	2009
Total expenditure on health as % of GDP	9	2006
General government expenditure on health		
as % of total expenditure on health	77,1	2006
Private expenditure on health		
as % of total expenditure on health	22,9	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease	
2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	not available
2009	not available

3. Healthcare System

National Health System

Basic insurance availability				Ye
basic insurance availability				- 10
Percentage of insured and unins	ured citizens			
Insured citizens	100%			
Uninsured citizens	0%			
		0	50	100
Distribution of insurance modali	ty			
Public insurance company	100%			
Private insurance company	0%			
Private co-payment	0%			
		0	50	100
Possibility of subscribing to priva	ate health in:	surance plans		Ye
Co-payment necessary for the fo	llowing thera	ру		
ICD devices				
Pacemakers				

Ablation

Reimbursement availability Internal loop recorders ICD primary prevention ICD secondary prevention CRT devices Ablation Unlimited availability of treatment Reimbursement is possible at private hospitals and at private insurances.

4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	No
National accreditation for centres	Yes
National Society supporting EHRA accreditation system	Yes
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
AIAC – FIC (National Association Arrhythmology & Pacing – Italian Fed	eration Cardiology)
Required period of training to perform implantations	No

Training centres availability

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

* approx.		0	40.000	80.000
2009	66.000*			
2008	61.300			

Pacemaker units implanted and number of implanting centres

	2008
Implanting centres	470
New implants	not available
Replacements	not available
	2009
Implanting centres	2009 470
Implanting centres New implants	

Specialty performing implants

Cardiologists	99%
Surgeons	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2008			
Implanting centres	400			
CRT pacemaker	1.500			
CRT ICD	9.500			
	2009			
Implanting centres	400			
CRT pacemaker	1.550*			
CRT ICD	8.800*			
* approx.		0	5.000	10.00

Specialty performing implants

Cardiologists	99%
Surgeons	1%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008		
Implanting centres	400		
Single chamber	not available		
Dual chamber	not available		
First implants	not available		
Replacements	not available		
Total	18.000		
	2009		
Implanting centres	2009 400		
<u> </u>			
Single chamber	400		
Single chamber Dual chamber	400 not available		
Single chamber Dual chamber First implants	400 not available not available		
Implanting centres Single chamber Dual chamber First implants Replacements Total	400 not available not available not available		

Specialty performing implants

Cardiologists	99%
Surgeons	1%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008			
Implanting centres	not available			
Loop recorders	not available			
	2009			
Implanting centres	470			
Loop recorders	1.860			
		0	1.000	2.000

Specialty performing implants

Cardiologists	100%
Surgeons	0%

9. Device specific

Availability of remote monitoring of devices	$\overline{\checkmark}$

National registry for

ICD	
Pacing	\checkmark
Electrophysiology	\checkmark

AIAC Registry

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

Availability of a national institution coordinating and guiding device recalls

Yes

The AIAC organizes the coordination of device recalls since 2004.

10. Interventional electrophysiology

Mirronhouse	f acuformina	catheter ablation	- comérce

95

	2008	2009
Number of ablations performed	not available	not available
Mean number (ablations/centres)	not available	not available
Number of AF ablations	not available	not available

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	\checkmark
U.S.	
European	✓

Necessity of guideline translation to national language

No

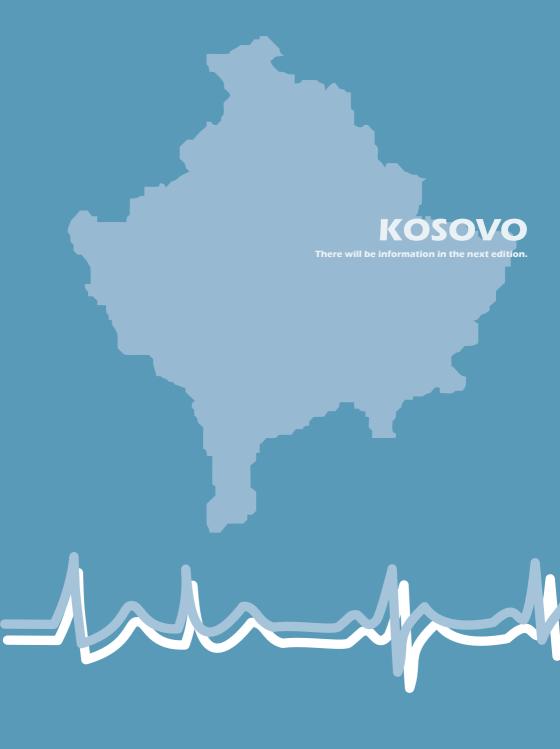
Obstacles to guideline implementation

1	2	3	4	5
\checkmark				
\checkmark				
\checkmark				
		\checkmark		
			\checkmark	
\checkmark				
	✓ ✓ □			

1 = no obstacle

5 = great obstacle

Sources: Italian association of Arrhythmias and Cardiac Pacing (AIAC) – President: Dr Michele Gulizia

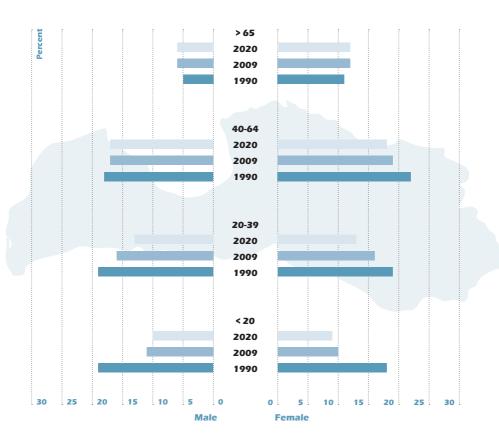


LATVIA



1. Statistics

Age pyramid for Latvia



Healthcare data

Hospitals (per 100.000 population)	4,13	2007
Beds (per 100.000 population)	757,13	2007
Density of physicians (per 1.000 population)	3,05	2007
Density of nurses (per 1.000 population)	5,48	2007

Demographic information

Population annual growth rate (%)	-0,6	2009
Life expectancy at birth	71,2	2007
Death rate (per 1.000 population)	14,52	2007
Live births (per 1.000 population)	10,23	2007

Economic information

Gross domestic product (U.S dollar-billions)	24,20*	2009
Gross domestic product per capita (U.S dollar-units)	10,700,91*	2009
Total expenditure on health as % of GDP	6	2006
General government expenditure on health		
as % of total expenditure on health	63,2	2006
Private expenditure on health		
as % of total expenditure on health	36,8	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	53,4%
2009	53,2%

3. Healthcare System

In Latvia, the National Healthcare system is devided between the Ministry of Welfare and municipalities. It is a descentralized and mainly based on local administrative structures. (Source: Health Care Systems in Transition: Latvia, European Observatory on Healthcare Systems, 2001)

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

Distribution of insurance modality

Private co-payment	0%			
Private insurance company	2%			
Public insurance company	98%			

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	V
ICD primary prevention	\checkmark
ICD secondary prevention	V
CRT devices	\checkmark
Ablation	V
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy	V
Invasive electrophysiology	V
Method certificates	
National accreditation for physicians	Yes
and the second s	
National accreditation for centres	Yes
Noticeal Conjety supporting EUDA proveditation system	Yes
National Society supporting EHRA accreditation system	163
Specialty required for catheter ablation	Yes
Cardiologist, cardiac surgeon	103
an array 15, tal alat sai year	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist, cardiac surgeon	

National Society of Cardiology, Guidelines of Competency

Required period of training to perform implantations

2 years

Training centres availability

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

Number of medical faculties

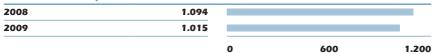
2

Percentage of academic facilities among practicing EP and implant centres

100%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

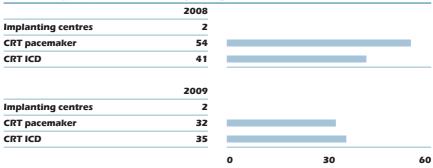
	2008			
Implanting centres	3			
New implants	829			
Replacements	265		•	
	2009			
Implanting centres	3			
New implants	795			
Replacements	220			
		0	500	1.00

Specialty performing implants

Cardiologists	70%
Surgeons	30%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	60%
Surgeons	40%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	60%
Surgeons	40%

8. Loop recorders

Loop recorders implanted and number of implanting centres

2008			
2			
28			
2009			
2			
28			
	0	15	3
	2 28 2009 2	2 28 2009 2 28	2009 2 2 28

Specialty performing implants

Cardiologists	70%
Surgeons	30%

9. Device specific

Availability of remote monitoring of devices

National registry for

ICD*	V
Pacing**	V
Electrophysiology***	V

- * National Register of ICD
- ** National Register of Pacing
- *** National Register of Electrophysiology

Availability of a national quality insurance system or complication registry

Yes

Health Statistics and Medical Technologies State Agency in colaboration with National Working Group of Arrhythmology and Board of National Society of Cardiology

Availability of a national institution coordinating and guiding device recalls

Yes

Health Statistics and Medical Technologies State Agency

10. Interventional electrophysiology

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	304	315
Mean number (ablations/centres)	152	157,5
Number of AF ablations	42	28

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	\checkmark
U.S.	
European	

Necessity of guideline translation to national language

Yes

2

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres			\checkmark		
Lack of reimbursement, limited financial resources					\checkmark
Lack of referral		\checkmark			
Lack of trained personnel				\checkmark	
Low awareness of guidelines		\checkmark			
Lack of operators				\checkmark	

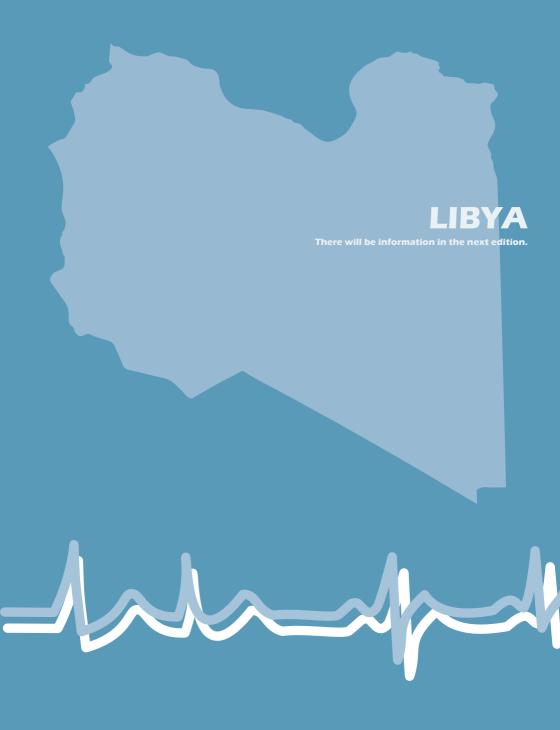
1 = no obstacle

5 = great obstacle

Sources: Latvia Working Group on Arrhythmology and Cardiac Pacing – Chairman: Ass. Prof. Oskars Kalejs

236 · The White Book 2010



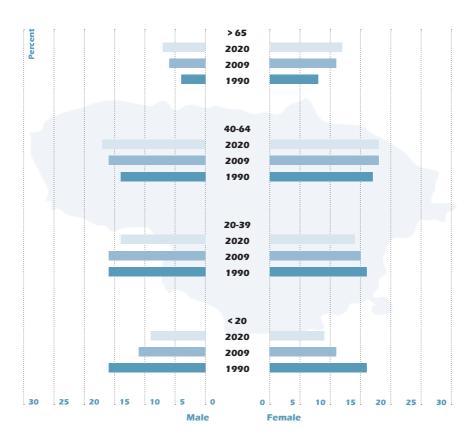


LITHUANIA



1. Statistics

Age pyramid for Lithuania



Healthcare data

Hospitals (per 100,000 population)	4,89	2007
Beds (per 100.000 population)	813,95	2007
Density of physicians (per 1.000 population)	4,07	2007
Density of nurses (per 1.000 population)	7,35	2007

Demographic information

Population annual growth rate (%)	-0,3	2009
Life expectancy at birth	72,05	2008
Death rate (per 1,000 population)	13,05	2008
Live births (per 1,000 population)	10,44	2008

Economic information

Gross domestic product (U,S dollar-billions)	35,96*	2009
Gross domestic product per capita (U.S dollar-units)	10.774,61*	2009
Total expenditure on health as % of GDP	6,2	2006
General government expenditure on health		
as % of total expenditure on health	70	2006
Private expenditure on health		
as % of total expenditure on health	30	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

704 per 100.000 citizens	2008
not available	2009

Proportion cardiac mortality over total mortality of the country

2008	53,3%
2009	not available

3. Healthcare System

The Healthcare system in Lithuania is based on a compulsory health insurance. The State Fund finances

near 100% of the services and there are only few private medicine services.

Possibility of subscribing to private health insurance plans

Private insurance company Private co-payment	0 %			
	0%			
Public insurance company	100%			
Distribution of insurance modal	ity	O .	50	100
		0	50	100
Uninsured citizens	2%	1		
Insured citizens	98%			
	98%			

Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	
ICD primary prevention	
ICD secondary prevention	✓
CRT devices	✓
Ablation	✓
Unlimited availability of treatment	
Some indications for ICD primary prevention are reimbursed.	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres	Yes
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation	Yes
Cardiologist	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist, cardiac surgeon	

Required period of training to perform implantations

No

Training centres availability

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

Number of medical faculties

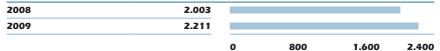
2

Percentage of academic facilities among practicing EP and implant centres

50%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

	2008			
Implanting centres	4			
New implants	1.666			
Replacements	337			
	2009			
Implanting centres	4			
New implants	1.816			
Replacements	395			
		0	1.000	2.00

Specialty performing implants

Cardiologists	97%
Surgeons	3%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

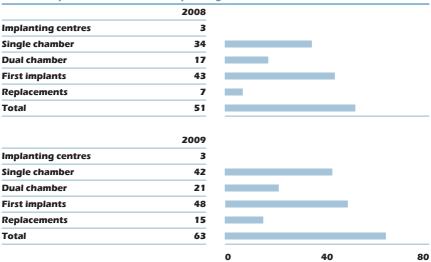
	2008			
Implanting centres	3			
CRT pacemaker	55			
CRT ICD	2			
	2009			
Implanting centres	3			
CRT pacemaker	75			
CRT ICD	14			
		0	40	80

Specialty performing implants

Cardiologists	98%
Surgeons	2%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008			
Implanting centres	3			
Loop recorders	19			
	2009			
Implanting centres	3			
Loop recorders	23			
		0	12	24

Specialty performing implants

Cardiologists	100%
urgeons	
9. Device specific	
Availability of remote monitoring of devices	
Availability of Telliote monitoring of devices	
National registry for	_
National registry for	
National registry for ICD Pacing	
National registry for	

Availability of a national institution coordinating and guiding device recalls

Yes

State Health Care Accreditation Agency

10. Interventional electrophysiology

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	797	785
Mean number (ablations/centres)	266	262
Number of AF ablations	38	65

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	\checkmark
U.S.	
European	✓

Necessity of guideline translation to national language

Yes

3

Obstacles to guideline implementation

4	5
	V
-	

1 = no obstacle

5 = great obstacle

Sources: Working Group on Arrhythmias Pacing and Electrophysiology – Lithuania – Chairman: Prof. Audrius Aidietis.

