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The EHRA White Book 2011

The Current Status of Cardiac Electrophysiology
in ESC Member Countries

P. Vardas, A. Auricchio, J.L. Merino



Acknowledgments

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

Preface – The EHRA White Book 2011: The fourth edition

The EHRA's White Book has become a reference for those seeking information about invasive rhythm procedures in Europe and the Mediterranean area countries. No other publication provides such a comprehensive collection of data from this region of the globe. The process of gathering the data for the White Book is complex and necessarily involves different sources among which the national scientific societies play a major role. The principle followed is to obtain the best possible evidence. Despite this, the disparity of the data sources produces some heterogeneity and some of them are based upon raw estimation from the national scientific societies. However, the principle that some data is better than no data was followed in this book, and when data come just from estimation, this is clearly indicated in the book.

We consider this edition to be the best published to date since it contains not only last year's data but also data from previous years updated following a process of continuous refinement and improvement. This year's edition includes data from 44 countries, the largest number to date and data collection among the contributing national societies. The data fields and questionnaire have also been reviewed and refined. The present edition offers more details about reimbursement availability and, for the first time, restrictions of provision of invasive heart rhythm procedures.

Finally, it needs to be mentioned that this book would have not been possible without the contribution of several people. Firstly, we would like to thank Prof. Christian Wolpert, who made this project, a European White Book on invasive heart rhythm procedures, reality and set its foundation. He is responsible for the great success of the first three editions. Without his leadership, this project probably would have never happened. Thank you Christian. Secondly, we would like to thank all those who contributed to the present edition, especially those from the national heart rhythm societies. For the first time, this edition places their names as authors of the book as a small token of appreciation for their invaluable input and careful review and validation of the final data. Finally, and as in previous editions, the staff of the European Heart House have to be acknowledged, because without them conduction of this project would not have been possible.

Panos Vardas, EHRA President (2009-2011)

Angelo Auricchio, EHRA President Elect

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1. List of Authors

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2. Scope and Methodology



2. Scope and Methodology

The EHRA White Book 2011 is the fourth edition of a project that was launched in an attempt to understand the national realities related to treatment of arrhythmias.

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

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

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

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

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

Each chairman of the societies and/or working groups was asked to compile information about their country based on a questionnaire. The repeating data for the year 2009 were prefilled in the questionnaire. The data gathered by the societies and working groups were from a number of national sources, but mainly national registries and national health institutions.

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

Some countries, however, did not have available data for all of the sections of the book. The primary and secondary research was undertaken from February 2011 until May 2011.

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

3. ESC Countries Overview





ALBANIA

Pending data submission.





ALGERIA

Pending data submission.

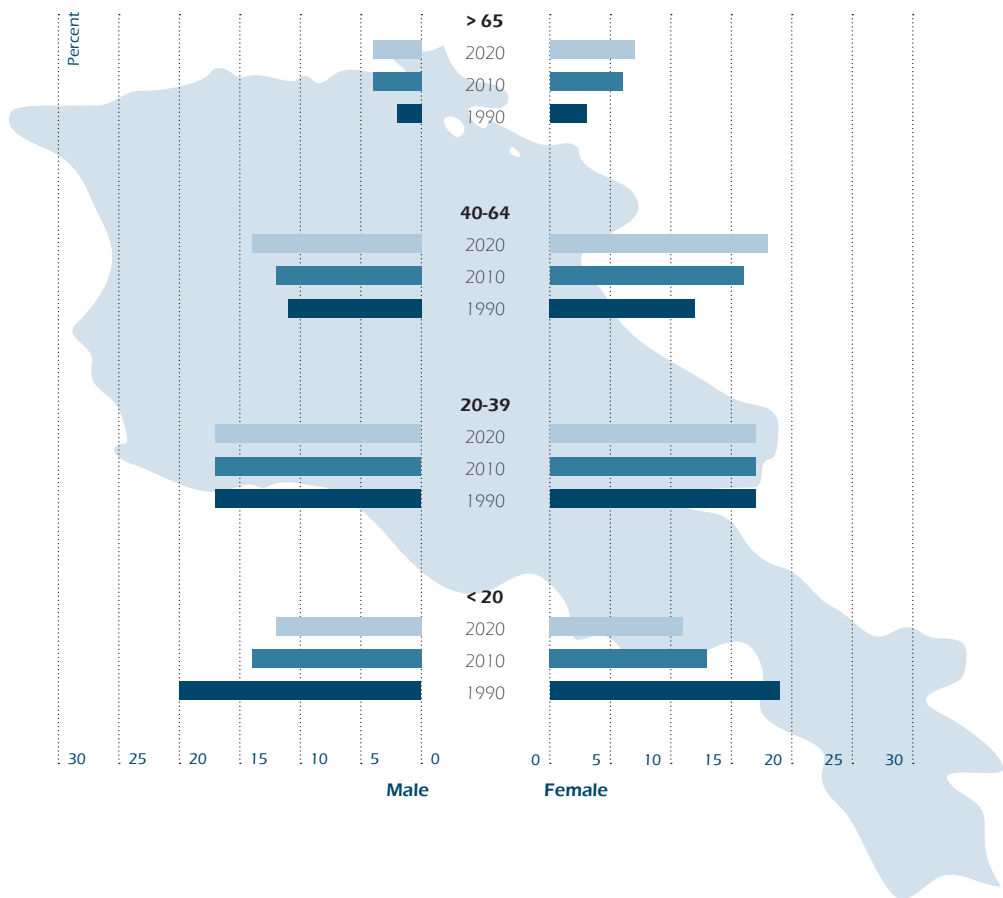


ARMENIA



1. Statistics

Age pyramid for Armenia





Healthcare data

Hospitals (per 100.000 population)	3,92	2009
Beds (per 100.000 population)	372,04	2009
Density of physicians (per 1.000 population)	3,44	2007
Density of nurses (per 1.000 population)	4,13	2007

Demographic information

Population	2.966.802	2010
Population annual growth rate (%)	0	2010
Life expectancy at birth	73,0	2010
Death rate (per 1.000 population)	8,48	2008
Live births (per 1.000 population)	12,73	2008

Economic information

Gross domestic product (U.S dollar-billions)	8,83*	2010
Gross domestic product per capita (U.S dollar-units)	2.676,52*	2010
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

2009	not available
2010	not available

3. Healthcare System

In Armenia, the National Health System fund covers all emergencies and children under seven year's 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

	2009	2010
Insured citizens	35%	15%
Uninsured citizens	65%	85%

Distribution of insurance modality

	2009	2010
Public insurance company	33%	15%
Private insurance company	2%	1%
Private co-payment	65%	84%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☒
Pacemakers	☒
Ablation	☒
Not necessary	☐

Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

* For a detailed understanding of the situation one has to know that Armenia does not have national certification for any cardiology subspecialties.

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 **2 years**

Training centres availability

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

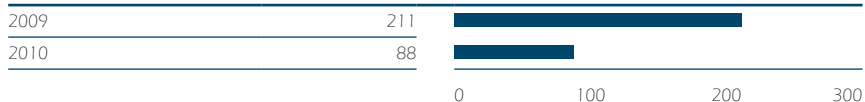
Number of medical faculties **5**

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

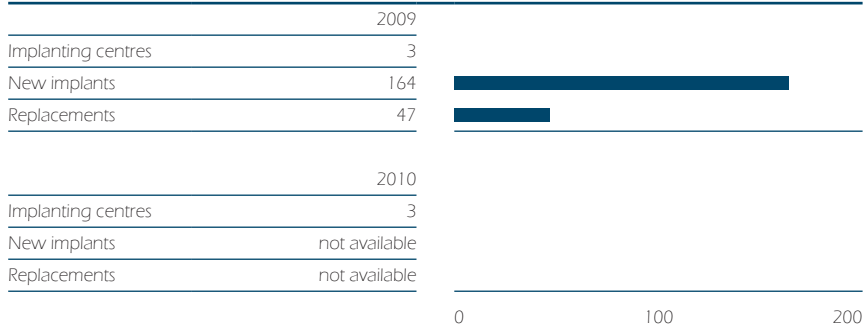


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

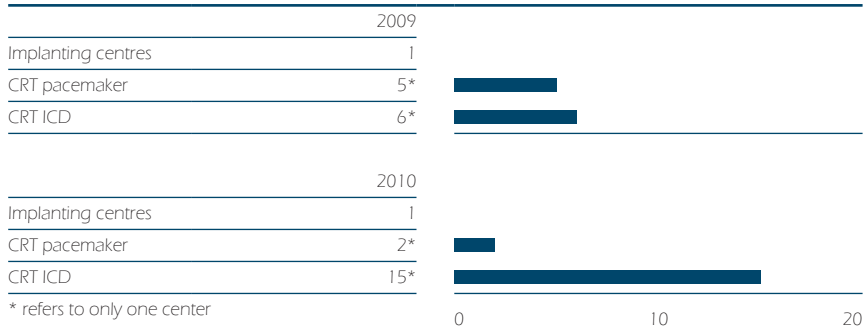


Specialty performing implants

Cardiologists	97%
Surgeons	3%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