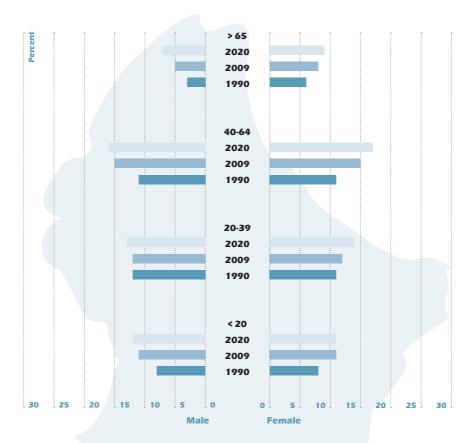
250 · The White Book 2010

LUXEMBOURG



1. Statistics

Age pyramid for Luxembourg



Healthcare data

Hospitals (per 100.000 population)	3,96	2004
Beds (per 100.000 population)	633,36	2004
Density of physicians (per 1.000 population)	2,9	2005
Density of nurses (per 1.000 population)	10,23	2005

Demographic information

Population annual growth rate (%)	1,2	2009
Life expectancy at birth	79,69	2006
Death rate (per 1.000 population)	7,86	2005
Live births (per 1.000 population)	11,41	2007

Economic information

Gross domestic product (U.S dollar-billions)	46,51*	2009
Gross domestic product per capita (U.S dollar-units)	94.417,72*	2009
Total expenditure on health as % of GDP	7,2	2006
General government expenditure on health		
as % of total expenditure on health	90,6	2006
Private expenditure on health		
as % of total expenditure on health	9,4	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	not available
2009	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

Insured citizens	100%			
Uninsured citizens	0%			
		0	50	10

Distribution of insurance modality

		0	50	100
Private co-payment	not available			
Private insurance company	58%			
Public insurance company	100%			

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	\checkmark
ICD primary prevention	\checkmark
ICD secondary prevention	\checkmark
CRT devices	\checkmark
Ablation	\checkmark
Unlimited availability of treatment	\checkmark
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres	No
National Society supporting EHRA accreditation system	No
Specialty required for catheter ablation	Yes
Cardiologist	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist, surgeon	

Required period of training to perform implantations

No

Training centres availability

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

Number of medical faculties

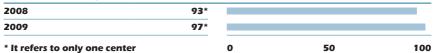
0

Percentage of academic facilities among practicing EP and implant centres

0%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

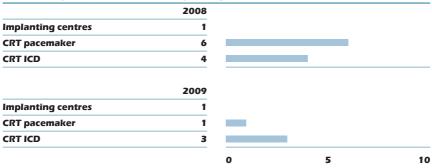
	2008			
Implanting centres	6			
New implants	54			
Replacements	39			
	2009			
Implanting centres	6			
New implants	61			
Replacements	36			
		0	40	80

Specialty performing implants

Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

		_		
	2008			
Implanting centres	1			
Single chamber	32			
Dual chamber	5			
First implants	36			
Replacements	5			
Total	41			
Implanting centres	2009			
Single chamber	25			
Dual chamber	14			
First implants	31			
Replacements	11			
Total	42			
		0	30	60

Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres

2008			
3			
4			
2009			
2			
5			
	0	3	6
	2009	2009 2 5	2009 2 5

Specialty performing implants

Cardiologists	100%
Surgeons	0%

9. Device specific

Availability of remote monitoring of devices	<u>Y</u>
National registry for	

ICD*

Pacing	
Electrophysiology*	

^{*} INCCI

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

Yes

Ministry of health: Direction de la santé

10. Interventional electrophysiology

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	99	107
Mean number (ablations/centres)	99	107
Number of AF ablations	9	20

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	V
European	

Necessity of guideline translation to national language

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres	V				
Lack of reimbursement, limited financial resources	V				
Lack of referral	V				
Lack of trained personnel		\checkmark			
Low awareness of guidelines			\checkmark		
Lack of operators			\checkmark		

1 = no obstacle 5 = great obstacle

1

No

Sources: National Working Group on Arrythmias – Chairmain: Dr. Camille Pesch

260 · The White Book 2010

MALTA

There will be information in the next edition.

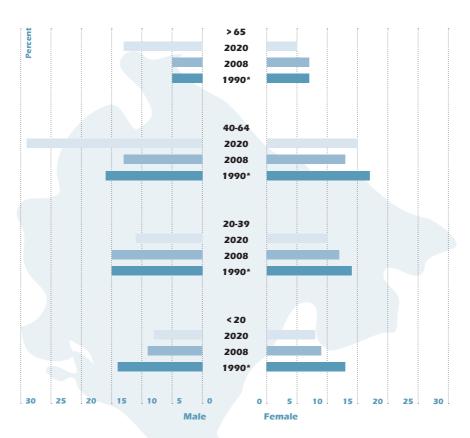


MONTENEGRO



1. Statistics

Age pyramid for Montenegro



^{*} Refers to Serbia and Montenegro

Healthcare data

Hospitals (per 100.000 population)	41	2006
Beds (per 100.000 population)	0,04	2008
Density of physicians (per 1.000 population)	2	2006
Density of nurses (per 1.000 population)	not available	not available

Demographic information

Population annual growth rate (%)	-1,1	2006
Life expectancy at birth	74	2008
Death rate (per 1.000 population)	9,1	2008
Live births (per 1.000 population)	13,1	2008

Economic information

4,5	2008
2.648	2009
6,8	2006
79,5	2006
20,5	2006
	2.648 6,8 79,5

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	490,6 per 100.000 citizens
2009	not available

Proportion cardiac mortality over total mortality of the country

54%	2008
not available	2009

3. Healthcare System

The healthcare system in Montenegro 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 of Montenegro.

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

		0	50	100
Uninsured citizens	10%			
Insured citizens	90%			

Distribution of insurance modality

Private co-payment	0%		
Private insurance company	0%		
Deliverte incompany company	00/		
Public insurance company	100%		

Possibility of subscribing to private health insurance plans

No

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
At the moment, Montenegro is going through a health reform which will give the tion the possibility of private and public health insurance.	e popula-
Reimbursement availability	
Internal loop recorders	
ICD primary prevention	
ICD secondary prevention	
CRT devices	
Ablation	
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy*	✓
Invasive electrophysiology**	√
* Center for pacemakers and electrophysiology Clinical center of Montenegro ** In 2010 we plan to start with invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres	Yes
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation Cardiologist	Yes
Specialty required for ICD or pacemaker implants Cardiologist or vascular surgeon	Yes

Required period of training to perform implantations

6 months-1 year

Training centres availability

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

^{*} Not in use yet, equipment being purchased.

Number of medical faculties

1

Percentage of academic facilities among practicing EP and implant centres

100%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

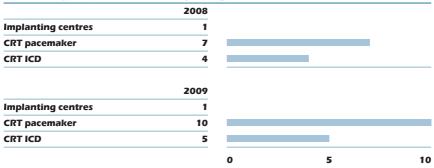
	2008			
Implanting centres	1			
New implants	109			
Replacements	11			
	2009			
Implanting centres	1			
New implants	147			
Replacements	13			
		0	80	1

Specialty performing implants

Cardiologists	1%
Surgeons	99%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%
Other*	

There is technical support from cardiologists from Serbia for CRT implanations.

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008	
Implanting centres	1	
Single chamber	9	
Dual chamber	3	
First implants	9	
Replacements	0	
Total	12	
	2009	
Implanting centres	1	
Single chamber	12	
Dual chamber	6	
First implants	16	
Replacements	2	
Total	18	
		0

Specialty performing implants

Cardiologists	0%
Surgeons	100%

8. Loop recorders

	2008	
Implanting centres	0	
Loop recorders	0	
	2009	
Implanting centres	0	
Loop recorders	0	
Specialty performing implan	ts	
Cardiologists		not available
Surgeons		not available
Availability of remote monit	oring of devices	
National registry for		
ICD		
Pacing		
Electrophysiology		
Availability of a national qua	ality insurance system or complication registry	y No
-		tv insurance
The EHRA invitation will be system.	a great inspiration to start developing a quali	• • • • • • • • • • • • • • • • • • • •

National Agency for controling drugs and devices

Availability of a national institution coordinating and guiding device recalls

Yes

10. Interventional electrophysiology

		_		
Number of	performing	catheter	ablation	centres

	2008	2009
Number of ablations performed	0	0
Mean number (ablations/centres)	0	0
Number of AF ablations	0	0

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	
European	

Necessity of guideline translation to national language

Yes

0

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres			\checkmark		
Lack of reimbursement, limited financial resources			\checkmark		
Lack of referral			\checkmark		
Lack of trained personnel			\checkmark		
Low awareness of guidelines			\checkmark		
Lack of operators			\checkmark		

1 = no obstacle

5 = great obstacle

Pacemaker Center Montenegro – Chief: Ljilja Music, MD, PhD,, Institute for Public Health and Protocols from Clinical Center Montenegro

272 · The White Book 2010

MOROCCO There will be information in the next edition.

NETHERLANDS



1. Statistics

Age pyramid for Netherlands



Healthcare data

Hospitals (per 100.000 population)	1,16	2007
Beds (per 100.000 population)	480,8	2007
Density of physicians (per 1.000 population)	3,93	2007
Density of nurses (per 1.000 population)	15,05	2007

Demographic information

Population annual growth rate (%)	0,4	2009
Life expectancy at birth	81,53	2008
Death rate (per 1.000 population)	8,18	2008
Live births (per 1.000 population)	11,17	2008

Economic information

Gross domestic product (U.S dollar-billions)	789,67*	2009
Gross domestic product per capita (U.S dollar-units)	47.041,60*	2009
Total expenditure on health as % of GDP	9,3	2006
General government expenditure on health		
as % of total expenditure on health	81,8	2006
Private expenditure on health		
as % of total expenditure on health	18,2	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

	30%
not a	vailable

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

Insured citizens	90%			
Uninsured citizens	10%			
		0	50	100

Distribution of insurance modality

		0	50	100
Private co-payment	0%			
Private insurance company	10%			
Public insurance company	90%			

Possibility of	subscrib	ing to pr	ivate heal	th ins	surance pl	ans
----------------	----------	-----------	------------	--------	------------	-----

Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	
ICD primary prevention	✓
ICD secondary prevention	✓
CRT devices	✓
Ablation	
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology*	
* Netherlands Heart Rhythm Association	
National accreditation for physicians	Yes
National accreditation for centres to perform EP	No
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation	Yes
Electrophysiologist	
Consists required for ICD or property less to the	9.0
Specialty required for ICD or pacemaker implants ICD Cardiologist	Yes

NVVC Praktijkrichtlijnen voor ICD centra

Required period of training to perform implantations

2 years

Training centres availability

Pacemaker	17
ICD implantation	19
Electrophysiological studies and catheter ablation	15
CRT implantation	19
Atrial fibrillation ablation	9

Number of medical faculties

7

Percentage of academic facilities among practicing EP and implant centres

50%

5. Pacemakers

Pacemaker units implanted

2009	not available		
2008	10.400*		

Pacemaker units implanted and number of implanting centres

r decinater arms implant	tea ana namber or m
	2008
Implanting centres	100
New implants	not available
Replacements	not available
	2009
Implanting centres	100
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2008			
Implanting centres	17			
CRT pacemaker	156			
CRT ICD	1.319			
	2009			
Implanting centres	19			
CRT pacemaker	not available			
CRT ICD	not available			
		0	700	1.40

Specialty performing implants

Cardiologists	100%
Suraeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008
Implanting centres	17
Single chamber	not available
Dual chamber	not available
First implants	2.644
Replacements	639
Total	3.238
	3000
Implanting centres	2009
Single chamber	not available
Dual chamber	not available
First implants	not available

0 1.700 3.400

Specialty performing implants

Replacements Total

Cardiologists	100%
Surgeons	0%

not available

not available

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008
Implanting centres	not available
Loop recorders	not available
	2009
Implanting centres	not available
Loop recorders	not available

Yes

Cardiologists	100%
Surgeons	0%
9. Device specific	
Availability of remote monitoring of devices	✓
National registry for	
ICD*	V
	Ø
ICD*	
ICD* Pacing*	✓

Availability of a national institution coordinating and guiding device recalls

Device Committee NHRA

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	4.368	not available
Mean number (ablations/centres)	336	not available
Number of AF ablations	1.536	not available

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	\checkmark
U.S.	
European	\checkmark

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

No

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres	\checkmark				
Lack of reimbursement, limited financial resources					V
Lack of referral				V	
Lack of trained personnel			\checkmark		
Low awareness of guidelines	\checkmark				
Lack of operators		\checkmark			

1 = no obstacle

5 = great obstacle

Sources: Netherlands Heart Rhythm Association (NHRA) – Chairman: Associate

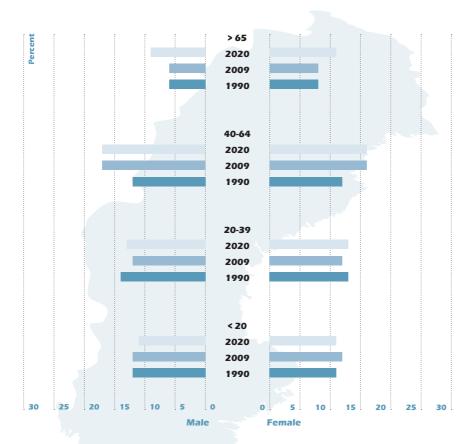
Professor. C. C. de Cock

NORWAY



1. Statistics

Age pyramid for Norway



Healthcare data

Hospitals (per 100.000 population)	1,5	2006
Beds (per 100.000 population)	396,16	2007
Density of physicians (per 1.000 population)	3,8	2007
Density of nurses (per 1.000 population)	15,47	2007

Demographic information

Population annual growth rate (%)	0,4	2009
Life expectancy at birth	80,7	2007
Death rate (per 1.000 population)	8,91	2007
Live births (per 1.000 population)	12,41	2007

Economic information

Gross domestic product (U,S dollar-billions)	368,96*	2009
Gross domestic product per capita (U.S dollar-units)	76.692,08*	2009
Total expenditure on health as % of GDP	8,7	2006
General government expenditure on health		
as % of total expenditure on health	83,6	2006
Private expenditure on health		
as % of total expenditure on health	16,4	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

290 per 100.000 citizen	2008
not availabl	2009

Proportion cardiac mortality over total mortality of the country

2008	39%
2009	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 uninsu	ıred citizens			
Insured citizens	100%			
Uninsured citizens	0%			
		0	50	100
Public insurance company	100%			
Private insurance company	0%			
rivate insurance company				
Private co-payment	3%			
	3%	0	50	100

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	✓
ICD primary prevention	✓
ICD secondary prevention	\checkmark
CRT devices	\checkmark
Ablation	\checkmark
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres	No
Nesting of Control of	No.
National Society supporting EHRA accreditation system	No
Specialty required for extension obligation	Yes
Specialty required for catheter ablation Cardiologist	res
Cardiologist	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist	163
Cararorogist	

Required period of training to perform implantations

No

Training centres availability

Pacemaker	5
ICD implantation	5
Electrophysiological studies and catheter ablation	4
CRT implantation	5
Atrial fibrillation ablation	4

Number of medical faculties

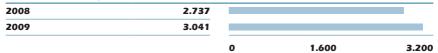
5

Percentage of academic facilities among practicing EP and implant centres

80%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

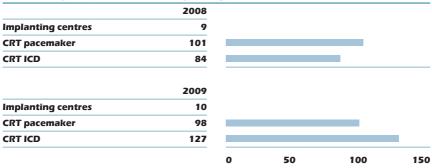
	2008			
Implanting centres	25			
New implants	2.179			
Replacements	558		<u> </u>	
	2009			
Implanting centres	25			
New implants	2.333			
Replacements	708			
		0	1.200	2.40

Specialty performing implants

Cardiologists	98,4%
Surgeons	1,6%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

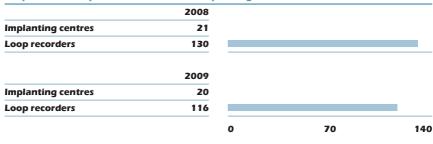
	2008		
Implanting centres	9		
Single chamber	135		
Dual chamber	267		
First implants	422		
Replacements	131		
Total	553		
Implanting centres	2009		
Single chamber	131		
Dual chamber	257		
First implants	504		
Replacements	153		
Total	657		
		0	

Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

1	recorders	implement	and serve	show of it	malantina	comfuce
LUUI	, recorders	IIIIpianiteu	and nun	ibei oi ii	mpianting	centres



Specialty performing implants

Availability of remote monitoring of devices

Cardiologists	100%
Surgeons	0%

9. Device specific

National registry for	
ICD	lacktriangle
Pacing	
Electrophysiology	
Norwegian Pacemaker Registry	

Availability of a national quality insurance system or complication registry

Yes

abla

Norwegian Pacemaker Registry Incomplete complication registry

Availability of a national institution coordinating and guiding device recalls

No

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	1.201	1.167
Mean number (ablations/centres)	240	233
Number of AF ablations	359	337

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	
European	\checkmark

Necessity of guideline translation to national language

No

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres		\checkmark			
Lack of reimbursement, limited financial resources				\checkmark	
Lack of referral			\checkmark		
Lack of trained personnel			\checkmark		
Low awareness of guidelines		\checkmark			
Lack of operators				\checkmark	

1 = no obstacle

5 = great obstacle

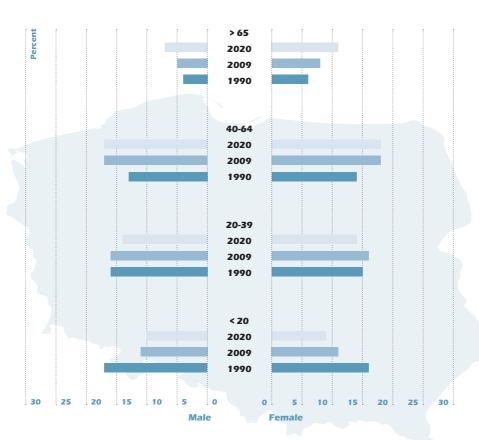
Sources: Norwegian Working Group of Arrhythmias – Chairman: Erik Kongsgaard and Norwegian Statistics

POLAND



1. Statistics

Age pyramid for Poland



Healthcare data

Hospitals (per 100.000 population)	2,08	2006
Beds (per 100.000 population)	516,17	2006
Density of physicians (per 1.000 population)	2,03	2006
Density of nurses (per 1.000 population)	4,69	2006

Demographic information

Population annual growth rate (%)	0	2009
Life expectancy at birth	75,45	2007
Death rate (per 1.000 population)	9,9	2008
Live births (per 1.000 population)	10,87	2008

Economic information

Gross domestic product (U.S dollar-billions)	422,96*	2009
Gross domestic product per capita (U.S dollar-units)	11.098,16*	2009
Total expenditure on health as % of GDP	6,2	2006
General government expenditure on health		
as % of total expenditure on health	69,9	2006
Private expenditure on health		
as % of total expenditure on health	30,1	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	40%*
2009	not available

^{*} approx.

3. Healthcare System

Poland has the health care system (NHS Found) based on general health insurance (on compulsory basis).

Basic insurance availabili	ty Yes
----------------------------	--------

Percentage of insured and uninsured citizens

Insured citizens	98%			
Uninsured citizens	2%*			
* approx.		0	50	100

Distribution of insurance modality

Private insurance company Private co-payment 98%* Private co-payment 5%*	* approx.		0	50	100
	Private co-payment	5%*			
Public insurance company 98%*	Private insurance company	1%*	1		
	Public insurance company	98%*			

Possibility of subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy

ICD devices	
Pacemakers	
Ablation	П

Reimbursement availability	
Internal loop recorders	
ICD primary prevention	\checkmark
ICD secondary prevention	\checkmark
CRT devices	\checkmark
Ablation	\checkmark
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy	✓
Invasive electrophysiology	✓
Polish Cardiac Society and Heart Rhythm Division Heart Rhythm Division's accreditation in process of acceptance of the Board of Polish Cardiac Society	
National accreditation for physicians Licence from the Polish Medical Association	Yes
National accreditation for centres to perform EP Accreditation (three levels A,B and C) from the Heart Rhythm Divisions' which needs	Yes
National Society supporting EHRA accreditation system	Yes
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	60
ICD implantation	35
Electrophysiological studies and catheter ablation	11
CRT implantation	12
Atrial fibrillation ablation	5

Number of medical faculties

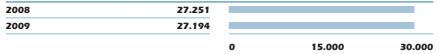
15

Percentage of academic facilities among practicing EP and implant centres

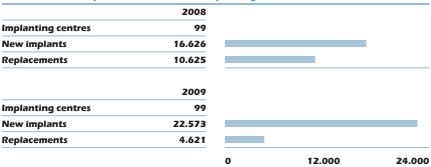
30%*

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres



Specialty performing implants

Cardiologists	98%
Surgeons	1%
Other (Pediatrics)	1%

^{*} approx.

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2008			
Implanting centres	52			
CRT pacemaker	517			
CRT ICD	821			
	2009			
Implanting centres	56			
CRT pacemaker	606			
CRT ICD	1.741			
		0	1.000	2.000

Specialty performing implants

Cardiologists	95%
Surgeons	0%
Other (Pediatrics)	5%

7. Implantable Cardiac Defibrillator

	2008		
Implanting centres	80		
Single chamber	2.517		
Dual chamber	996		
First implants	not available		
Replacements	not available		
Total	3.513		
Implanting centres	80		
	80 not available		
Single chamber			
Single chamber Dual chamber	not available		
Implanting centres Single chamber Dual chamber First implants Replacements	not available not available	_	_
Single chamber Dual chamber First implants	not available not available 4.886		

Specialty performing implants

Cardiologists	99%
Surgeons	0%
Other	1%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008			
Implanting centres	5			
Loop recorders	30			
	2009			
Implanting centres	5			
Loop recorders	not available			
		0	30	

Specialty performing implants

Cardiologists	100%
Surgeons	0%

9. Device specific

Availability of remote monitoring of devices	▼

National Consultant for Cardiology

National registry for

ICD	\checkmark
Pacing	\square
Electrophysiology	

Polish ICD Register; Elektroterapia; Polish Multicenter AF Ablation Register

Urzad Rejestracji Produktow Medycznych – Warsaw; National Consultant for Cardiology

Availability of a national institution coordinating and guiding device recalls

Yes

Urzad Rejestracji Produktow Medycznych – Warsaw; National Consultant for Cardiology Cooperation – Heart Rhythm Division of Polish Cardaic Society

10. Interventional electrophysiology

Number of performing catheter ablation centres

42

	2008	2009
Number of ablations performed	4.716	6.390
Mean number (ablations/centres)	124	152
Number of AF ablations	436	734

11. 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

	1	2	3	4	5
Lack of centres	\checkmark				
Lack of reimbursement, limited financial resources		\checkmark			
Lack of referral				abla	
Lack of trained personnel			abla		
Low awareness of guidelines				abla	
Lack of operators	П	П	V	П	

1 = no obstacle

5 = great obstacle

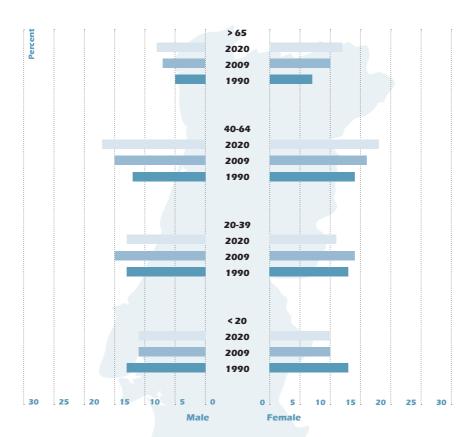
Sources: Heart Rhythm Division Polish Cardiac Society - Prof. Andrzej Kutarski

PORTUGAL



1. Statistics

Age pyramid for Portugal



Healthcare data

Hospitals (per 100.000 population)	1,93	2005
Beds (per 100.000 population)	345,44	2006
Density of physicians (per 1.000 population)	3,43	2005
Density of nurses (per 1.000 population)	4,81	2006

Demographic information

Population annual growth rate (%)	0,3	2009
Life expectancy at birth	78,31	2004
Death rate (per 1,000 population)	9,75	2004
Live births (per 1,000 population)	10,38	2005

Economic information

Gross domestic product (U,S dollar-billions)	219,84*	2009
Gross domestic product per capita (U.S dollar-units)	20.654,94*	2009
Total expenditure on health as % of GDP	10	2006
General government expenditure on health		
as % of total expenditure on health	71,8	2006
Private expenditure on health		
as % of total expenditure on health	28,2	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	340 per 100.000 citizens
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	32,3%
2009	not available

3. Healthcare System

The Portuguese healthcare system is composed by the National Health Service (NHS), the special social health schemes for certain professionals and the voluntary private health insurance. The NHS provides universal coverage. There are also private hospitals and clinics, which are payed privately or through the insurance. (Highlights on health, WHO, 2004)

Basic insurance availability

No

Percentage of insured and uninsured citizens

Distribution of insurance modality

		o	50	100
Private co-payment	30%			
Private insurance company	15%			
Public insurance company	85%			

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Those treatments are available in public hospitals.	
Reimbursement availability	
Internal loop recorders	
ICD primary prevention	
ICD secondary prevention	
CRT devices	
Ablation	
Unlimited availability of treatment	
These treatments are free in public services and they are not reimbursed for priv	ate pay-
ments.	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology*	\checkmark
* College of cardiology, subspeciality in Cardiac Electrophysiology	
National accreditation for physicians	Yes
The Medical Nacional Board	
National accreditation for centres	No
National Society supporting EHRA accreditation system	No
Our meettings are acccreditated by EBAC	
Specialty required for catheter ablation	Yes
Cardiologist with the sub-specialty in Cardiac Electrophysiology	
Specialty required for ISD or appearator involves	Ve-
Specialty required for ICD or pacemaker implants	Yes

Required period of training to perform implantations

2 years

Training centres availability

Pacemaker	12
ICD implantation	5
Electrophysiological studies and catheter ablation	5
CRT implantation	5
Atrial fibrillation ablation	3

Number of medical faculties

7

Percentage of academic facilities among practicing EP and implant centres

37.5%

5. Pacemakers

Pacemaker units implanted

)	3.000	6.000	9.000
2009	7.969				
2008	8.182				

Pacemaker units implanted and number of implanting centres

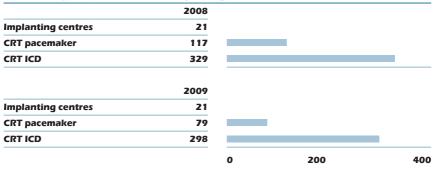
	2008			
Implanting centres	40			
New implants	6.496			
Replacements	1.472			
	2009			
Implanting centres	43			
New implants	5.794			
Replacements	1.502			
		0	4.000	8.000

Specialty performing implants

Cardiologists	99%
Surgeons	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008	
Implanting centres	20	
Single chamber	572	
Dual chamber	80	
First implants	652	
Replacements	75	
Total	727	
	2009	
Implanting centres	21	
Single chamber	518	
Dual chamber	88	
First implants	606	
Replacements	123	
Total	729	

Specialty performing implants

Cardiologists	90%
Surgeons	10%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008
Implanting centres	not available
Loop recorders	not available
	2009
Implanting centres	not available
Loop recorders	not available

Yes

Specialty performing implants	
Cardiologists	100%
Surgeons	0%
9. Device speci-	
fic Availability of remote monitoring of devices	✓
In very few centers	
National registry for	
National registry for	<u> </u>
National registry for ICD	
National registry for ICD Pacing	V

Availability of a national institution coordinating and guiding device recalls

10. Interventional electrophysio-

logy

Number of performing catheter ablation centres

16

	2008	2009
Number of ablations performed	1.594	1.391
Mean number (ablations/centres)	100	87
Number of AF ablations	233	318

11. 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

	1	2	3	4	5
Lack of centres		V			
Lack of reimbursement, limited financial resources					\checkmark
Lack of referral				\checkmark	
Lack of trained personnel		\checkmark			
Low awareness of guidelines				V	
Lack of operators		V			

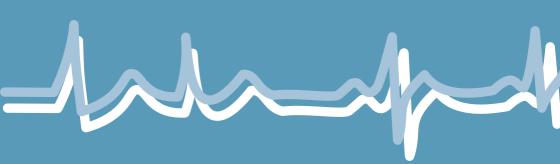
1 = no obstacle

5 = great obstacle

Sources: Portuguese Association of Arrhythmology, Pacing and Electrophysiology (APAPE) – Chairman Dr. João Jose Primo, APAPE registry, National Institute of Statistics, Pordata and National Institute of Insurances

REPUBLIC OF MOLDOVA

There will be information in the next edition.



ROMANIA



1. Statistics

Age pyramid for Romania



Healthcare data

Hospitals (per 100.000 population)	1,94	2006
Beds (per 100.000 population)	654,29	2006
Density of physicians (per 1.000 population)	1,92	2006
Density of nurses (per 1.000 population)	3,97	2006

Demographic information

Population annual growth rate (%)	-0,1	2009
Life expectancy at birth	73,47	2008
Death rate (per 1.000 population)	11,77	2008
Live births (per 1.000 population)	10,32	2008

Economic information

Gross domestic product (U.S dollar-billions)	160,67*	2009
Gross domestic product per capita (U.S dollar-units)	7.502,90*	2009
Total expenditure on health as % of GDP	5,7	2006
General government expenditure on health		
as % of total expenditure on health	71	2006
Private expenditure on health		
as % of total expenditure on health	29	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	not available
2009	not available

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.

Rasic	insurance	availability

Yes

Percentage of insured and uninsured citizens

		0	50	100
Uninsured citizens	2%			
Insured citizens	98%			

Distribution of insurance modality

Public insurance company	57%			
Private insurance company	14%			
Private co-payment	29%			
		0	50	100

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
In very limited numbers of ICDs	
Reimbursement availability	
Internal loop recorders	
ICD primary prevention	✓
ICD secondary prevention	V
CRT devices	V
Ablation	V
Unlimited availability of treatment	V
In very limited number of complex devices.	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres	No
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation	Yes
Cardiologist	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist	

Required period of training to perform implantations

No

Training centres availability

Pacemaker	12
ICD implantation	7
Electrophysiological studies and catheter ablation	7
CRT implantation	5
Atrial fibrillation ablation	0

Number o	f medical	faculties
----------	-----------	-----------

11

Percentage of academic facilities among practicing EP and implant centres

100%

5. Pacemakers

Pacemaker units implanted

2008	2.348			
2009	3.000			
* It refers to only one center		0	1.500	3.000

Pacemaker units implanted and number of implanting centres

	2008
Implanting centres	18
New implants	not available
Replacements	not available
	2009
Implanting centres	18
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

2008			
10			
75			
24		<u> </u>	
2009			
10			
100			
40			
	0	50	10
	10 75 24 2009 10 100	10 75 24 2009 10 100 40	10 75 24 2009 10 100 40

Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008	
Implanting centres	12	
Single chamber	not available	
Dual chamber	not available	
First implants	not available	
Replacements	not available	
Total	106	
Implanting centres	2009	
Single chamber	not available	
Dual chamber	not available	
First implants	not available	
Replacements	not available	
Total	125	

Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

	2008	
Implanting centres	not available	
Loop recorders	not available	
	2009	
Implanting centres	not available	
Loop recorders	not available	
Specialty performing im	plants	
Cardiologists		not available
Surgeons		not available
9. Device specific Availability of remote m	onitoring of devices	Ø
National registry for		
ICD		П
ICD Pacing		Ш

Availability of a national institution coordinating and guiding device recalls

No

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	780	904
Mean number (ablations/centres)	70	82
Number of AF ablations	0	4

11. 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

	1	2	3	4	5
Lack of centres			\checkmark		
Lack of reimbursement, limited financial resources					V
Lack of referral			\checkmark		
Lack of trained personnel			\checkmark		
Low awareness of guidelines		\checkmark			
Lack of operators			\checkmark		

1 = no obstacle

5 = great obstacle

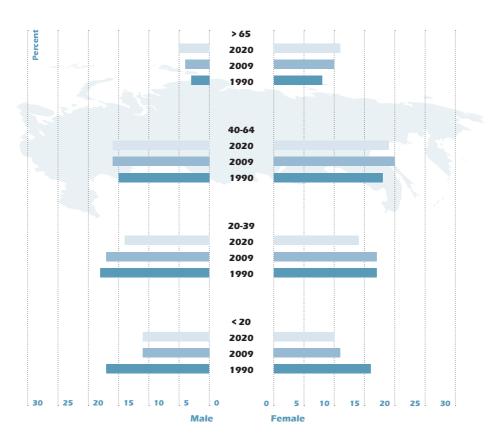
Sources: Romanian Society of Cardiology, Arrhythmias Working Group – President: Assoc. Prof. Dan Dobreanu

RUSSIAN FEDERATION



1. Statistics

Age pyramid for Russian Federation



Healthcare data

Hospitals (per 100.000 population)	4,5	2006
Beds (per 100.000 population)	965,85	2006
Density of physicians (per 1.000 population)	4,31	2006
Density of nurses (per 1.000 population)	8,06	2006

Demographic information

Population annual growth rate (%)	-0,5	2009
Life expectancy at birth	66,67	2006
Death rate (per 1.000 population)	15,21	2006
Live births (per 1.000 population)	10,38	2006

Economic information

Gross domestic product (U.S dollar-billions)	1.254,65*	2009
Gross domestic product per capita (U.S dollar-units)	8.873,61*	2009
Total expenditure on health as % of GDP	5,3	2006
General government expenditure on health		
as % of total expenditure on health	63,2	2006
Private expenditure on health		
as % of total expenditure on health	36,8	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

1.462 per 100.000 citizens	2008
not available	2009

Proportion cardiac mortality over total mortality of the country

F30/		3000
57%		2008
not available		2009
not availab		2009

3. Healthcare System

The Russian Federation is formed National and Private healthcare systems.

Basic insurance availability				No
Percentage of insured and unins	ured citizens			
Insured citizens	5%			
Uninsured citizens	95%			
		0	50	100
Distribution of insurance modali	ty			
Public insurance company	94%			
Private insurance company	5%			
Private co-payment	1%			
		0	50	100
Possibility of subscribing to priva	ite health in	surance plans		Yes
Co-payment necessary for the fol	lowing thera	ару		
ICD devices				
Pacemakers				
Ablation				

Reimbursement availability Internal loop recorders П **ICD** primary prevention **ICD** secondary prevention $\overline{\mathsf{V}}$ **CRT** devices $\overline{\mathsf{V}}$ Ablation $\overline{\mathsf{V}}$ **Unlimited availability of treatment** $\overline{\mathsf{V}}$ 4. Education **National accreditation availability Device therapy** $\overline{\mathsf{V}}$ Invasive electrophysiology $\overline{\mathsf{V}}$ **National accreditation for physicians** Yes **National accreditation for centres** Yes **National Society supporting EHRA accreditation system** Yes **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 **Russian Society of Arrhythmology** Required period of training to perform implantations

3 years

Training centres availability

Pacemaker	7
ICD implantation	7
Electrophysiological studies and catheter ablation	7
CRT implantation	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

* approx.		0	10.000	20.000	30.000
2009	26.375				
2008	23.751				

Pacemaker units implanted and number of implanting centres

	2008			
Implanting centres	110			
New implants	20.163			
Replacements	3.588			
	2009			
Implanting centres	115			
New implants	22.516			
Replacements	3.859			
		0	12.000	24.0

Specialty performing implants

Cardiologists	70%
Surgeons	30%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

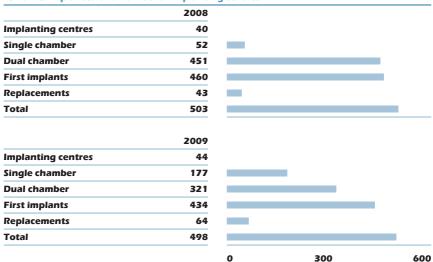
	2008		
Implanting centres	21		
CRT pacemaker	322		
CRT ICD	123		
	2009		
Implanting centres	23		
CRT pacemaker	346		
CRT ICD	116		

Specialty performing implants

Cardiologists	70%
Surgeons	30%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty	performin	g implants
------------------	-----------	------------

Cardiologists	70%
Surgeons	30%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008			
Implanting centres	17			
Loop recorders	85			
	2009			
Implanting centres	not available			
Loop recorders	not available			
		0	50	1

Specialty performing implants

Cardiologists	30%
Surgeons	70%

9. Device specific

Availability of remote monitoring of devices	A

National registry for

ICD	
Pacing	\checkmark
Electrophysiology	✓

Russian Centre of Arrhythmology

Availability of	f a national qu	ality insurance:	system or com	plication registr	y Yes
-----------------	-----------------	------------------	---------------	-------------------	-------

Russian Custumer Control

Availability of	f a national	inctitution	coordinating	and quiding	device recalls
Availability o	t a national	institution (coordinating	ana aulaina	device recalls

Yes

Bakoulev Scietific Centre for Cardio-Vascular Surgery

10. Interventional electrophysiology

Number	of noufo	 	ablation	comérce

	2008	2009
Number of ablations performed	11.200	13.384
Mean number (ablations/centres)	196	194
Number of AF ablations	1.500	2.514

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	✓
U.S.	abla
European	✓

Necessity of guideline translation to national language

Yes

57

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres			\checkmark		
Lack of reimbursement, limited financial resources					V
Lack of referral		\checkmark			
Lack of trained personnel	V				
Low awareness of guidelines	V				
Lack of operators		\checkmark			

1 = no obstacle

5 = great obstacle

Sources: Clinical Electrophysiology, Arrhythmology and Cardiac Pacing – Russian Federation, Chairman: Prof. A. Sh. Revishvili



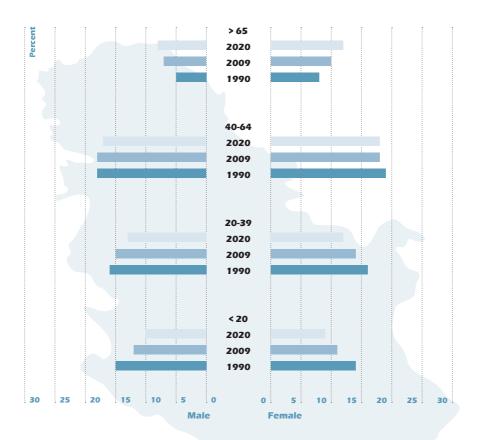


SERBIA



1. Statistics

Age pyramid for Serbia



Healthcare data

Hospitals (per 100.000 population)	1,4	2007
Beds (per 100.000 population)	540,26	2007
Density of physicians (per 1.000 population)	2,71	2007
Density of nurses (per 1.000 population)	5,57	2007

Demographic information

Population annual growth rate (%)	-0,5	2009
Life expectancy at birth	73,69	2007
Death rate (per 1.000 population)	13,97	2008
Live births (per 1.000 population)	9,4	2008

Economic information

Gross domestic product (U.S dollar-billions)	42,39*	2009
Gross domestic product per capita (U.S dollar-units)	5.742,04*	2009
Total expenditure on health as % of GDP	7,6	2006
General government expenditure on health		
as % of total expenditure on health	71	2006
Private expenditure on health		
as % of total expenditure on health	29	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

304 per 100.000 citizens	2008
not available	2009

Proportion cardiac mortality over total mortality of the country

2008	55,8%
2009	not available

3. Healthcare System

Pacie incurance availability

The National healthcare system in Serbia is provided through an established netwrok of health centers and health stations (primary care). As a secondary and tertiary care, general hospitals, university clinical centers and specialised institutions are providing services. The private healthcare is not incorporated to the national healthcare system.

Basic insurance availability				Ye
Percentage of insured and ur	ninsured citizens			
Insured citizens	95%			
Uninsured citizens	5%			
		0	50	100
Distribution of insurance mo	dality			
Public insurance company	100%			
Private insurance company	not available			
Private co-payment	not available			
		0	50	100

Voc

Yes

Possibility of subscribing to private health insurance plans

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 maxi 200 Euros.	mum amount of
Reimbursement availability	
Internal loop recorders	✓
ICD primary prevention	✓
ICD secondary prevention	✓
CRT devices	\checkmark
Ablation	\checkmark
Unlimited availability of treatment	\checkmark
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
The Working Group on cardiac pacing provides the Statement for Pacing a py for participantes who passed on the 6 month training in the referral ce	
National accreditation for physicians	Yes
National accreditation for centres	No
The Ministry of Health accredited the Pacemaker Center in Clinical center referral for the country.	of Serbia as
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation Cardiologist	Yes
Specialty required for ICD or pacemaker implants	Yes

Required period of training to perform implantations

6 months

Training centres availability

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

Number of medical faculties

3

Percentage of academic facilities among practicing EP and implant centres

75%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

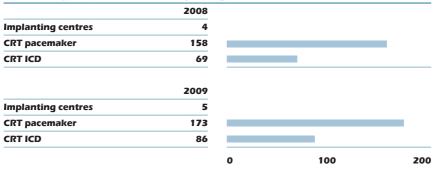
	2008
Implanting centres	16
New implants	not available
Replacements	not available
	2009
Implanting centres	15
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008	
Implanting centres	5	
Single chamber	171	
Dual chamber	61	
First implants	not available	
Replacements	not available	
Total	232	
mplanting centres	6	
Single chamber	not available	
Dual chamber	not available	
First implants	not available	
Replacements	not available	
Total	384	
Total		

Specialty performing implants

Cardiologists	100%
Surgeons	0%

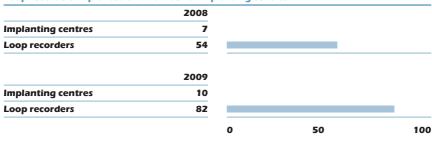
 $\overline{\mathsf{V}}$

 $\overline{\mathsf{V}}$

Yes

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

9. Device specific

Pacing

National registry for	
ICD	V

Electrophysiology

Availability of remote monitoring of devices

Referral Pacemaker center, Clinical center of Serbia	

Availability of a national quality insurance system or complication registry Ministry of Health of Serbia

Availability of a national institution coordinating and guiding device recalls	Yes

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	610	840
Mean number (ablations/centres)	203	280
Number of AF ablations	55	75

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	
European	lacksquare

Necessity of guideline translation to national language

No

Obstacles to guideline implementation

1	2	3	4	5
	\checkmark			
				\checkmark
	\checkmark			
V				
	\checkmark			
	\checkmark			
				V

1 = no obstacle

5 = great obstacle

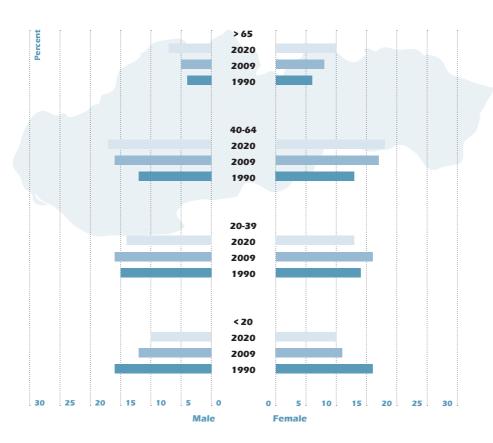
Sources: Serbian Working Group on Cardiac Pacing – Chairman: Prof. Goran Milasinovic

SLOVAKIA



1. Statistics

Age pyramid for Slovakia



Healthcare data

Hospitals (per 100.000 population)	2,65	2007
Beds (per 100.000 population)	678,84	2007
Density of physicians (per 1.000 population)	3,13	2004
Density of nurses (per 1.000 population)	6,32	2005

Demographic information

Population annual growth rate (%)	0,1	2009
Life expectancy at birth	74,3	2005
Death rate (per 1.000 population)	9,92	2005
Live births (per 1.000 population)	10,1	2005

Economic information

Gross domestic product (U.S dollar-billions)	88,30*	2009	
Gross domestic product per capita (U.S dollar-units)	16.315,41*	2009	
Total expenditure on health as % of GDP	7	2006	
General government expenditure on health			
as % of total expenditure on health	73,9	2006	
Private expenditure on health			
as % of total expenditure on health	26,1	2006	

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

461 per 100.000 citizens	2008
not available	2009

Proportion cardiac mortality over total mortality of the country

2008	53%
2009	not available

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

Insured citizens	100%			
Uninsured citizens	0%			
		0	50	100

Distribution of insurance modality

Public insurance company	75%			
Private insurance company	25%		l	
Private co-payment	0%			
		0	50	100

Possibility of subscribing to private health insurance plans	Yes

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	\checkmark
ICD primary prevention	\checkmark
ICD secondary prevention	\checkmark
CRT devices	\checkmark
Ablation	V
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy	\checkmark
Invasive electrophysiology	✓
Certified clinical activity in implantation and management of pacemakers (starting in 2010) Certified clinical activity in diagnostic and interventional electrophysiology (starting in 2010)	
National accreditation for physicians	No
National accreditation for centres	No
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation Cardiologist	Yes
Specialty required for ICD or pacemaker implants Cardiologist, surgeon	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
Electrophysiological studies and catheter ablation	3
CRT implantation	3
Atrial fibrillation ablation	1

Number of medical faculties

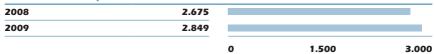
4

Percentage of academic facilities among practicing EP and implant centres

38%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

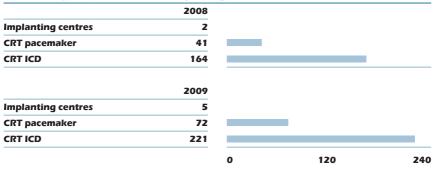
	2008			
Implanting centres	14			
New implants	2.257			
Replacements	418			
	2009			
Implanting centres	13			
New implants	2.400			
Replacements	449			
		0	1.200	2.4

Specialty performing implants

Cardiologists	75 %
Surgeons	25%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

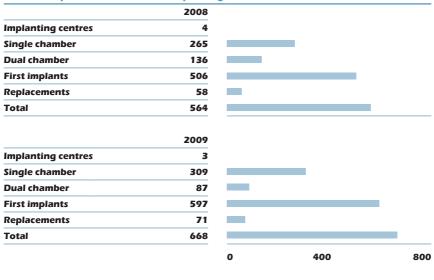


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	75%
Surgeons	25%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008
Implanting centres	3
Loop recorders	not available
	2009
Implanting centres	3
Loop recorders	not available

Yes

Specialty performing implants

Cardiologists	100%
Surgeons	0%
9. Device specific	
Availability of remote monitoring of devices	✓
National registry for	
ICD	V
ICD Pacing	√
ICD	

Availability of a national institution coordinating and guiding device recalls

SUKL (State Institute for Drug Control)

10. Interventional electrophysiology

Advanced to the second			A Ref and A reserved	
Number of	performing	catneter	abiation	centres

	2008	2009
Number of ablations performed	878	889
Mean number (ablations/centres)	220	222
Number of AF ablations	118	129

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	
European	

Necessity of guideline translation to national language

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres		\checkmark			
Lack of reimbursement, limited financial resources			abla		
Lack of referral			\checkmark		
Lack of trained personnel			\checkmark		
Low awareness of guidelines				\checkmark	
Lack of operators			\checkmark		