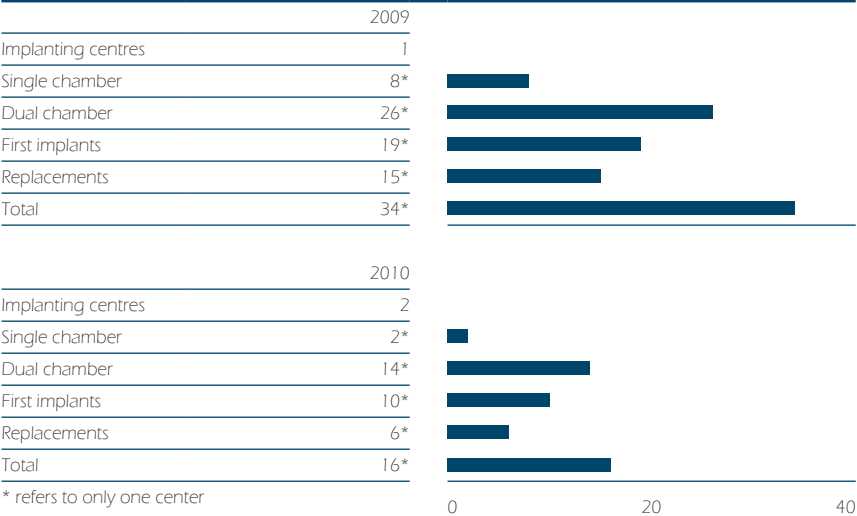


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

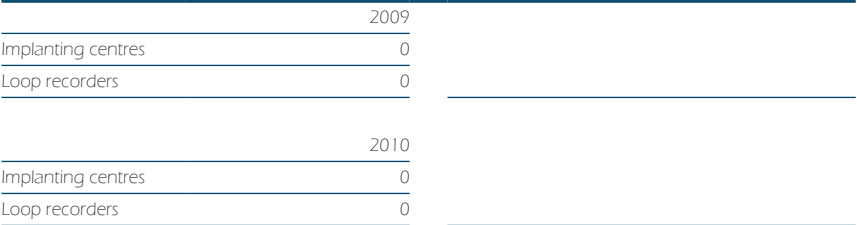


Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	0%
Surgeons	0%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	1	1
Number of ablations performed	146	49
Number of ablations per centre	146	49
Number of AF ablations	1	2

Availability of a national registry for interventional electrophysiology

No

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	☐	☐	☐	☒	☐
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☐	☐	☒	☐
Low awareness of guidelines	☐	☐	☐	☐	☒
Lack of operators	☒	☐	☐	☐	☐
Other: Financial	☐	☐	☐	☐	☒

1 = no obstacle

5 = great obstacle

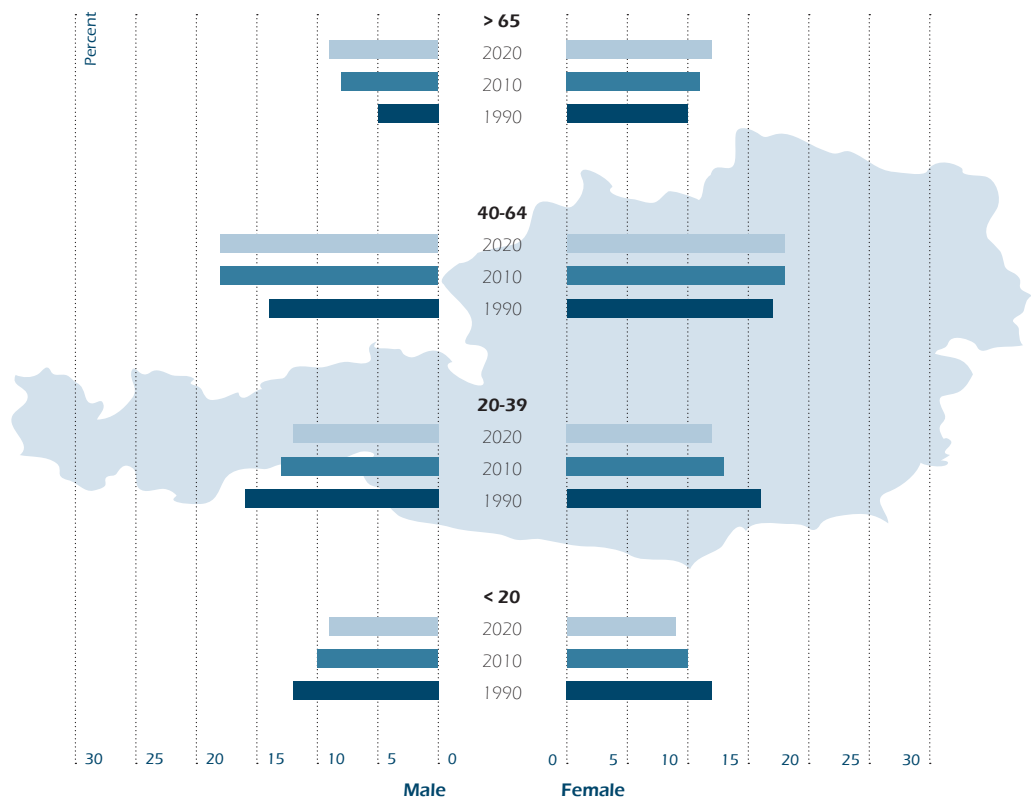
Sources: Armenian Working Group on Cardiac Pacing and Electrophysiology – Dr. Zara Kartoyan

AUSTRIA



1. Statistics

Age pyramid for Austria



Healthcare data

Hospitals (per 100.000 population)	3,2	2008
Beds (per 100.000 population)	770,91	2008
Density of physicians (per 1.000 population)	3,75	2007
Density of nurses (per 1.000 population)	6,35	2007

Demographic information

Population	8.214.160	2010
Population annual growth rate (%)	0,1	2009
Life expectancy at birth	80,0	2010
Death rate (per 1.000 population)	9,25	2009
Live births (per 1.000 population)	9,13	2009

Economic information

Gross domestic product (U.S dollar-billions)	366,26*	2010
Gross domestic product per capita (U.S dollar-units)	43.723,32*	2010
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

2009	42,9%
2010	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 availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	97,6%	97,6%
Uninsured citizens	2,4%	2,4%

Distribution of insurance modality

	2009	2010
Public insurance company	80-85%	80-85%
Private insurance company	15-20%	15-20%
Private co-payment	0%	0%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation**Yes**

Mostly cardiologists (EP doctors), few surgeons

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

Cardiologist, surgeon

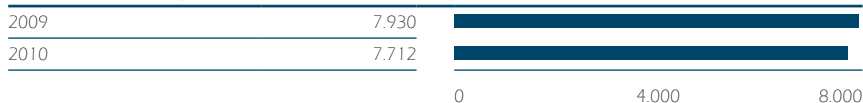
Official national competency guidelines for electrophysiological studies or catheter ablation**No****Required period of training to perform implantations****No****Training centres availability**

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**4****Percentage of academic facilities among practicing EP and implant centres****6,5%**

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

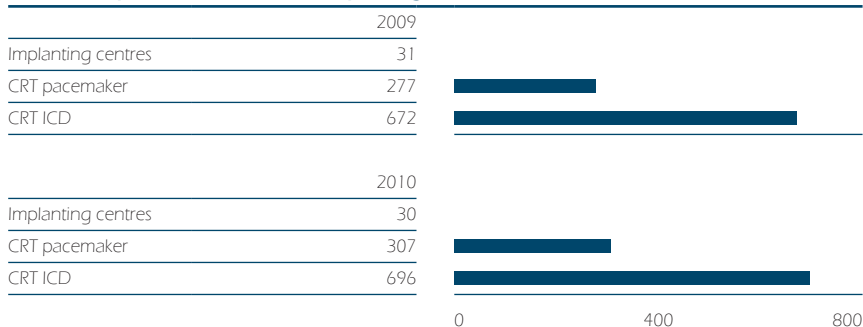
2009	
Implanting centres	65
New implants	not available
Replacements	not available
2010	
Implanting centres	61
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	30-50%
Surgeons	50-70%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

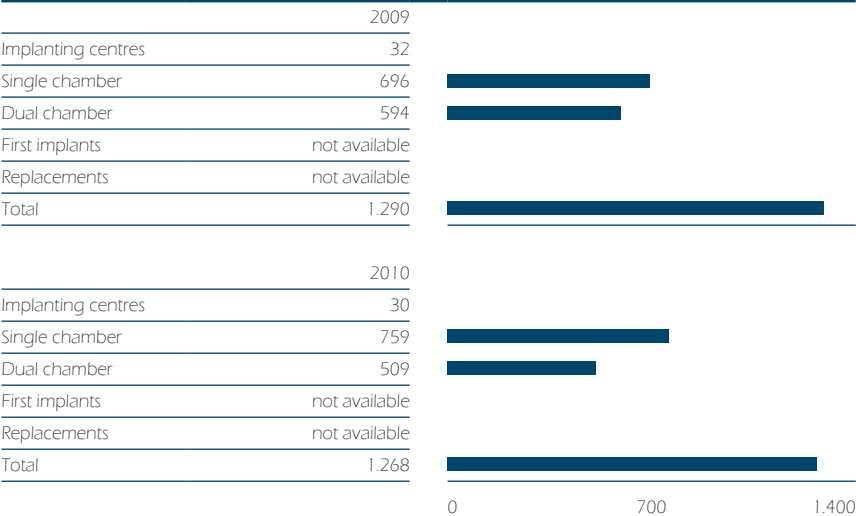


Specialty performing implants

Cardiologists	30%
Surgeons	70%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

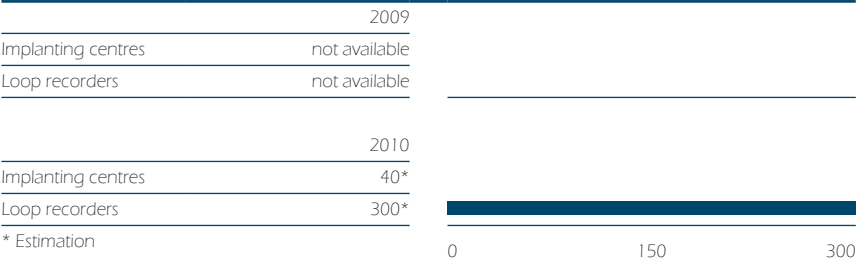


Specialty performing implants

Cardiologists	30%
Surgeons	70%

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

Yes

National registry for

ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* In preparation (ÖBIG)

** Austrian PM Registry

*** National Ablation Registry

Availability of a national quality insurance system or complication registry

Yes

In preparation (BIOG)

Availability of a national institution coordinating and guiding device recalls

Yes

GÖG, ÖBIG, BMGFJ (Ministry of Health)

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	15	18
Number of ablations performed	1.400*	1.800*
Number of ablations per centre	100	120
Number of AF ablations	>300*	450*

* Approx.

Availability of a national registry for interventional electrophysiology

Yes

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☐
U.S.	☐
European	☒

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

Sources:

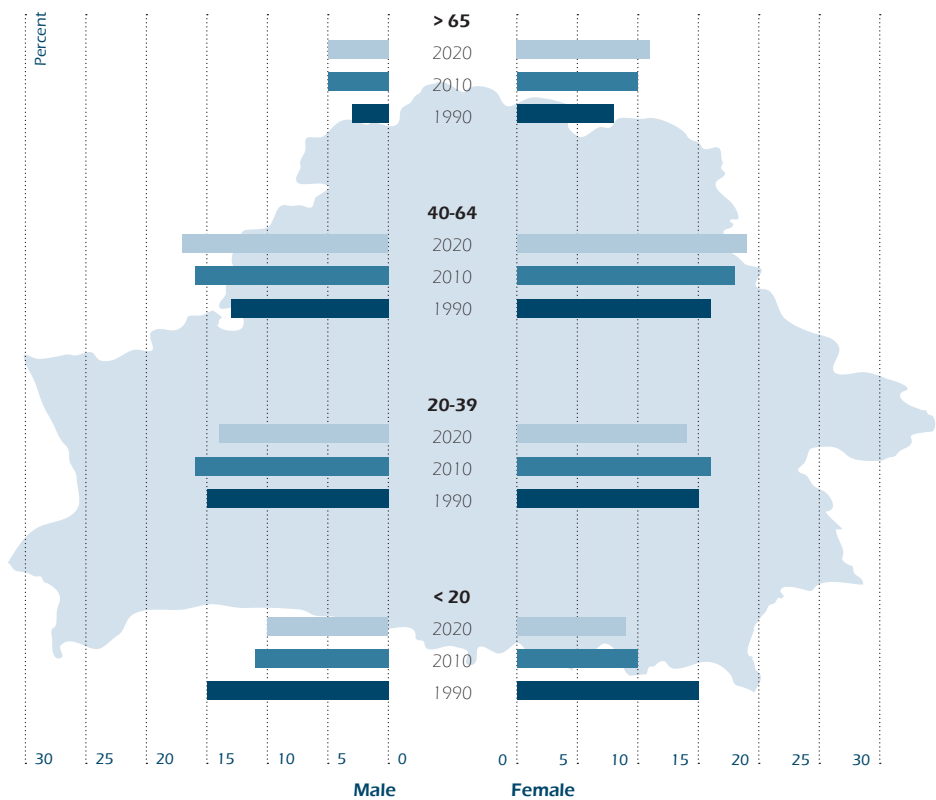
- Austrian Working Group on Arrhythmias – Jakl Gabriele MD
- National Ablation Registry

BELARUS



1. Statistics

Age pyramid for Belarus





Healthcare data

Hospitals (per 100.000 population)	6,84	2009
Beds (per 100.000 population)	1.107,06	2009
Density of physicians (per 1.000 population)	4,84	2007
Density of nurses (per 1.000 population)	11,98	2007

Demographic information

Population	9.612.632	2010
Population annual growth rate (%)	-0,4	2010
Life expectancy at birth	71,0	2010
Death rate (per 1,000 population)	13,71	2007
Live births (per 1,000 population)	11,14	2008

Economic information

Gross domestic product (U.S dollar-billions)	52,89*	2010
Gross domestic product per capita (U.S dollar-units)	5.606,78*	2010
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

2009	54%
2010	53.8%*

* Preliminary data

3. Healthcare System

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

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	100%	100%
Private insurance company	1%	1%
Private co-payment	3%	3%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒

Founds for these therapies are limited.



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy*	☒
Invasive electrophysiology*	☒
None	☐

* Roentgen-endovascular surgery

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation**Yes**

Roentgen-endovascular surgeon

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

Roentgen-endovascular surgeon, cardiac surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation**No****Required period of training to perform implantations****2 years****Training centres availability**

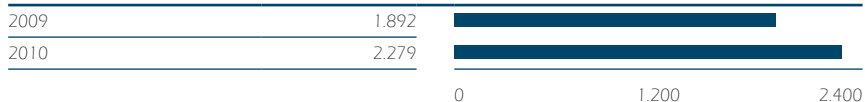
Pacemaker	1
ICD implantation	1
Electrophysiological studies and catheter ablation	1
CRT implantation	1
Atrial fibrillation ablation	1

Number of medical faculties**4****Percentage of academic facilities among practicing EP and implant centres****75%**