1 = no obstacle 5 = great obstacle

No

Source: Slovak Heart Rhythm Association - Chairman: Prof. Dr. Robert Hatala

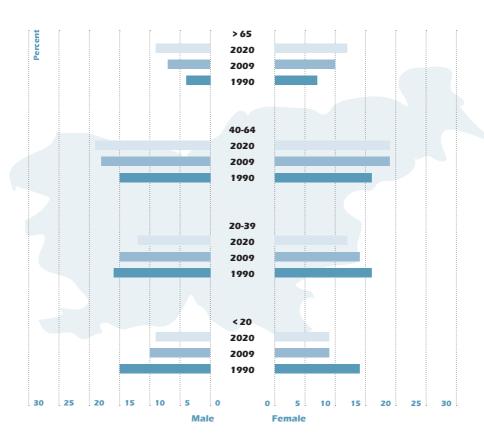
358 · The White Book 2010

SLOVENIA



1. Statistics

Age pyramid for Slovenia



Healthcare data

Hospitals (per 100.000 population)	1,44	2007
Beds (per 100.000 population)	466,18	2007
Density of physicians (per 1.000 population)	2,37	2006
Density of nurses (per 1.000 population)	7,65	2006

Demographic information

Population annual growth rate (%)	-0,1	2009
Life expectancy at birth	78,53	2007
Death rate (per 1.000 population)	9,2	2007
Live births (per 1.000 population)	9,81	2007

Economic information

Gross domestic product (U.S dollar-billions)	49,55*	2009
Gross domestic product per capita (U.S dollar-units)	24.583,31*	2009
Total expenditure on health as % of GDP	8,4	2006
General government expenditure on health		
as % of total expenditure on health	73	2006
Private expenditure on health		
as % of total expenditure on health	27	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	not available
2009	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 unins	ured citizens			
Insured citizens	99%			
Uninsured citizens	1%	1		
		0	50	100
Public insurance company	85%			
Private insurance company	13%			
Private co-payment	2%			
		0	50	100
				100

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	✓
ICD primary prevention	
ICD secondary prevention	
CRT devices	
Ablation	
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
Netional according to a hospital	3.0
National accreditation for physicians	Yes
National accreditation for centres	No
ivational actreditation for tentres	No
National Society supporting EHRA accreditation system	Yes
	res
Specialty required for catheter ablation	Yes
Internist	103
Specialty required for ICD or pacemaker implants	Yes
Surgeon or internist	
•	
Official national competency quidelines for	
electrophysiological studies or catheter ablation	No

Training centres availability

Pacemaker	2
ICD implantation	2
Electrophysiological studies and catheter ablation	2
CRT implantation	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

		0	600	1.200
2009	935			
2008	1.100			

Pacemaker units implanted and number of implanting centres

	2008			
Implanting centres	2			
New implants	917			
Replacements	183			
	2009			
Implanting centres	4			
New implants	762			
Replacements	173			
		0	500	1.00

Specialty performing implants

Cardiologists	0%
Surgeons	100%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

•				
	2008			
Implanting centres	2			
CRT pacemaker	37			
CRT ICD	19			
	2009			
Implanting centres	2			
CRT pacemaker	36			
CRT ICD	31			
		0	20	40

Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

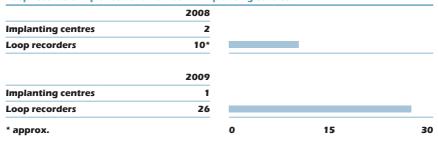


Specialty performing implants

Cardiologists	23%
Surgeons	77 %

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	50%
Surgeons	50%

9. Device specific

Availability of remote monitoring of devices	٧	1
--	---	---

National registry for

ICD	\checkmark
Pacing	
Electrophysiology	☑

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

Yes

Public Agency for Medicinal Products and Medical Devices of the Republic of Slovenia

10. Interventional electrophysiology

Number of performing catheter ablation centres

 Number of ablations performed
 2008
 2009

 Mean number (ablations/centres)
 148
 123

 Number of AF ablations
 50
 94

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	
U.S.	
European	✓

Necessity of guideline translation to national language

No

2

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres			\checkmark		
Lack of reimbursement, limited financial resources				\checkmark	
Lack of referral		\checkmark			
Lack of trained personnel				\checkmark	
Low awareness of guidelines		\checkmark			
Lack of operators				\checkmark	

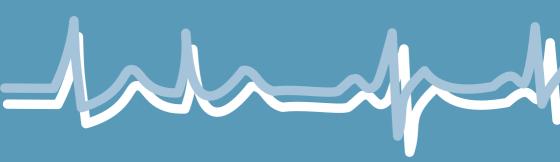
1 = no obstacle

5 = great obstacle

Sources: Slovenia National Working Group on Arrhythmias and Pacing – Chairman:

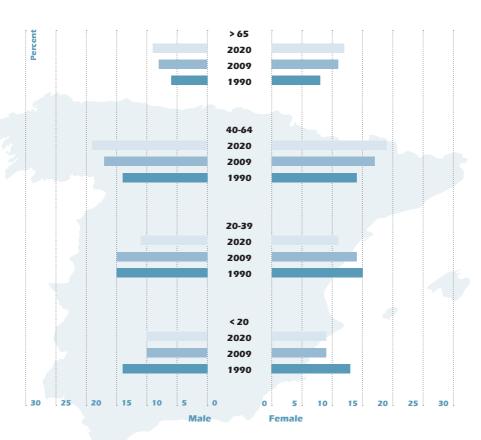
Prof. P. Rakovec

SPAIN



1. Statistics

Age pyramid for Spain



Healthcare data

Hospitals (per 100.000 population)	1,72	2006
Beds (per 100.000 population)	337,03	2006
Density of physicians (per 1.000 population)	3,76	2007
Density of nurses (per 1.000 population)	7,44	2006

Demographic information

Population annual growth rate (%)	0,1	2009
Life expectancy at birth	80,44	2005
Death rate (per 1.000 population)	8,93	2005
Live births (per 1.000 population)	10,75	2005

Economic information

Gross domestic product (U,S dollar-billions)	1.438,35*	2009
Gross domestic product per capita (U.S dollar-units)	31.141,50*	2009
Total expenditure on health as % of GDP	8,1	2006
General government expenditure on health		
as % of total expenditure on health	72,5	2006
Private expenditure on health		
as % of total expenditure on health	27,5	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	203,7 per 100.000 citizens
2009	203,7 per 100.000 citizens

Proportion cardiac mortality over total mortality of the country

2008	31,5%
2009	31%

3. Healthcare System

Basic insurance availability

Spain's healthcare system is based on a national health system with autonomous comunity 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)

Yes

Percentage of insured and uninsured citizens

Insured citizens	100%			
Uninsured citizens	0%			
		0	50	100

Distribution of insurance modality

Public insurance company	100%			
Private insurance company	20%			
Private co-payment	0%			
		0	50	10

Possibility of subscribing to private he	alth insurance plans Yes	5

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	✓
ICD primary prevention	✓
ICD secondary prevention	✓
CRT devices	✓
Ablation	✓
Unlimited availability of treatment	✓
4. Education	
National accreditation availability	
Device therapy*	✓
Invasive electrophysiology**	✓
 * Acreditación en estimulación cardiaca ** Acreditación de formación específica y excelencia para la práctica de Cardiaca Intervencionista 	Electrofisiología
National accreditation for physicians	Yes
National accreditation for centres	Yes
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation Cardiologist	Yes
Specialty required for ICD or pacemaker implants	Yes
Cardiologist cardiac surgeon intensive care physician	res

Sociedad Española de Cardiología

Required period of training to perform implantations

No

Training centres availability

Pacemaker	43
ICD implantation	36
Electrophysiological studies and catheter ablation	37
CRT implantation	31
Atrial fibrillation ablation	14

Number of medical faculties

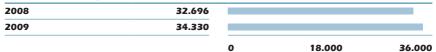
26

Percentage of academic facilities among practicing EP and implant centres

50%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

Specialty performing implants

Cardiologists	70%
Surgeons	25%
Other: Intensive care physician	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	90%
Surgeons	5%
Other	5%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008	
Implanting centres	114	
Single chamber	1.971	
Dual chamber	899	
First implants	2.477	
Replacements	678	
Total	3.487	
	2009	
Implanting centres	134	
Single chamber	not available	
Dual chamber	not available	
First implants	2.930	
Replacements	950	
Total	4.108	

Specialty performing implants

Cardiologists	73%
Surgeons	19%
Other	8%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008			
Implanting centres	130			
Loop recorders	1.085			
	2009			
Implanting centres	134			
Loop recorders	1.139			
		0	600	

Specialty performing implants

Cardiologists	98%
Surgeons	1%
Other	1%

9. Device speci-

fic

Availability of remote monitoring of devices
--

National registry for

ICD*	\checkmark
Pacing**	
Electrophysiology***	

- * Registro Español de Desfibrilador Automático implantable
- ** Registro Español de marcapasos
- *** Registro español de ablación con cateter

Availability of a national quality insurance system or complication registry

Yes

Registro Español de ablación con cateter

Availability of a national institution coordinating and guiding device recalls

Yes

Sección de Electrofisiología y Arritmias (SEA) Management recommendations documents

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	7.063	7.798
Mean number (ablations/centres)	146	144
Number of AF ablations	622	1.025

11. 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

1	2	3	4	5
V				
\checkmark				
	V			
		V		
	V			
		V		

1 = no obstacle

5 = great obstacle

Sources: Section of Electrophysiology and Arrhythmias of the Spanish Society of

Cardiology -

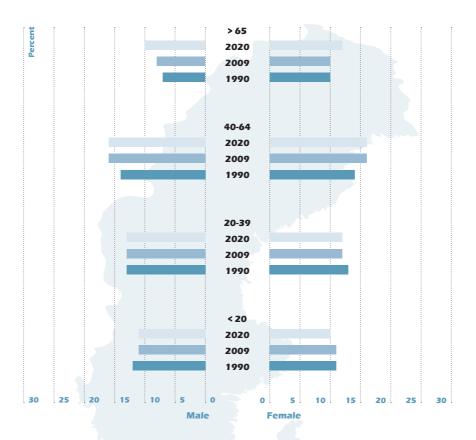
Chairman: Dr Ignacio Fernandez-Lozano

SWEDEN



1. Statistics

Age pyramid for Sweden



Healthcare data

Hospitals (per 100,000 population)	0,9	2004
Beds (per 100.000 population)	370	2004
Density of physicians (per 1.000 population)	3,58	2006
Density of nurses (per 1.000 population)	10,83	2006

Demographic information

Population annual growth rate (%)	0,2	2009
Life expectancy at birth	81,19	2007
Death rate (per 1,000 population)	10,04	2007
Live births (per 1,000 population)	11,74	2007

Economic information

Gross domestic product (U,S dollar-billions)	397,70*	2009
Gross domestic product per capita (U.S dollar-units)	43.146,74*	2009
Total expenditure on health as % of GDP	8,9	2006
General government expenditure on health		
as % of total expenditure on health	81,2	2006
Private expenditure on health		
as % of total expenditure on health	18,8	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	417 per 100.000 citizens*
2009	not available
* 2007	

Proportion cardiac mortality over total mortality of the country

2008	27%*
2009	not available
* 2007	

3. Healthcare System

Sweden's health system is compulsory and tax based. It covers all Sweden's residents. Voluntary health insurance is very limited and normally provides only supplementary coverage. The healthcare system is region based, but publicly operated. There are three levels of organisation: national, regional and local. The National sets the fundamental objectives and assures it runs efficiently, the regional level provides and finances the health services and the local level (290 municipalities) is responsible for delivering and financing social welfare services. (Highlights on health. WHO 2004)

Basic insurance availability				Ye
Percentage of insured and unins	ured citizens			
Insured citizens	100%			
Uninsured citizens	0%			
		0	50	100
Distribution of insurance modali	ty			
Distribution of insurance modali Public insurance company	100%			
Public insurance company	100%			

Yes

Possibility of subscribing to private health insurance plans

Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	\checkmark
ICD primary prevention	\checkmark
ICD secondary prevention	\checkmark
CRT devices	\checkmark
Ablation	\checkmark
Unlimited availability of treatment	\checkmark
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres	No
national accreditation for centres	140
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation	No
Not formally, but all catheter ablation operators are cardiologists.	
Specialty required for ICD or pacemaker implants	No

Required period of training to perform implantations

No

Training centres availability

Pacemaker	10
ICD implantation	9
Electrophysiological studies and catheter ablation	7
CRT implantation	9
Atrial fibrillation ablation	7

Number of medical faculties

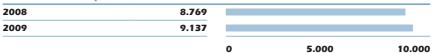
7

Percentage of academic facilities among practicing EP and implant centres

88%/16%*

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

	2008			
Implanting centres	44			
New implants	6.127			
Replacements	2.642			
	2009			
Implanting centres	44			
New implants	6.320			
Replacements	2.817			
		0	4.000	8.000

^{*} EP: 88%. Implant: 16%

Specialty performing implants

Cardiologists	90%
Surgeons	5%
Other: Anaesthesiologists, specialists in internal medicine	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	_		
2008			
14			
359			
195			
2009			
14			
430			
415			
	0	300	600
	14 359 195 2009 14 430	14 359 195 2009 14 430 415	14 359 195 2009 14 430 415

Specialty performing implants

Cardiologists	98%
Surgeons	2%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008		
Implanting centres	24		
Single chamber	172		
Dual chamber	379		
First implants	773		
Replacements	257		
Total	1.030		
	2009		
Implanting centres	28		
Single chamber	213		
Dual chamber	451		
First implants	1.013		
Replacements	317		
Total	1.330		
		0	700

Specialty performing implants

Cardiologists	98%
Surgeons	2%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008			
Implanting centres	44			
Loop recorders	303			
	2009			
Implanting centres	44			
Loop recorders	394			
		0	200	40

Specialty performing implants

Cardiologists	98%
Surgeons	2%

9. Device specific

Availability of remote monitoring of devices

abla

- * Swedish ICD and Pacemaker register
- ** Svenska Kateterablationsregistret

Availability of a national quality insurance system or complication registry

Yes

 $\overline{\mathbf{V}}$

ICD and Pacemaker registries and Svenska Ablationsregistret track complication rates.

Availability of a national institution coordinating and guiding device recalls

Yes

Läkemedelsverket **Equivalent to FDA**

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	2.530	2.839
Mean number (ablations/centres)	316	315
Number of AF ablations	543	906

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	\checkmark
U.S.	
European	\checkmark

Necessity of guideline translation to national language

No

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres	\checkmark				
Lack of reimbursement, limited financial resources		\checkmark			
Lack of referral			\checkmark		
Lack of trained personnel		\checkmark			
Low awareness of guidelines		\checkmark			
Lack of operators		\checkmark			

1 = no obstacle

5 = great obstacle

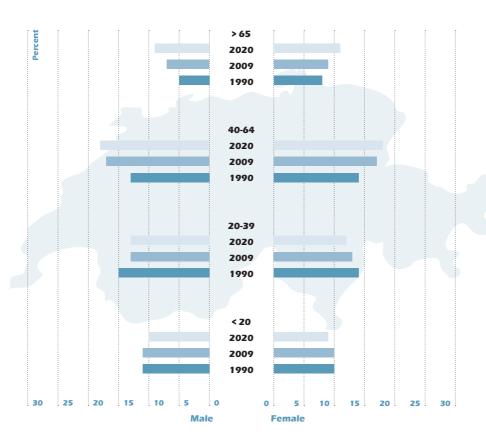
Sources: Working Group on Arrhythmias, The Swedish Society of Cardiology – Chairman: Johan Brandt, M.D., Ph.D and National Registries

SWITZERLAND



1. Statistics

Age pyramid for Switzerland



Healthcare data

Hospitals (per 100.000 population)	4,53	2005
Beds (per 100.000 population)	553,92	2005
Density of physicians (per 1.000 population)	3,85	2006
Density of nurses (per 1.000 population)	10,75	2002

Demographic information

Population annual growth rate (%)	0,3	2009
Life expectancy at birth	82,17	2007
Death rate (per 1,000 population)	8,09	2007
Live births (per 1,000 population)	9,87	2007

Economic information

Gross domestic product (U,S dollar-billions)	484,13*	2009
Gross domestic product per capita (U.S dollar-units)	66.126,79*	2009
Total expenditure on health as % of GDP	11,3	2006
General government expenditure on health		
as % of total expenditure on health	60,3	2006
Private expenditure on health		
as % of total expenditure on health	39,7	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	not available
2009	not available

Proportion cardiac mortality over total mortality of the country

2008	not available
2009	not available

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.