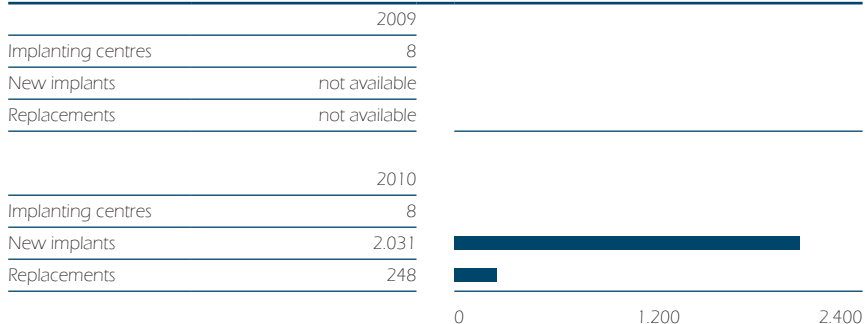


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

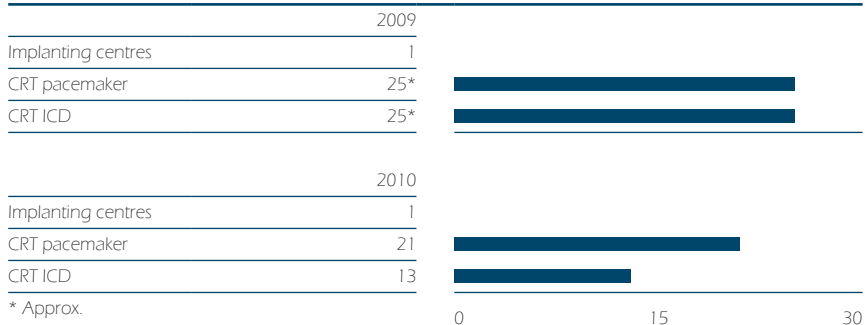


Specialty performing implants

Cardiologists	0%
Surgeons	100%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

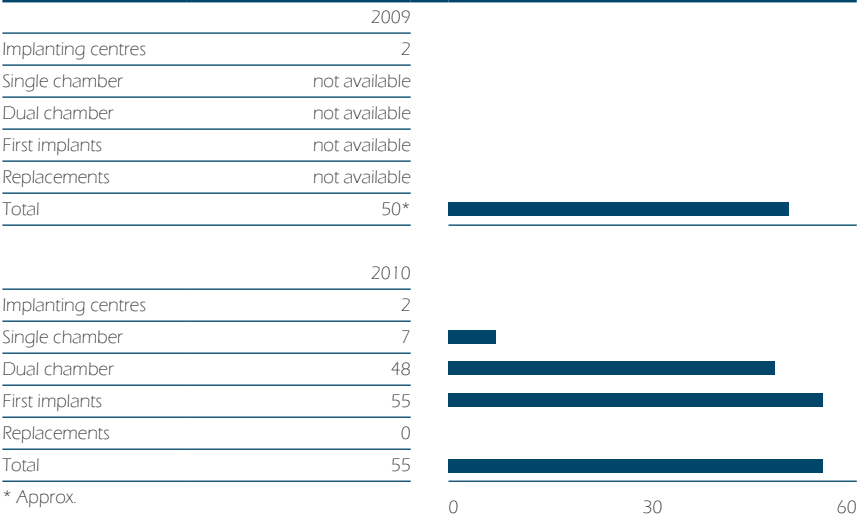


Specialty performing implants

Cardiologists	0%
Surgeons	100%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

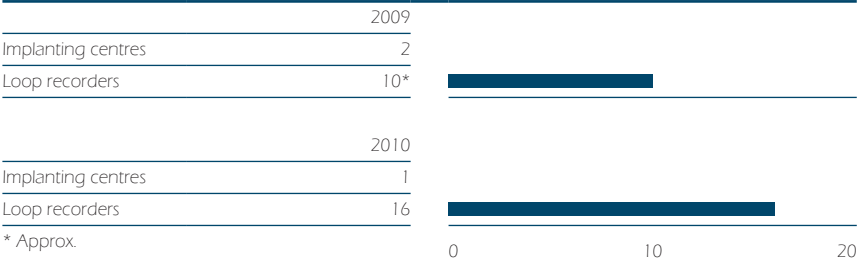


Specialty performing implants

Cardiologists	0%
Surgeons	100%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	0%
Surgeons	100%



9. Device specific

Availability of remote monitoring of devices

No

Due to expensive value and low number of implants.

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology	☐
None	☐

* IPG-Registry

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

Yes

Republican Scientific and Practical Center of Cardiology and Ministry of Health

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	3	3
Number of ablations performed	419	488
Number of ablations per centre	140	162,6
Number of AF ablations	33	55

Availability of a national registry for interventional electrophysiology

No

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	☐	☐	☒	☐	☐
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☐	☐	☒	☐
Lack of operators	☐	☐	☒	☐	☐

1 = no obstacle

5 = great obstacle

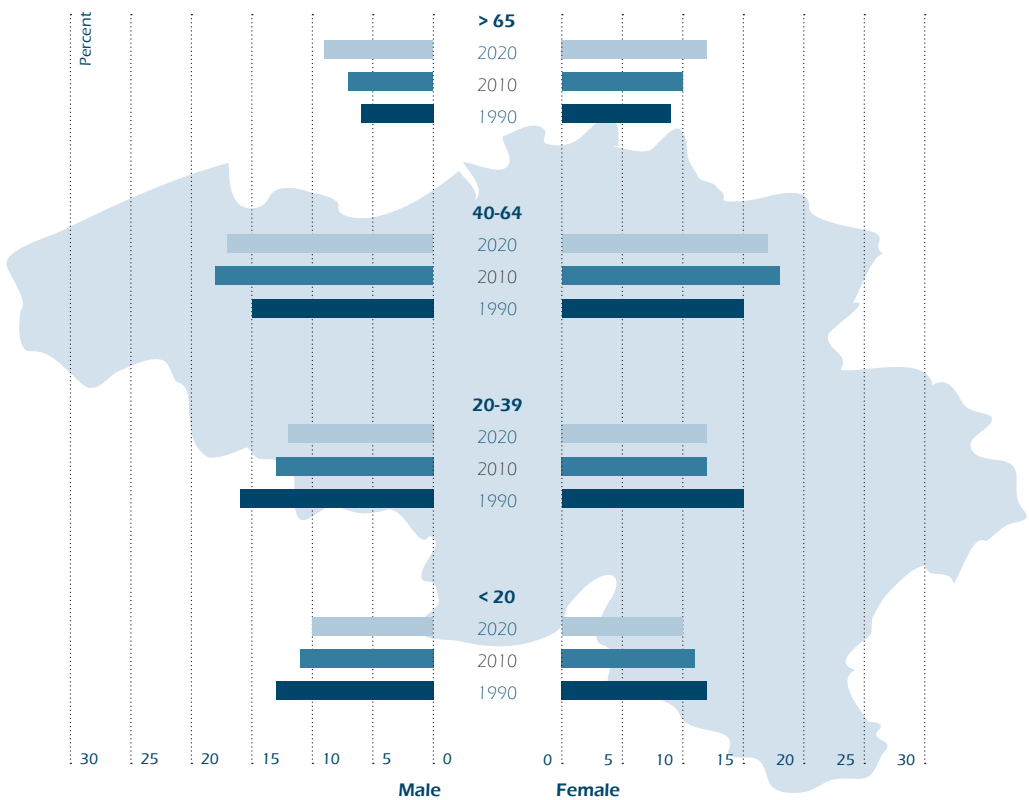
Sources: Belarus National Working Group on Arrhythmias – Prof. Alexander Mrochek

BELGIUM



1. Statistics

Age pyramid for Belgium



Healthcare data

Hospitals (per 100.000 population)	1,92	2009
Beds (per 100.000 population)	659,63	2009
Density of physicians (per 1.000 population)	4,18	2006
Density of nurses (per 1.000 population)	13,41	2004

Demographic information

Population	10.423.493	2010
Population annual growth rate (%)	0,1	2010
Life expectancy at birth	79,0	2010
Death rate (per 1.000 population)	9,82	2005
Live births (per 1.000 population)	11,36	2007

Economic information

Gross domestic product (U.S dollar-billions)	461,33*	2010
Gross domestic product per capita (U.S dollar-units)	42.596,55*	2010
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

2009	33.61%*
2010	33.61%*

*refer to last 2005 national statistics 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

	2009	2010
Insured citizens	99%	99%
Uninsured citizens	1%	1%

Distribution of insurance modality

	2009	2010
Public insurance company	100%	100%
Private insurance company	20%	20%
Private co-payment	20%	20%

Possibility of subscribing to private health insurance plans Yes

Co-payment necessary for the following therapy

ICD devices	☒
Pacemakers	☒
Ablation	☒
Not necessary	☐



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist, licence for EP diagnostics, licence for ablations

Specialty required for ICD or pacemaker implants No

Official national competency guidelines for electrophysiological studies or catheter ablation No

Required period of training to perform implantations No

Training centres availability

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

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

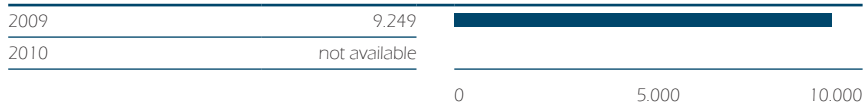
Number of medical faculties 7

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

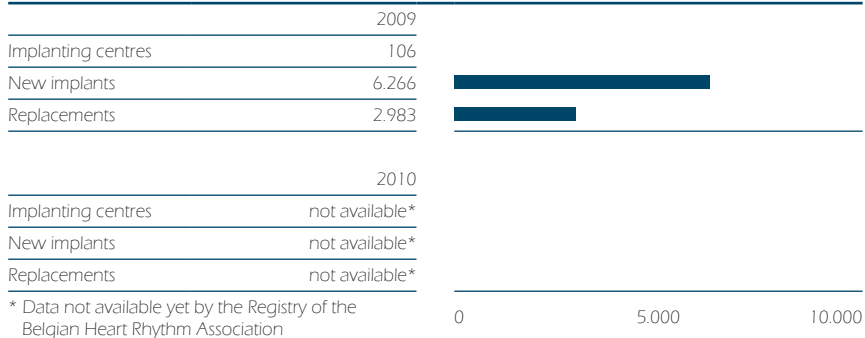


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

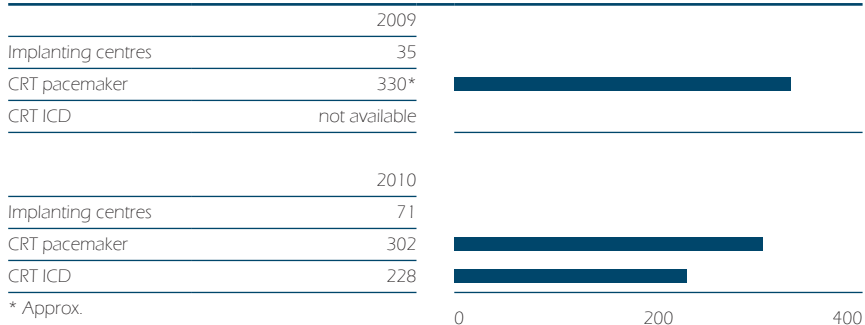


Specialty performing implants

Cardiologists	75%
Surgeons	25%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

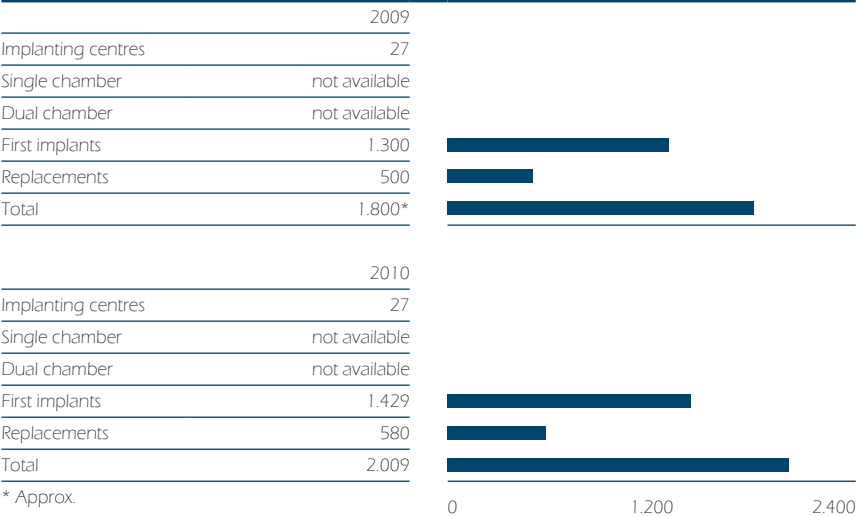


Specialty performing implants

Cardiologists	85%
Surgeons	15%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

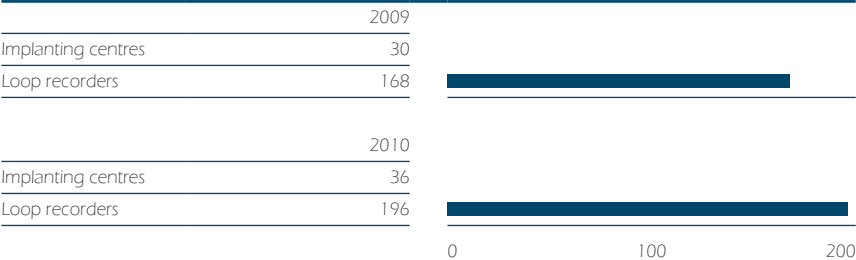


Specialty performing implants

Cardiologists	30%
Surgeons	70%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	95%
Surgeons	5%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing**	☒
Electrophysiology**	☒
None	☐

* Inami/Riziv database

** BeHRA database

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

Yes

FAGG

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	42	38
Number of ablations performed	4.758	5.079
Number of ablations per centre	117	134
Number of AF ablations	1.322	1.836

Availability of a national registry for interventional electrophysiology

Yes

BeHRA registry

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	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☒	☐	☐
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☒	☐	☐	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☐	☒	☐	☐	☐

1 = no obstacle

5 = great obstacle

Sources:

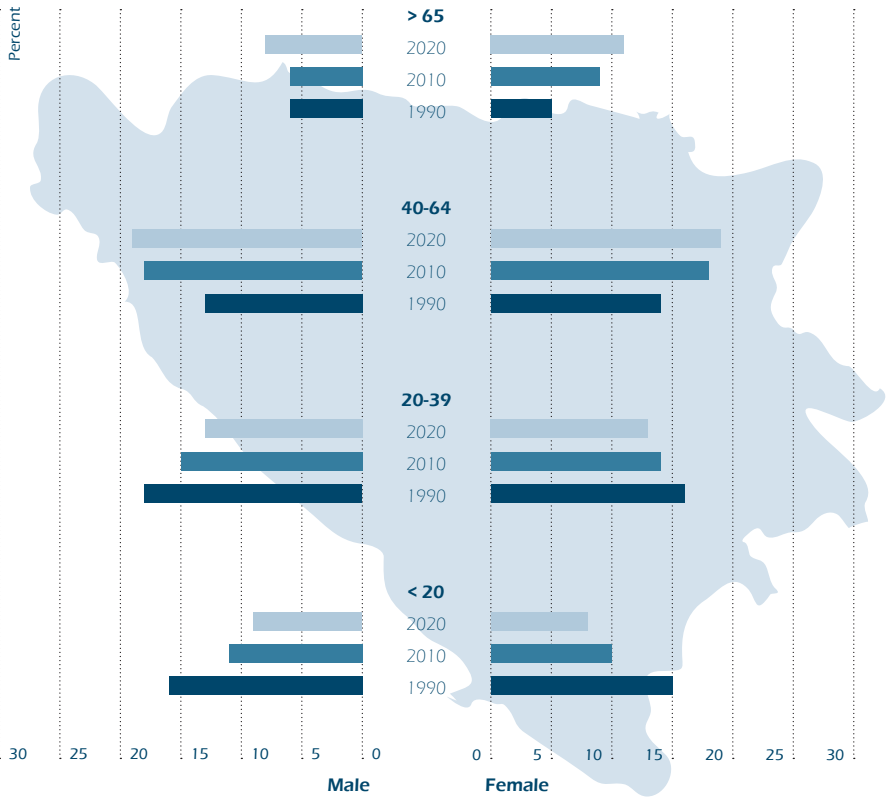
- Belgian Heart Rhythm Association (BeHRA) – Chairman: Dr. Georges H. Mairesse
- Registry of the Belgian Heart Rhythm Association
- Van Brabandt H, Camberlin C, Neyt M, De Laet C, Stroobandt S, Devriese S, Obyn C. Thérapie de resynchronisation cardiaque. Un rapport d'évaluation de technologie de santé. Health Technology Assessment (HTA). Bruxelles: Centre fédéral d'expertise des soins de santé (KCE) 2010. KCE Reports 145B. D/2010/10.273/83
- Conseil d'accord INAMI (national health system)
- Economie Statistics Belgium: <http://statbel.fgov.be>