				Ye
Percentage of insured and u	ninsured citizens			
Insured citizens	100%			
Uninsured citizens	0%			
		0	50	100
Distribution of insurance mo				
Public insurance company	not available			
Public insurance company Private insurance company	not available not available			

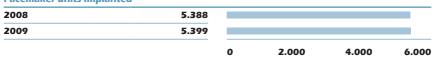
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	V
ICD primary prevention	\checkmark
ICD secondary prevention	\checkmark
CRT devices	V
Ablation	V
Unlimited availability of treatment	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians Y	Yes
National accreditation for centres	No
National Society supporting EHRA accreditation system Y	Yes
Specialty required for catheter ablation Y	Yes
Cardiologist	
Guidelines edicted by the Working group for Pacing and Electrophysiology of the Swiss Society of Cardiology.	
society of earthology.	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist; surgeon	

Working group for Pacing and Electrophysiology of the Swiss Society of Cardiology

Required period of training to perform implantations No **Training centres availability Pacemaker** 5 **ICD** implantation 5 Electrophysiological studies and catheter ablation 5 **CRT** implantation 5 Atrial fibrillation ablation 5 **Number of medical faculties** 5 Percentage of academic facilities among practicing EP and implant centres 7-30%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

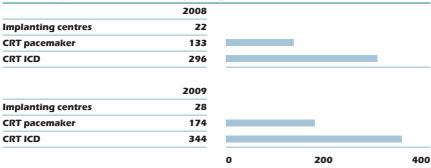
	2008			
Implanting centres	71			
New implants	3.949			
Replacements	1.439			
	2009			
Implanting centres	70			
New implants	3.991			
Replacements	1.408			
		0	2.000	4.000

Specialty performing implants

Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	99%
Surgeons	1%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008			
Implanting centres	28			
Single chamber	377			
Dual chamber	536			
First implants	913			
Replacements	282			
Total	1.179			
	2009			
Implanting centres	34			
Single chamber	not available			
Dual chamber	not available			
First implants	935			
Replacements	386			
Total	1.321			
		0	700	1.40

Specialty performing implants

Cardiologists	99%
Surgeons	1%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008
Implanting centres	not available
Loop recorders	not available
	2009
Implanting centres	not available
Loop recorders	not available

Specialty performing implants

Specialty performing implants	
Cardiologists	not available
Surgeons	not available
9. Device speci-	
fic Availability of remote monitoring of devices	▼
National registry for	
ICD	
Pacing	
Electrophysiology	
Availability of a national quality insurance system or complication registry	No
Availability of a national institution coordinating and guiding device recalls	Yes

Swissmedic (National Institution)

Number of performing catheter ablation centres

	2008	2009
Number of ablations performed	3.497	3.830
Mean number (ablations/centres)	184	201
Number of AF ablations	999	1.178

11. 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

	1	2	3	4	5
Lack of centres		V			
Lack of reimbursement, limited financial resources		\checkmark			
Lack of referral			\checkmark		
Lack of trained personnel			\checkmark		
Low awareness of guidelines	V				
Lack of operators	V				

1 = no obstacle

5 = great obstacle

Sources: Swiss Working Group on Cardiac Pacing and Electrophysiology – Chairman: Dr. J. Schläpfer

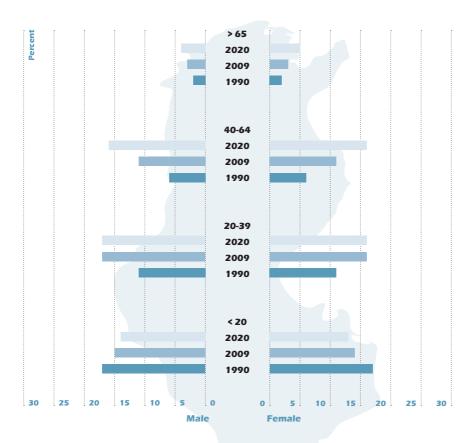


TUNISIA



1. Statistics

Age pyramid for Tunisia



Healthcare data

Hospitals (per 100.000 population)	1,76	2004
Beds (per 100.000 population)	190	2006
Density of physicians (per 1.000 population)	1,3	2004
Density of nurses (per 1.000 population)	2,9	2004

Demographic information

Population annual growth rate (%)	1,0	2009
Life expectancy at birth	72	2006
Death rate (per 1,000 population)	5,6	2006
Live births (per 1,000 population)	17	2007

Economic information

Gross domestic product (U,S dollar-billions)	39,57*	2009
Gross domestic product per capita (U.S dollar-units)	3.794,43*	2009
Total expenditure on health as % of GDP	5,3	2006
General government expenditure on health		
as % of total expenditure on health	43,7	2006
Private expenditure on health		
as % of total expenditure on health	56,3	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	163 per 100.000 citizens
2009	168 per 100.000 citizens*

^{*} approx.

Proportion cardiac mortality over total mortality of the country

2008	29%
2009	30%

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.



No

Percentage of insured and uninsured citizens

		0	50	100
Uninsured citizens	10%			
Insured citizens	90%			

Distribution of insurance modality

Public insurance company	80%			
Private insurance company	15%			
Private co-payment	5%			
		0	50	10

Possibility of subscribing to private health insurance plans	No
Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
Reimbursement availability	
Internal loop recorders	✓
ICD primary prevention	
ICD secondary prevention	
CRT devices	
Ablation	
Unlimited availability of treatment	
•	
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
CEC de Rythmologie	
National accreditation for physicians	Yes
National accreditation for centres	No
National Society supporting EHRA accreditation system	Yes
Specialty required for catheter ablation	Yes
Cardiologist	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist and cardiovascular surgeon	

Required period of training to perform implantations

2 years

Training centres availability

Pacemaker	15
ICD implantation	10
Electrophysiological studies and catheter ablation	9
CRT implantation	10
Atrial fibrillation ablation	2

Number of medical faculties

Percentage of academic facilities among practicing EP and implant centres

70%

5. Pacemakers

Pacemaker units implanted

2008	1.400				
2009	1.520				
		0	600	1.200	1.800

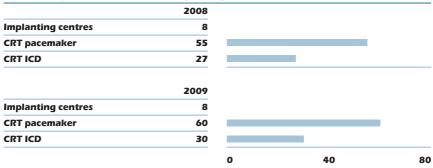
Pacemaker units implanted and number of implanting centres

Specialty performing implants

Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008
Implanting centres	8
Single chamber	not available
Dual chamber	not available
First implants	not available
Replacements	not available
Total	63

	2009
Implanting centres	8
Single chamber	not available
Dual chamber	not available
First implants	not available
Replacements	not available
Total	56

0 40 80

Specialty performing implants

Cardiologists	95%
Surgeons	5%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2008	'		
Implanting centres	2			
Loop recorders	4			
	2009			
Implanting centres	3			
Loop recorders	8			
		0	5	10

No

Specialty performing implants

Cardiologists	95%
Surgeons	5%
9. Device specific	
Availability of remote monitoring of devices	¥
Availability of remote monitoring of devices	<u> </u>
Availability of remote monitoring of devices National registry for	₩
	<u>▼</u>
National registry for	
National registry for	С
National registry for ICD Pacing	

Availability of a national institution coordinating and guiding device recalls

10. Interventional electrophysiology

Number	of	performing	cathotor	ablation	contros
Number	OI	periorming	catheter	abiation	centres

	2008	2009
Number of ablations performed	450	510
Mean number (ablations/centres)	60	60
Number of AF ablations	17	20

11. 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

	1	2	3	4	5
Lack of centres					
Lack of reimbursement, limited financial resources	\checkmark				
Lack of referral	\checkmark				
Lack of trained personnel					
Low awareness of guidelines					
Lack of operators					

1 = no obstacle

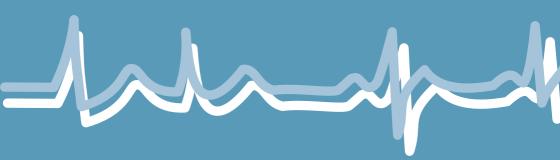
5 = great obstacle

Sources: Working Group on Arrhythmias – President: Dr. Habib Haouala

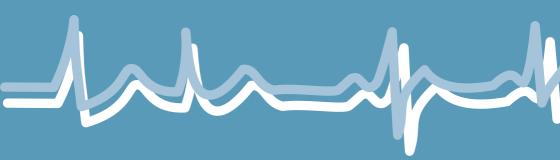
410 · The White Book 2010

TURKEY

There will be information in the next edition.





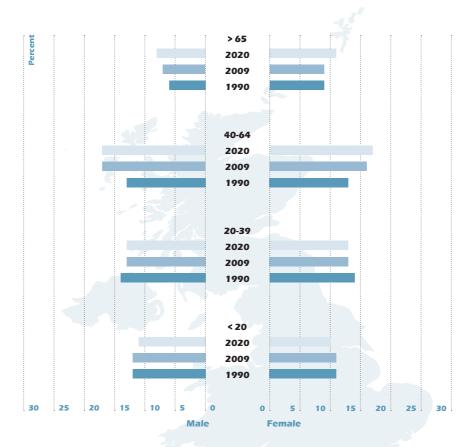


UNITED KINGDOM



1. Statistics

Age pyramid for United Kingdom



Healthcare data

Hospitals (per 100,000 population)	1.400	2009
Beds (per 100.000 population)	389,72	2007
Density of physicians (per 1.000 population)	2,13	2007
Density of nurses (per 1.000 population)	9,3	2007

Demographic information

Population annual growth rate (%)	0,3	2004
Life expectancy at birth	79,86	2004
Death rate (per 1.000 population)	9,42	2002
Live births (per 1.000 population)	12,66	2004

Economic information

Gross domestic product (U.S dollar-billions)	2.198,16*	2009
Gross domestic product per capita (U.S dollar-units)	35.727,96*	2009
Total expenditure on health as % of GDP	8,4	2006
General government expenditure on health		
as % of total expenditure on health	87,4	2006
Private expenditure on health		
as % of total expenditure on health	12,6	2006

^{*} IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2008	1.000 per 100.000,citizens
2009	not available

Proportion cardiac mortality over total mortality of the country

15%	2008
not available	2009

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)

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

Insured citizens	10%			
Uninsured citizens	90%			
		0	50	100

Distribution of insurance modality

		0	50	100
Private co-payment	0%			
Private insurance company	10%			
Public insurance company	90%			

Possibility of subscribing to private health insurance plans

Yes

Comment was a second of a the fall and a strong of	
Co-payment necessary for the following therapy	
ICD devices	
Pacemakers	
Ablation	
National guidelines	
Reimbursement availability	
Internal loop recorders	✓
ICD primary prevention	✓
ICD secondary prevention	✓
CRT devices	✓
Ablation	✓
Unlimited availability of treatment	▼
4. Education	
National accreditation availability	
Device therapy	
Invasive electrophysiology	
National accreditation for physicians	Yes
National accreditation for centres to perform EP	No
·	
National Society supporting EHRA accreditation system	No
Specialty required for catheter ablation	Yes
Cardiologist	
Specialty required for ICD or pacemaker implants	Yes
Cardiologist	

Heart Rhythm UK

Required period of training to perform implantations

2 years

Training centres availability

Pacemaker	70
ICD implantation	35
Electrophysiological studies and catheter ablation	30
CRT implantation	35
Atrial fibrillation ablation	30

Number of medical faculties

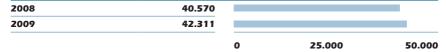
35

Percentage of academic facilities among practicing EP and implant centres

20%*

5. Pacemakers

Pacemaker units implanted



^{*} approx.

Pacemaker units implanted and number of implanting centres

	2008			
Implanting centres	209			
New implants	30.620			
Replacements	9.950			
	2009			
Implanting centres	211			
New implants	32.135			
Replacements	10.176			
		0	18.000	36.00

Specialty performing implants

Cardiologists	99,49%
Surgeons	0,51%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



Specialty performing implants

Cardiologists	99,7%
Surgeons	0,3%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

	2008		
Implanting centres	98		
Single chamber	not available		
Dual chamber	not available		
First implants	5.775		
Replacements	1.628		
Total	7.403		
mplanting centres	101		
Single chamber	not available		
Dual chamber	not available		
First implants	not available		
Replacements	not available		
Total	8.239		
		0	5.000

Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres

		_		
	2008			
Implanting centres	87			
Loop recorders	1.548			
	2009			
Implanting centres	137			
Loop recorders	2.200*			
* approx.		0	1.200	2.400

 $\overline{\mathsf{V}}$

 $\overline{\mathsf{V}}$

40

3.237

Specialty performing implants

Cardiologists	100%
Surgeons	0%

9. Device specific

9. Device specific	
Availability of remote monitoring of devices	Ø
National registry for	
ICD	✓

CCAD

Pacing

Electrophysiology

Number of AF ablations

Availability of a nationa	I quality insurance system or complication registry	No

Availability of a national institution coordinating and guiding device recalls Yes

Medicines and Healthcare products Regulatory Agency

10. Interventional electrophysiology

Number of performing catheter ablation centres

	2008	2009	
Number of ablations performed	12.057	13.003	
Mean number (ablations/centres)	310	280	

2.629

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	V
U.S.	
European	
Necessity of guideline translation to national language	

Obstacles to guideline implementation

	1	2	3	4	5
Lack of centres		\checkmark			
Lack of reimbursement, limited financial resources		\checkmark			
Lack of referral				V	
Lack of trained personnel			\checkmark		
Low awareness of guidelines		abla			
Lack of operators					
Other*				V	

^{*} Lack of belief in applicability of guidelines to many patients seen in routine clinical practice

1 = no obstacle

5 = great obstacle

Sources: Heart Rhythm UK - President: Dr. Edward Rowland

3. SOURCES



3. Sources

Main Sources

The data in the White Book has been collected and authorized by the National Societies and National Working Groups.