BOSNIA & HERZEGOVINA



1. Statistics

Age pyramid for Bosnia & Herzegovina



Healthcare data

Hospitals (per 100.000 population)	1,02	2009
Beds (per 100.000 population)	341,26	2009
Density of physicians (per 1.000 population)	1,42	2005
Density of nurses (per 1.000 population)	4,37	2005

Demographic information

Population	4.621.598	2009
Population annual growth rate (%)	0	2009
Life expectancy at birth	79,0	2006
Death rate (per 1.000 population)	6,69	1991
Live births (per 1.000 population)	8,82	2005

Economic information

Gross domestic product (U.S dollar-billions)	16,20*	2010
Gross domestic product per capita (U.S dollar-units)	4.157,51*	2010
Total expenditure on health as % of GDP	8,3	2006
General government expenditure on health as % of total expenditure on health	57,2	2006
Private expenditure on health as % of total expenditure on health	42,8	2006

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2009	not available
2010	54%

3. Healthcare System

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

Basic insurance availability

No

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	not available	74%
Uninsured citizens	not available	26%

Distribution of insurance modality

	2009	2010
Public insurance company	not available	74%
Private insurance company	not available	0%
Private co-payment	not available	26%

Possibility of subscribing to private health insurance plans

No

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒

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

Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Internist, cardiologist

Specialty required for ICD or pacemaker implants Yes

Internist, cardiologist, surgeon

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

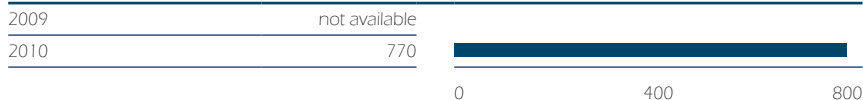
Pacemaker	0
ICD implantation	0
Electrophysiological studies and catheter ablation	0
CRT implantation	0
Atrial fibrillation ablation	0

Number of medical faculties 5**Percentage of academic facilities among practicing EP and implant centres** 50%

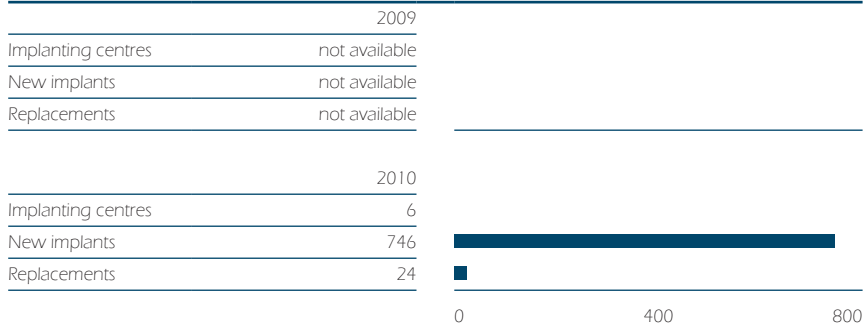


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

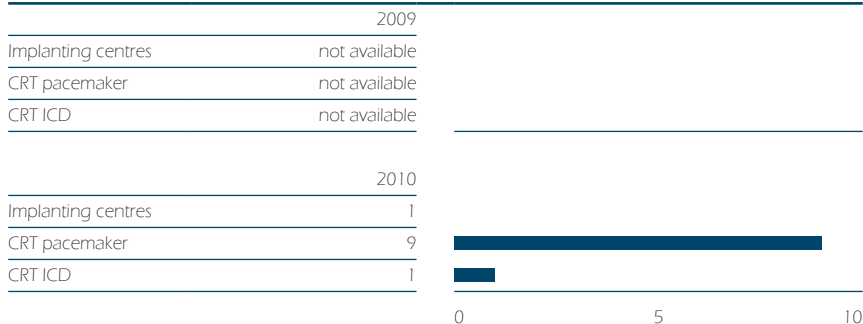


Specialty performing implants

Cardiologists	20%
Surgeons	80%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

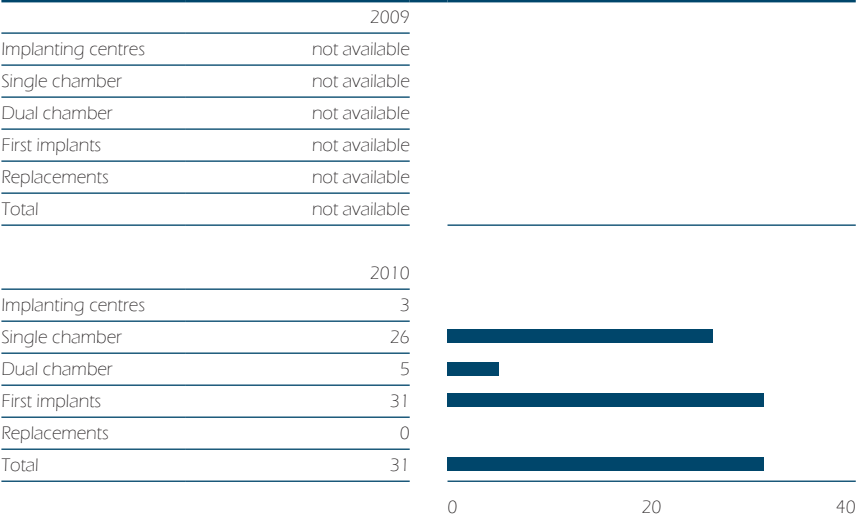


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	55%
Surgeons	45%

8. Loop recorders

Loop recorders implanted and number of implanting centres

2009	
Implanting centres	not available
Loop recorders	not available

2010	
Implanting centres	0
Loop recorders	0

Specialty performing implants

Cardiologists	0%
Surgeons	0%

9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	not available	1
Number of ablations performed	not available	14
Number of ablations per centre	not available	14
Number of AF ablations	not available	2

Availability of a national registry for interventional electrophysiology

No

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	☐	☐	☐	☐	☒
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☐	☐	☒	☐	☐
Other: Limited finance	☐	☐	☐	☐	☒

1 = no obstacle

5 = great obstacle

Sources:

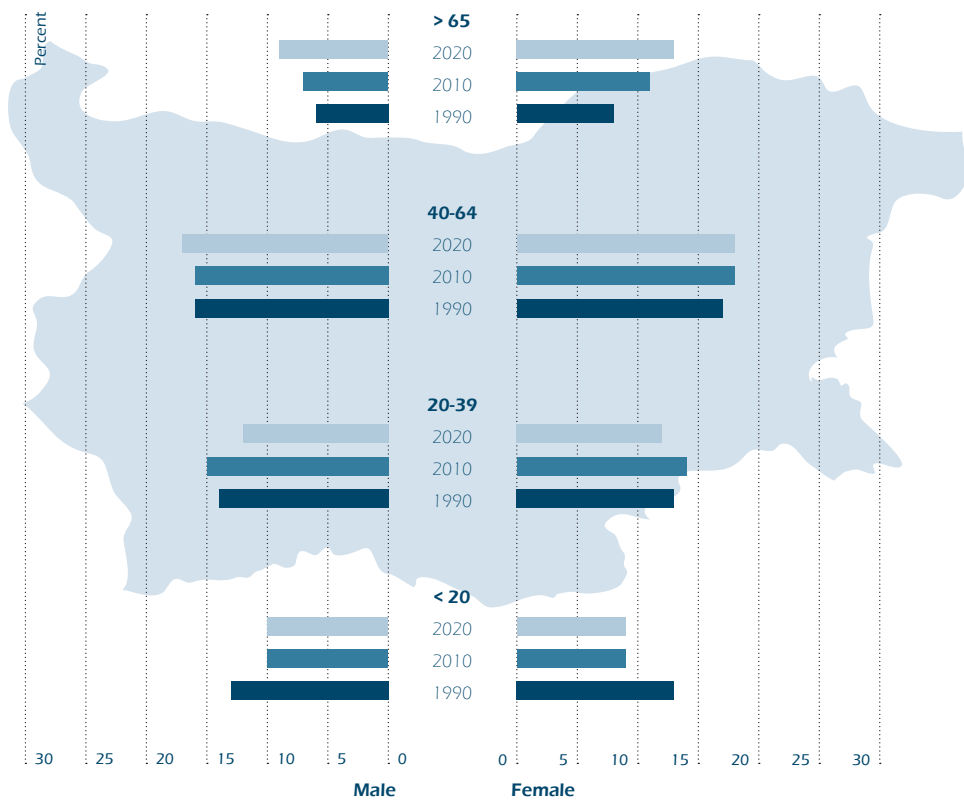
- Association of Cardiologists and Angiologists of Bosnia and Herzegovina
- Working group for pacemakers – Vice-president: Dr. Boris M. Goronja
- World Health Organisation (WHO)

BULGARIA



1. Statistics

Age pyramid for Bulgaria





Healthcare data

Hospitals (per 100.000 population)	4,6	2008
Beds (per 100.000 population)	649,41	2008
Density of physicians (per 1.000 population)	3,64	2007
Density of nurses (per 1.000 population)	4,21	2007

Demographic information

Population	7.148.785	2010
Population annual growth rate (%)	-0,8	2010
Life expectancy at birth	73,0	2010
Death rate (per 1.000 population)	14,5	2008
Live births (per 1.000 population)	10,19	2008

Economic information

Gross domestic product (U.S dollar-billions)	44,84*	2010
Gross domestic product per capita (U.S dollar-units)	5.954,72*	2010
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

2009	66%
2010	64%

3. Healthcare System

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

Basic insurance availability Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	86%	80%*
Uninsured citizens	14%	20%*

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

Distribution of insurance modality

	2009	2010
Public insurance company	62%	62%
Private insurance company	0,9%	0,9%
Private co-payment	37,1%	37,1%

Possibility of subscribing to private health insurance plans Yes

Co-payment necessary for the following therapy

ICD devices	☒
Pacemakers	☒
Ablation	☒

Co-payment is necessary for all pacemakers except VVI type which is covered by the NHS Fund.



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None*	☒

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

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation**Yes**

Cardiology

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

Cardiology, surgery

Official national competency guidelines for electrophysiological studies or catheter ablation**No****Required period of training to perform implantations****2 years****Training centres availability**

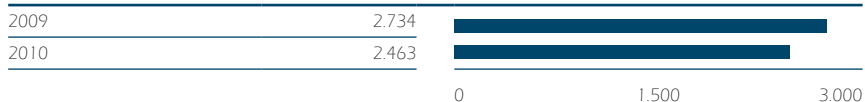
Pacemaker	2
ICD implantation	2
Electrophysiological studies and catheter ablation	1
CRT implantation	1
Atrial fibrillation ablation	1

Number of medical faculties**5****Percentage of academic facilities among practicing EP and implant centres****not available**

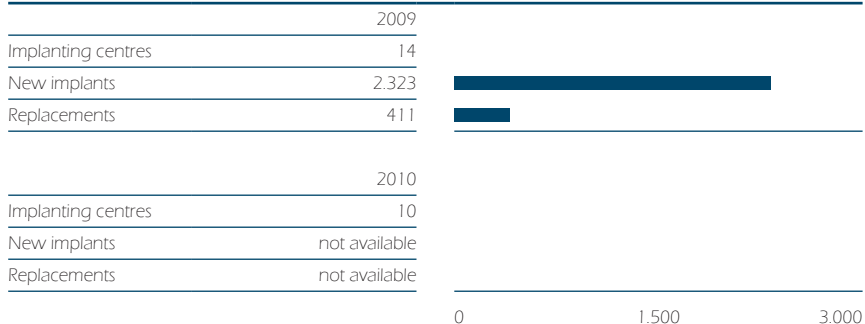


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

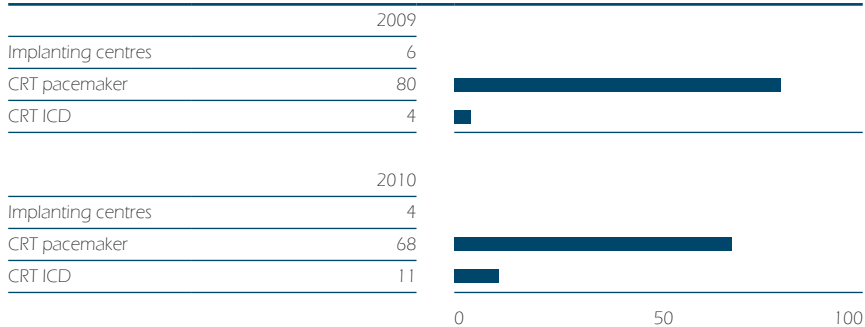


Specialty performing implants

Cardiologists	84%
Surgeons	16%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

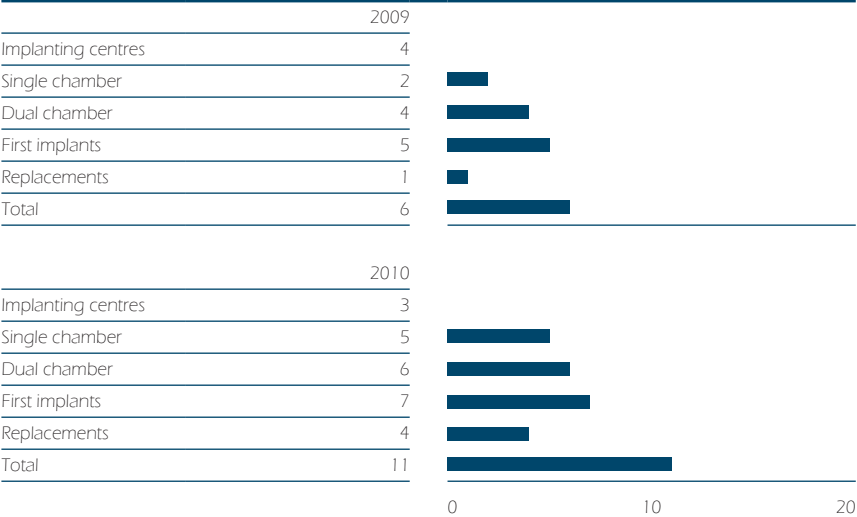


Specialty performing implants

Cardiologists	75%
Surgeons	25%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

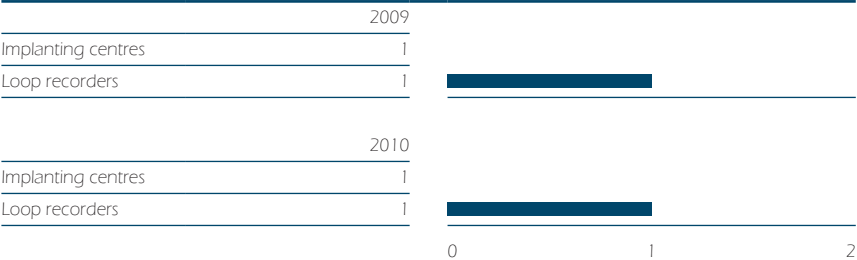


Specialty performing implants

Cardiologists	67%
Surgeons	33%

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

Yes

National registry for

ICD	☐
Pacing	☐
Electrophysiology*	☒

* Ablation Registry National Heart Hospital

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	1	1
Number of ablations performed	309	299
Number of ablations per centre	309	299
Number of AF ablations	28	14

Availability of a national registry for interventional electrophysiology

No

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	☐	☐	☐	☐	☒
Lack of referral	☐	☐	☐	☒	☐
Lack of trained personnel	☐	☒	☐	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☒	☐	☒	☐	☐
Other: Limited finance	☐	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