The National Societies and National Working Groups that participated in this edition of the White Book re listed below:

- Arrhythmias Working Group of Armenia
- Armenian Working Group of Cardiac Pacing & Electrophysiology
- · Austrian Working Group of Invasive Rhythmology
- · Scientific Laboratory of Heart Arrhythmias of Belarus
- · Belgian Heart Rhythm Association (BeHRA)
- · Bulgarian Working Group of Electrophysiology
- · Croatian Working Group on Arrhythmias and Cardiac Pacing
- · Cyprus Society of Cardiology
- · Working Group on Arrhythmias and Cardiac Pacing of Czech Republic
- Danish Working Group for Electrophysiology
- Egyptian Cardiac Rhythm Association (ECRA)
- Egyptian Society of Cardiology
- Estonian Working Group of Arrhythmias
- Finnish Working Group of Arrhythmias and Cardiac Pacing of the Finnish Cardiac Society

- FYRO, Macedonia Working Group on Electrophysiology and Cardiac Pacing
- · Working Group on Arrhythmias and Cardiac Pacing France
- · Working Group on Arrhythmias of the Georgian College of Cardiology
- · German Working Group on Cardiac Pacing and Arrhythmia
- · Hellenic Working Group on Electrophysiology and Pacing
- Hungarian Society of Cardiology
- · Hungarian Working Group on Arrhythmias and Cardiac Pacing
- · Irish Working Group on Electrophysiology
- Israeli Working Group on Electrophysiology and Cardiac Pacing
- · Italian Association on Arrhythmias and Cardiac Pacing (AIAC)
- · Latvian Working Group on Arrhythmology and Cardiac Pacing
- · Lithuanian Working Group on Arrhythmias Pacing and Electrophysiology
- · National Institute of Cardiac Surgery and Interventional Cardiology (INCCI) of Luxembourg
- · Pacemaker Center of Montenegro
- · Netherlands Heart Rhythm Association (NHRA)
- Norwegian Working Group of Arrhythmias

3. Sources

Main Sources

- · Heart Rhythm Division of the Polish Cardiac Society Portuguese Association of Arrhythmology, Pacing and Electrophysiology (APAPE) · Romanian Society of Cardiology, Arrhythmias Working Group Russian Federation Working Group in Clinical Electrophysiology · Serbian Working Group in Cardiac Pacemakers and Arrhythmias · Slovak Heart Rhythm Association (SHRA) · Slovenian Working Group for Pacing and Arrhythmias Spanish Section of Electrophysiology and Arrhythmias of the Spanish Society of Cardiology Study Group of Arrhythmias of the Associazione Nazionale Medici Cardiologi Ospedalieri (ANMCO) · Swedish Working Group on Arrhythmias · Swiss Working Group on Cardiac Pacing and Electrophysiology Tunisian Working Group on Arrhythmias Heart Rhythm United Kingdom **Additional Sources**
- · Austrian National Ablation Registry
- Belgium National Statistical Institute
- · Croatian Registry on Cardiac Pacing, ICD and Electrophysiology
- · Estonian Pacemaker and ICD Implantation Registry

- Health care systems in transition: Latvia. Copenhagen,
 European Observatory on Health Systems and Policies, 2001
- Health care systems in transition: Russian Federation. Copenhagen,
 European Observatory on Health Systems and Policies, 2003
- Health care systems in transition: The Former Yugoslav Republic of Macedonia.

 Copenhagen, European Observatory on Health Systems and Policies, 2000
- · Hellenic National Statistical Service
- · Ministry of Health of the Republic of Belarus
- · Ministry of Labour, Health and Social Affairs of Georgia
- · Norway Pacemaker Register
- Institute for Public Health and Protocols from Clinical Center Montenegro
- International Monetary Fund (IMF), Washington DC, USA. http://www.imf.org
- · Slovak registry of pacemakers, ICD and ablations (SLOVIMPULZ)
- · Spanish Catheter Ablation Registry
- Statistical Information System (WHOSIS).
 World Health Organization, Geneva, Switzerland.
 http://www.who.int/whosis/en/
- U.S. Census Bureau, International. Atlanta, USA.
 http://www.census.gov/
- World Health Statistics. World Health Organization, Geneva, Switzerland.
 http://www.who.org

4. APPENDIX









The EHRA offers the first European certification of professional excellence, in two areas:

- Invasive Cardiac Electrophysiology
- Cardiac Pacing & ICDs

The EHRA is pleased to publish the list, starting from 2006, of professionals who are officially fully accredited, as well as that of the candidates who have passed the written part of the accreditation process. «Join us in congratulating them!»

Invasive Cardiac Electrophysiology

EHRA EP Accredited professionals

AVELLA Andrea Italy 2009 BARRERA CORDERO Alberto Spain 2000 BELOTTI Giusepina Italy 2009 BENCSIK Gabor Hungary 2009 BERRUEZO SANCHEZ Antonio Spain 2010 BRUGADA TERRADELLAS Josep Spain 2009 BURRI Haran Switzerland 2009 BURRI Haran Switzerland 2009 DURAY Gábor Zoltán Germany 2009 FERNANDEZ LOZANO Ignacio Spain 2000 GARCIA MORAN Emilio Spain 2000 GRECU Mihaela Romania 2000 HERNANDEZ-MADRID Antonio Spain 2000 HERREROS GUILARTE Benito Spain 2000 HUYBRECHTS Wim Belgium 2000 IVO PETRUS TRINES Serge Alexander Netherlands 2000 JANSEN Ward P.J. Netherlands 2001 KEMME Michiel Netherlands 2001 KILISZEK Marek Poland 2001 LAURENZI Francesco Italy 2009 LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2001	-			
BARRERA CORDERO Alberto Spain 2006 BELOTTI Giusepina Italy 2008 BENCSIK Gabor Hungary 2008 BERRUEZO SANCHEZ Antonio Spain 2016 BRUGADA TERRADELLAS Josep Spain 2008 BURRI Haran Switzerland 2008 DURAY Gábor Zoltán Germany 2008 FERNANDEZ LOZANO Ignacio Spain 2009 GARCIA MORAN Emilio Spain 2009 GRECU Mihaela Romania 2008 HERNANDEZ-MADRID Antonio Spain 2009 HERREROS GUILARTE Benito Spain 2009 HUYBRECHTS Wim Belgium 2009 IVO PETRUS TRINES Serge Alexander Netherlands 2008 JANSEN Ward P.J. Netherlands 2008 KEMME Michiel Netherlands 2009 KILLISZEK Marek Poland 2009 KILLISZEK Marek Poland 2009 LUBINSKI Andrzej Poland 2009 LUBINSKI Andrzej Poland 2009	ARBELO LAINEZ	Elena	Spain	2009
BELOTTI Giusepina Italy 2008 BENCSIK Gabor Hungary 2008 BERRUEZO SANCHEZ Antonio Spain 2016 BRUGADA TERRADELLAS Josep Spain 2008 BURRI Haran Switzerland 2008 DAVOODI Gholamreza Iran 2008 DURAY Gábor Zoltán Germany 2008 FERNANDEZ LOZANO Ignacio Spain 2009 GARCIA MORAN Emilio Spain 2009 GRECU Mihaela Romania 2009 HERNANDEZ-MADRID Antonio Spain 2009 HERREROS GUILARTE Benito Spain 2009 HUYBRECHTS Wim Belgium 2009 IVO PETRUS TRINES Serge Alexander Netherlands 2009 JANSEN Ward P.J. Netherlands 2009 KEMME Michiel Netherlands 2009 KILISZEK Marek Poland 2009 KILISZEK Marek Poland 2009 LAURENZI Francesco Italy 2009 LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2008	AVELLA	Andrea	Italy	2009
BENCSIK Gabor Hungary 2009 BERRUEZO SANCHEZ Antonio Spain 2010 BRUGADA TERRADELLAS Josep Spain 2009 BURRI Haran Switzerland 2008 DAVOODI Gholamreza Iran 2008 DURAY Gábor Zoltán Germany 2009 FERNANDEZ LOZANO Ignacio Spain 2009 GARCIA MORAN Emilio Spain 2009 GRECU Mihaela Romania 2009 HERNANDEZ-MADRID Antonio Spain 2009 HERREROS GUILARTE Benito Spain 2009 HUYBRECHTS Wim Belgium 2009 IVO PETRUS TRINES Serge Alexander Netherlands 2008 JANSEN Ward P.J. Netherlands 2016 KEMME Michiel Netherlands 2009 KILISZEK Marek Poland 2009 KILISZEK Marek Poland 2009 KILISZEK Marek Poland 2009 LAURENZI Francesco Italy 2009 LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2000	BARRERA CORDERO	Alberto	Spain	2006
BERRUEZO SANCHEZ Antonio Spain 2010 BRUGADA TERRADELLAS Josep Spain 2009 BURRI Haran Switzerland 2008 DAVOODI Gholamreza Iran 2008 DURAY Gábor Zoltán Germany 2008 FERNANDEZ LOZANO Ignacio Spain 2009 GARCIA MORAN Emilio Spain 2009 GRECU Mihaela Romania 2009 HERNANDEZ-MADRID Antonio Spain 2009 HERREROS GUILARTE Benito Spain 2009 HUYBRECHTS Wim Belgium 2009 IVO PETRUS TRINES Serge Alexander Netherlands 2008 JANSEN Ward P.J. Netherlands 2008 KEMME Michiel Netherlands 2008 KILISZEK Marek Poland 2008 KILISZEK Marek Poland 2008 LAURENZI Francesco Italy 2009 LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2008	BELOTTI	Giusepina	Italy	2008
BRUGADA TERRADELLAS BURRI Haran Switzerland 2008 DAVOODI Gholamreza Iran 1008 DURAY Gábor Zoltán Germany 1008 GARCIA MORAN Emilio Spain 1009 GRECU Mihaela Romania 1009 HERNANDEZ-MADRID HERREROS GUILARTE Benito Spain 1009 HUYBRECHTS Wim Belgium 1009 IVO PETRUS TRINES Serge Alexander Netherlands 1009 NASTREZBSKI Marek Poland 1009 KEMME Michiel Netherlands 1009 KILISZEK Marek Poland 1009 LAURENZI Francesco Italy 1009 LETSAS Konstantinos Greece 1009 COURTEIR SWITTEINES LUBINSKI Andrzej Poland 1009 Spain 1009 Spain	BENCSIK	Gabor	Hungary	2009
BURRI Haran Switzerland 2008 DAVOODI Gholamreza Iran 2008 DURAY Gábor Zoltán Germany 2008 FERNANDEZ LOZANO Ignacio Spain 2008 GARCIA MORAN Emilio Spain 2007 GRECU Mihaela Romania 2007 HERNANDEZ-MADRID Antonio Spain 2008 HERREROS GUILARTE Benito Spain 2008 IVO PETRUS TRINES Serge Alexander Netherlands 2008 JANSEN Ward P.J. Netherlands 2008 KEMME Michiel Netherlands 2008 KILISZEK Marek Poland 2008 LAURENZI Francesco Italy 2009 LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2008	BERRUEZO SANCHEZ	Antonio	Spain	2010
DAVOODI Gholamreza Iran 2008 DURAY Gábor Zoltán Germany 2008 FERNANDEZ LOZANO Ignacio Spain 2008 GARCIA MORAN Emilio Spain 2008 GRECU Mihaela Romania 2008 HERNANDEZ-MADRID Antonio Spain 2008 HERREROS GUILARTE Benito Spain 2008 HUYBRECHTS Wim Belgium 2008 IVO PETRUS TRINES Serge Alexander Netherlands 2008 JANSEN Ward P.J. Netherlands 2018 JASTREZBSKI Marek Poland 2008 KEMME Michiel Netherlands 2008 KILISZEK Marek Poland 2018 LAURENZI Francesco Italy 2008 LETSAS Konstantinos Greece 2008 LUBINSKI Andrzej Poland 2008	BRUGADA TERRADELLAS	Josep	Spain	2009
DURAY Gábor Zoltán Germany 2008 FERNANDEZ LOZANO Ignacio Spain 2008 GARCIA MORAN Emilio Spain 2008 GRECU Mihaela Romania 2008 HERNANDEZ-MADRID Antonio Spain 2008 HERREROS GUILARTE Benito Spain 2008 HUYBRECHTS Wim Belgium 2008 IVO PETRUS TRINES Serge Alexander Netherlands 2008 JANSEN Ward P.J. Netherlands 2018 JASTREZBSKI Marek Poland 2008 KEMME Michiel Netherlands 2008 KILISZEK Marek Poland 2018 LAURENZI Francesco Italy 2008 LETSAS Konstantinos Greece 2008 LUBINSKI Andrzej Poland 2008	BURRI	Haran	Switzerland	2008
FERNANDEZ LOZANO Ignacio Spain 2006 GARCIA MORAN Emilio Spain 2007 GRECU Mihaela Romania 2007 HERNANDEZ-MADRID Antonio Spain 2006 HURREROS GUILARTE Benito Spain 2006 HUYBRECHTS Wim Belgium 2006 IVO PETRUS TRINES Serge Alexander Netherlands 2006 JANSEN Ward P.J. Netherlands 2016 JASTREZBSKI Marek Poland 2006 KEMME Michiel Netherlands 2006 KILISZEK Marek Poland 2016 LAURENZI Francesco Italy 2006 LETSAS Konstantinos Greece 2006 LUBINSKI Andrzej Poland 2007	DAVOODI	Gholamreza	Iran	2008
GARCIA MORAN Emilio Spain 2007 GRECU Mihaela Romania 2007 HERNANDEZ-MADRID Antonio Spain 2006 HERREROS GUILARTE Benito Spain 2006 HUYBRECHTS Wim Belgium 2006 IVO PETRUS TRINES Serge Alexander Netherlands 2006 JANSEN Ward P.J. Netherlands 2016 JASTREZBSKI Marek Poland 2006 KEMME Michiel Netherlands 2006 KILISZEK Marek Poland 2016 LAURENZI Francesco Italy 2006 LETSAS Konstantinos Greece 2006 LUBINSKI Andrzej Poland 2007	DURAY	Gábor Zoltán	Germany	2008
GRECU Mihaela Romania 2007 HERNANDEZ-MADRID Antonio Spain 2009 HERREROS GUILARTE Benito Spain 2009 HUYBRECHTS Wim Belgium 2009 IVO PETRUS TRINES Serge Alexander Netherlands 2008 JANSEN Ward P.J. Netherlands 2010 JASTREZBSKI Marek Poland 2008 KEMME Michiel Netherlands 2009 KILISZEK Marek Poland 2010 LAURENZI Francesco Italy 2009 LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2007	FERNANDEZ LOZANO	Ignacio	Spain	2006
HERNANDEZ-MADRID Antonio Spain 2009 HERREROS GUILARTE Benito Spain 2009 HUYBRECHTS Wim Belgium 2009 IVO PETRUS TRINES Serge Alexander Netherlands 2009 JANSEN Ward P.J. Netherlands 2010 JASTREZBSKI Marek Poland 2009 KEMME Michiel Netherlands 2009 KILISZEK Marek Poland 2010 LAURENZI Francesco Italy 2009 LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2007	GARCIA MORAN	Emilio	Spain	2007
HERREROS GUILARTE Benito Spain 2006 HUYBRECHTS Wim Belgium 2007 IVO PETRUS TRINES Serge Alexander Netherlands 2007 JANSEN Ward P.J. Netherlands 2007 KEMME Michiel Netherlands Michiel Netherlands 2007 KILISZEK Marek Poland 2007 KILISZEK Marek Poland 2007 LAURENZI Francesco Italy LAURENZI LETSAS Konstantinos Greece 2007 LUBINSKI Andrzej Poland 2007	GRECU	Mihaela	Romania	2007
HUYBRECHTS Wim Belgium 2009 IVO PETRUS TRINES Serge Alexander Netherlands 2008 JANSEN Ward P.J. Netherlands 2010 JASTREZBSKI Marek Poland 2008 KEMME Michiel Netherlands 2009 KILISZEK Marek Poland 2010 LAURENZI Francesco Italy 2009 LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2007	HERNANDEZ-MADRID	Antonio	Spain	2009
IVO PETRUS TRINES Serge Alexander Netherlands 2008 JANSEN Ward P.J. Netherlands 2010 JASTREZBSKI Marek Poland KEMME Michiel Netherlands 2009 KILISZEK Marek Poland 2010 LAURENZI Francesco Italy LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2007	HERREROS GUILARTE	Benito	Spain	2006
JANSEN Ward P.J. Netherlands 2010 JASTREZBSKI Marek Poland 2008 KEMME Michiel Netherlands 2009 KILISZEK Marek Poland 2010 LAURENZI Francesco Italy 2009 LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2007	HUYBRECHTS	Wim	Belgium	2009
JASTREZBSKI Marek Poland 2008 KEMME Michiel Netherlands 2009 KILISZEK Marek Poland 2010 LAURENZI Francesco Italy 2009 LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2007	IVO PETRUS TRINES	Serge Alexander	Netherlands	2008
KEMME Michiel Netherlands 2009 KILISZEK Marek Poland 2010 LAURENZI Francesco Italy 2009 LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2007	JANSEN	Ward P.J.	Netherlands	2010
KILISZEK Marek Poland 2010 LAURENZI Francesco Italy 2009 LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2007	JASTREZBSKI	Marek	Poland	2008
LAURENZI Francesco Italy 2009 LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2007	KEMME	Michiel	Netherlands	2009
LETSAS Konstantinos Greece 2009 LUBINSKI Andrzej Poland 2007	KILISZEK	Marek	Poland	2010
LUBINSKI Andrzej Poland 2007	LAURENZI	Francesco	Italy	2009
	LETSAS	Konstantinos	Greece	2009
MADRID Antonio Spain 2009	LUBINSKI	Andrzej	Poland	2007
	MADRID	Antonio	Spain	2009



EHRA EP Accredited professionals

MARTINEZ ALDAY	Jesus	Spain	2006
MAZUR	Alexander	Italy	2006
MORENO PLANAS	Javier	Spain	2006
MOYA I. MITJANS	Angel	Spain	2006
NAVARRETE	Antonio	United States	2008
ORMAETXE MERODIO	José Miguel	Spain	2006
OSCA	Joaquín	Spain	2010
PAPIASHVILI	Giorgi	Georgia	2009
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
SAUSE	Armin	Germany	2009
SEOW	Swee-Chong	Singapore	2007
SMIT	Jaap Jan Johannes	Netherlands	2009
TOQUERO RAMOS	Jorgue	Spain	2006
TZEIS	Stylianos	Greece	2010
VATASESCU	Radu-Gabriel	Romania	2009
voss	Frederik	Germany	2009
VUKAJLOVIC	Dejan	Serbia	2009
ZOPPO	Franco	Italy	2008



EHRA Accreditation



Invasive Cardiac Electrophysiology

ABEDIN	Zainul	United States	2007
AL BUNNI	Muhamad	Italy	2007
ANGUERA CAMOS	Ignacio	Spain	2008
ARCOCHA TORRES	Maria Fe	Spain	2009
AYALA PAREDES	Felix	Canada	2007
BUERKLE	Gerd	Austria	2008
CANO PEREZ	Oscar	Spain	2009
CASTRO URDA	Victor	Spain	2009
CATANCHIN	Andrei	United Kingdom	2008
DE GROOT	Joris R	Netherlands	2009
DEL CASTILLO ARROJO	Silvia	Spain	2006
DEUTSCH	Alexandru	Germany	2009
EISENBERGER	Martin	United Kingdom	2008
FORCLAZ	Andrei	Switzerland	2009
GALLARDO LOBO	Rodrigo	Spain	2009
GAWRYCIAK	Marcin	Poland	2009
GLOWNIAK	Andrzej	Poland	2009
GONZALEZ VASSEROT	Maria del Mar	Spain	2007
GONZALEZ-ENRIQUEZ	Susana	Spain	2008
HERCZKU	Csaba	Hungary	2009
HOBBS	William	United Kingdom	2007
HOGLUND	Niklas	Sweden	2008
JANDA	Igor	Germany	2009
JOHAR	Sofian	United Kingdom	2009
JONES	David Gareth	United Kingdom	2009
MARTINEK	Martin	Austria	2008
MARTINEZ SANDE	Jose Luis	Spain	2009
MASSIN	Francois	Belgium	2009
MATIA FRANCES	Roberto	Spain	2009
MATIELLO	Maria	Spain	2007



EP Accreditation candidates successful to exam

MUELLER	Dirk	Germany	2008
PAISEY	John	United Kingdom	2008
PUCHOL	Alberto	Spain	2009
RAMANNA	Hemanth	Netherlands	2008
REBELLATO	Luca	Italy	2009
RODORF	Roberto	Italy	2009
SCHOONDERWOERD	Bas	Netherlands	2008
SIELSKI	Slawomir	Poland	2007
SKODA	Jan	Czech Republic	2008
SPADACINI	Gianmario	Italy	2006
SUMAN HORDUNA	Irina	Canada	2008
TOMLINSON	D	United Kingdom	2008
TREGUER	Frederic	France	2009
TRINES SERGE	Alexander Ivo Petrus	Netherlands	2006
URBAN	Lubos	Slovak Republic	2009
VITALE	Raffaele	Italy	2009
VUKAJLOVIC	Dejan	Serbia	2009
ZUCCHELLI	Giulio	Italy	2008

Candidates successful to the exam need to have their logbook assessed by an EHRA grader to be fully accredited. EHRA Accreditation is valid for 10 years.



EHRA Accreditation



«Accreditation in Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)»

EHRA CP Accredited professionals

MARTINEK	Martin	Austria	2009
KETELS	Stefan	Belgium	2009
HJORTSHØJ	Søren	Denmark	2010
GRADAUS	Rainer	Germany	2007
KLEIN	Gunnar	Germany	2008
NEVEN	Kars	Germany	2008
DURAY	Gábor Zoltán	Germany	2009
LÜDORFF	Guido	Germany	2009
Voss	Frederik	Germany	2009
HEIB	Klaus Dieter	Germany	2010
APOSTOLOPOULOS	Theodoros	Greece	2007
DILAVERIS	Polychronis	Greece	2007
IOANNIDIS	Panagiotis	Greece	2007
SIMEONIDOU	Eftihia	Greece	2007
VASILOPOULOS	Charambalos	Greece	2007
ZERVOPOULOS	George	Greece	2007
KARABINOS	Ilias K	Greece	2009
MERKELY	Bela	Hungary	2007
вонм	Ádám	Hungary	2009
BENCSIK	Gábor	Hungary	2009
DAVOODI	Gholamreza	Iran	2006
LIPCHENCA	Igor Ariel	Israel	2009
AVELLA	Andrea	Italy	2006
BELOTTI	Giusepina	Italy	2006
AL BUNNI	Muhamad	Italy	2007
CALZOLARI	Vittorio	Italy	2007
CURNIS	Antonio	Italy	2007
MASCIOLI	Giosue	Italy	2007
POZZETTI	Daniela	Italy	2007
SGARITO	Guiseppe	Italy	2007
VACCARI	Diego	Italy	2007
ZOPPO	Franco	Italy	2007



EHRA CP Accredited professionals

MARINI	Massimiliano	Italy	2008
CROSATO	Martino	Italy	2009
PAULUSSEN	Guido	Netherlands	2007
SPIERENBURG	Han A.M.	Netherlands	2009
VAN OPSTAL	Jurren	Netherlands	2009
WESTENDORP	Iris C.D.	Netherlands	2009
KEMME	Michiel	Netherlands	2009
FOLKERINGA	Johan Richard	Netherlands	2009
BORGER VAN DER BURG	Alida Elisabeth	Netherlands	2009
BOUWELS	Leon HR	Netherlands	2009
BROERS	Bernard	Netherlands	2010
GJESTVANG	Finn Tore	Norway	2009
KÖPP	Ulf	Norway	2009
EIVINSDON	Gunvald	Norway	2009
MITROWSKI	Przemyslaw	Poland	2006
BISSINGER	Andrzej	Poland	2007
JASTREZBSKI	Marek	Poland	2007
PRZYBYLSKI	Andrzej	Poland	2008
MACIAG	Aleksander	Poland	2009
STERLINSKI	Maciej	Poland	2009
VATASESCU	Radu Gabriel	Romania	2007
GRECU	Mihaela	Romania	2009
SEOW	Swee-Chong	Singapore	2008
GARCIA BOLAO	José Ignacio	Spain	2006
HERREROS GUILARTE	Benito	Spain	2006
MORENO PLANAS	Javier	Spain	2006
PEREZ CASTELLANO	Nicasio	Spain	2006
GARCIA MORAN	Emilio	Spain	2007
PINDADO RODRIGUEZ	Javier	Spain	2010
HORNSTEN	Jonas	Sweden	2007
SJÖBLOM	Johanna	Sweden	2009
BURRI	Haran	Switzerland	2006

4. Appendix





«Accreditation in Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)»

EHRA CP Accredited professionals

ROTEN	Laurent	Switzerland	2009
ZAKY	Hosam	United Arab Emirates	2007
OSMAN	Faizel	United Kingdom	2007
PUGH	Peter J	United Kingdom	2009
BOOS	Christopher John	United Kingdom	2009
RAO	Archana	United Kingdom	2009

«Accreditation in Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)»

AARDEMA	Margriet W.	Netherlands	2006
AERTS	Arnaud	Netherlands	2009
ALDERGARD	Niklas	Sweden	2007
ALGALARRONDO	Vincent	France	2009
AYALA PAREDES	Felix Alejandro	Canada	2006
BACCHIONI	Giuseppe	Italy	2008
BAHGAT	Amr Kamal	Egypt	2009
BARTHEZ	Olivier	France	2009
BIJSTERVELD	Nick	Netherlands	2009
BLAAUW	Y	Netherlands	2009
BORRELLI	Alessio	Italy	2009
BREULS	Nico	Netherlands	2009
BUERKLE	Gerd	Austria	2008
CANDEIAS	Rui	Portugal	2008
CSONTOS	Pal	Hungary	2009
DE GROOT	Joris R	Netherlands	2009
DE JONG	Richard M	Netherlands	2007
DE JONG	Jonas	Netherlands	2009
DE JONG	Jeroen	Netherlands	2006
DE LA FUENTE	Sam	Netherlands	2009



DE LEEUW	Martin	Netherlands	2008
DE POTTER	Tom	Belgium	2008
DE WAARD	Daan	Netherlands	2007
DE WEERD	Gerjan	Netherlands	2009
DIAB	Ihab Gomaa	United Kingdom	2009
EISENBERGER	Martin	United Kingdom	2008
ENGBERS	Jos G	Netherlands	2009
ERCKERT	Martin	Italy	2006
ESCHEN	Ole	Denmark	2009
FLEVARI	Panayota	Greece	2008
FOLDESI	Csaba Laszlo	Hungary	2009
FOLEY	Paul	United Kingdom	2009
FRANCA PEREIRA	Roberto	United States	2007
FRYKMAN	Viveka	Sweden	2007
GALLARDO LOBO	Rodrigo	Hungary	2009
GEBETSBERGER	Franz	Austria	2008
GIANNOLA	Gabriele	Italy	2008
GONZALEZ-ENRIQUEZ	Susana	Spain	2008
HAUER	Herbert	Netherlands	2009
HAYES	Chris	United Kingdom	2009
HEMELS	Martin	Netherlands	2009
HERCZKU	Csaba	Hungary	2009
HURLIMANN	David	Switzerland	2009
HUYBRECHTS	Wim	Belgium	2008
IORGULESCU	Corneliu	Romania	2008
JANSEN	Annemieke	Netherlands	2008
JANSSENS	Cornelis	Netherlands	2006
JOHANSSON	Peter	Sweden	2008
JONES	David Gareth	United Kingdom	2009
KJELLMAN	Bjorn	Sweden	2007
KNOPS	Reinoud	Netherlands	2008
KOEPFLI	Pascal	Switzerland	2007



EHRA Accreditation



«Accreditation in Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)»

KORANTZOPOULOS	Panagiotis	Greece	2009
KOULOURIS	Spyridon	Greece	2007
KOURGIANNIDIS	Georgios	Greece	2007
KRAVCHUK	Borys	Ukraine	2007
KRUPA	Wojciech	Poland	2006
LIEUW-A-FA	Mariska	Netherlands	2009
LINDELL	Peter	Sweden	2007
LINDGREEN	Ulf	Sweden	2008
LIPOLDOVA	Jolana	Czech Republic	2009
LITTERFELDT	Ingrid	Sweden	2008
LUZI	Mario	Italy	2008
MAASS	Alexander	Netherlands	2007
MAC GILLAVRY	Melvin	Netherlands	2008
MAGNUSSON	Peter	Sweden	2007
MARICONTI	Barbara	Italy	2008
MARTINEZ SANDE	Jose Luis	Spain	2009
MASSA	Thomas	Germany	2008
MAZZUCCO	Raffaele	Italy	2009
MEILTZ	Alexandre	Switzerland	2009
MEINE	Mathias	Netherlands	2007
MELANDER	Kjell	Sweden	2008
MLCOCHOVA	Hanka	Czech Republic	2009
MOLHOEK	Sander G	Netherlands	2008
MUELLER	Dirk	Germany	2008
MUNDEL	Markus	Germany	2008
MUNTINGA	Harm-Jans	Netherlands	2009
NAGARAJAN	Darbhamulla	United Kingdom	2007
NERI	Gianfilippo	Italy	2007
NICASTIA	Deborah	Netherlands	2009
NICOLAIDES	Eleftherios	United Kingdom	2007
ODLAND	Hans Henrik	Norway	2009
OIKARINEN	Lasse	Finland	2008



OSTROWSKA	Bozena	Sweden	2007
PAISEY	John	United Kingdom	2008
PARAVOLIDAKIS	Konstantinos	Greece	2008
PASCALE	Patrizio	Switzerland	2009
PAULUSSEN	Guido	Netherlands	2006
PENA HERNANDEZ	Jose Luis	Spain	2008
PEREZ DIEZ	Diego	Spain	2009
PETKAR	Sanjiv	United Kingdom	2008
PETRACCI	Barbara	Italy	2009
PETRU	Jan	Czech Republic	2009
PORRO	Rosa	Spain	2009
PUCHOL	Alberto	Spain	2009
RAMANNA	Hemanth	Netherlands	2008
REBELLATO	Luca	Italy	2009
RESTLE	Christian	Germany	2009
RUSSO	Giovanni	Italy	2009
SCHAUMANN	Anselm	Germany	2009
SCHEFFER	Michael G	Netherlands	2008
SCHOONDERWOERD	Bas	Netherlands	2008
SCHWAGTEN	Bruno	Belgium	2008
SENOUF	David	Switzerland	2009
SIELSKI	Slawomir	Poland	
STATESCU	Cristian	Romania	2009
STEEN	Torkel	Norway	2007
BOGDAN	Stefan Nicolea	Romania	2009
STEVENHAGEN	Jeroen	Netherlands	2008
STRIKWERDA	Sipke	Netherlands	2009
SWART	Нр	Netherlands	2009
TAHAPARY	Giovanni	Netherlands	2009
TEUBL	Alexander	Austria	2009
TIELEMAN	Robert	Netherlands	2009
TOMLINSON	D	United Kingdom	2009







«Accreditation in Cardiac Pacing & Implantable Cardioverter Defibrillators (ICDs)»

CP Accreditation candidates successful to exam

TORN	Marieke	Netherlands	2009
TOSSEBRO	Morten Shoren	Norway	2009
TREGUER	Frederic	France	2009
TRINES	Serge	Netherlands	2008
TUININGA	Ype	Netherlands	2009
TUREL	Baybars	Turkey	2009
URBAN	Lubos	Slovak Republic	2009
VAN DEN BOS	Ewout-Jan	Netherlands	2009
VAN DER WEERDT	Arno Peter	Netherlands	2007
VAN HERENDAEL	Hugo	Belgium	2009
VAN KRAAIJ	Dave	Netherlands	2009
VAN NOORD	Trudeke	Netherlands	2007
VAN OOSTROM	Antonie	Netherlands	2009
VAN SCHAARDENBURGH	Pepijn	Netherlands	2009
VAN SCHAIKVAN DER WIELEN	MarieLouise	Netherlands	2009
VERGARA	Pasquale	Italy	2009
VET	Thijs	Netherlands	2008
VICENTINI	Alessandro	Italy	2009
WESTRA	Sjoerd	Netherlands	2009
WIDDERSHOVEN	Josef Jos	United Kingdom	2009
WIJCHERS	Sip	Netherlands	2009
WILLEMS	Albert Richard	Netherlands	2009
WIM	Anne	Belgium	2008
ZALEVSKY	Valery P	Ukraine	2007
ZIMA	Endre	Hungary	2009
ZUCCHELLI	Giulio	Italy	2008
		•	

EHRA Accreditation is valid for 10 years.





European Heart Rhythm Association

ESC Office for Associations (EHRA)
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

The EHRA White Book 2010 was made possible with the aid of unrestricted educational grant from BIOTRONIK SE & Co. KG