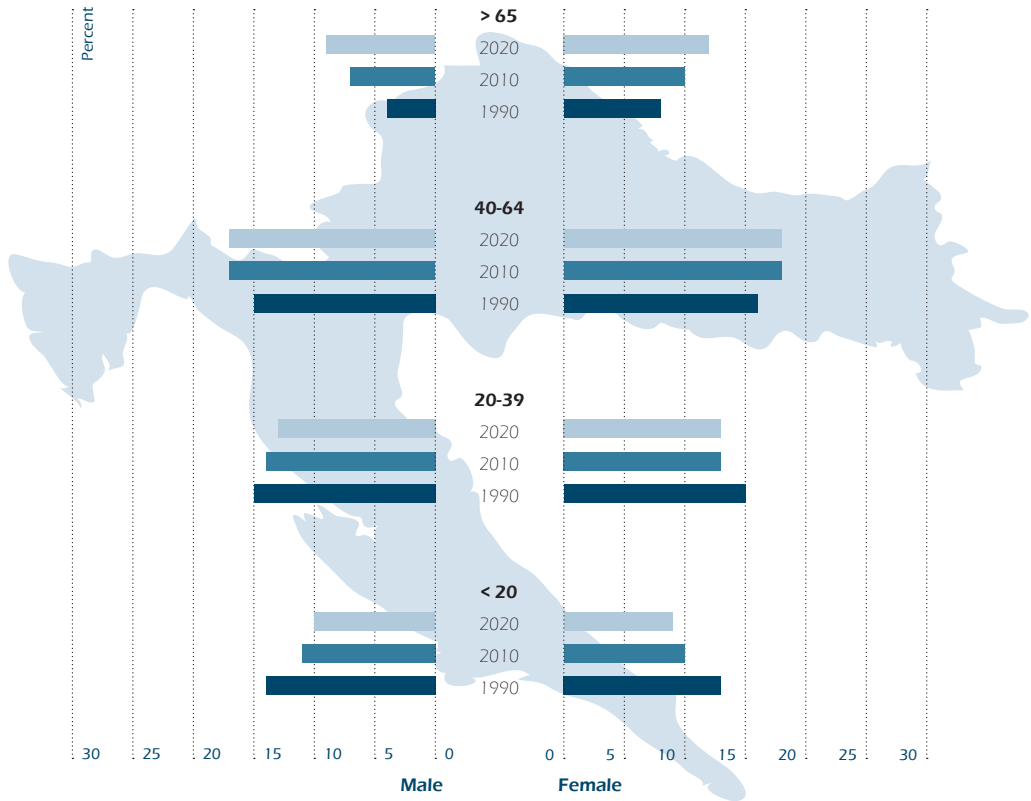
Sources: Bulgarian Cardiology Society – Svetoslav Iovchev

CROATIA



1. Statistics

Age pyramid for Croatia





Healthcare data

Hospitals (per 100.000 population)	1,8	2007
Beds (per 100.000 population)	621	1992
Density of physicians (per 1.000 population)	2,59	2007
Density of nurses (per 1.000 population)	5,24	2007

Demographic information

Population	4.486.881	2010
Population annual growth rate (%)	-0,1	2010
Life expectancy at birth	76,0	2010
Death rate (per 1.000 population)	11,83	2009
Live births (per 1.000 population)	10,06	2009

Economic information

Gross domestic product (U.S dollar-billions)	59,92*	2010
Gross domestic product per capita (U.S dollar-units)	13.527,66*	2010
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

2009	50%
2010	49%

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 uninsured citizens

	2009	2010
Insured citizens	90%	90%
Uninsured citizens	10%	10%

Distribution of insurance modality

	2009	2010
Public insurance company	90%	90%
Private insurance company	3%	3%
Private co-payment	7%	7%

Possibility of subscribing to private health insurance plans Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒

Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist

Specialty required for ICD or pacemaker implants Yes

Cardiologist, surgeon

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

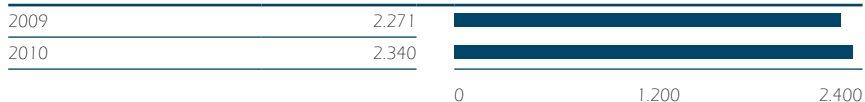
Pacemaker	4
ICD implantation	4
Electrophysiological studies and catheter ablation	2
CRT implantation	2
Atrial fibrillation ablation	2

Number of medical faculties 4**Percentage of academic facilities among practicing EP and implant centres** 61,5%

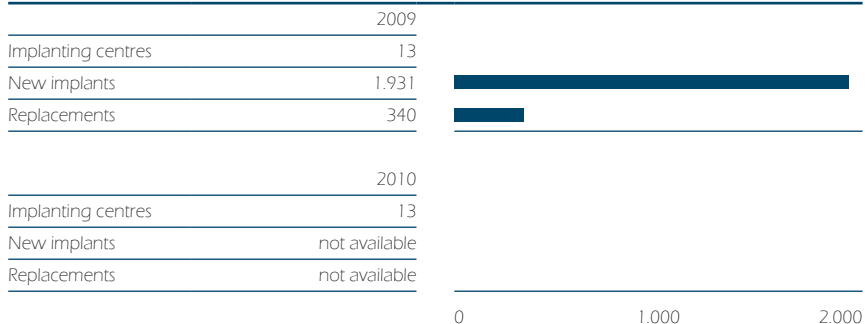


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

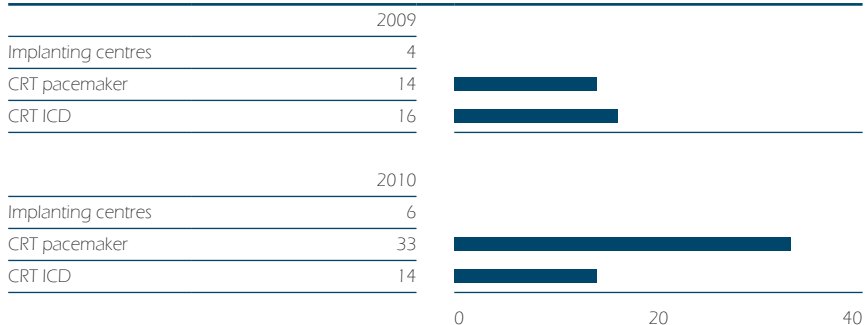


Specialty performing implants

Cardiologists	70%
Surgeons	30%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

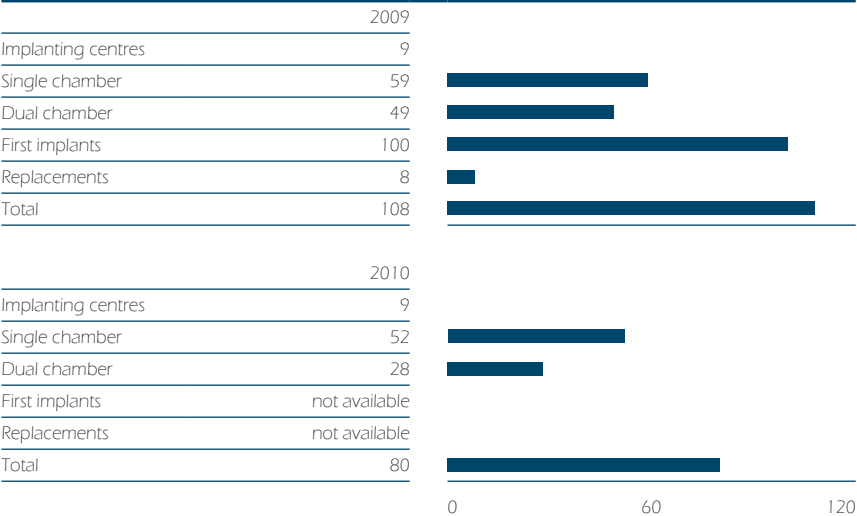


Specialty performing implants

Cardiologists	70%
Surgeons	30%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

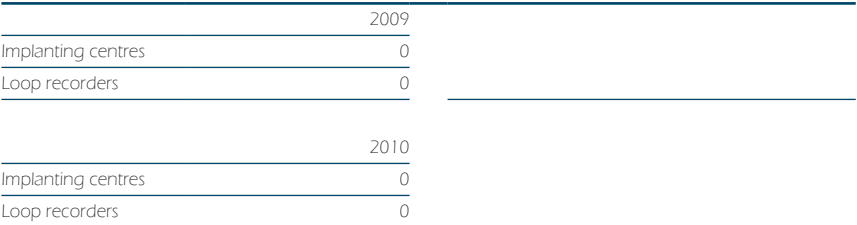


Specialty performing implants

Cardiologists	70%
Surgeons	30%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	0%
Surgeons	0%



9. Device specific

Availability of remote monitoring of devices

No

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology*	☒
None	☐

* 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

	2009	2010
Number of ablation centres	4	4
Number of ablations performed	242	not available
Number of ablations per centre	60,5	not available
Number of AF ablations	0	2

Availability of a national registry for interventional electrophysiology

No

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	☐	☐	☐	☐	☒
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☐	☐	☒	☐	☐

1 = no obstacle

5 = great obstacle

Sources:

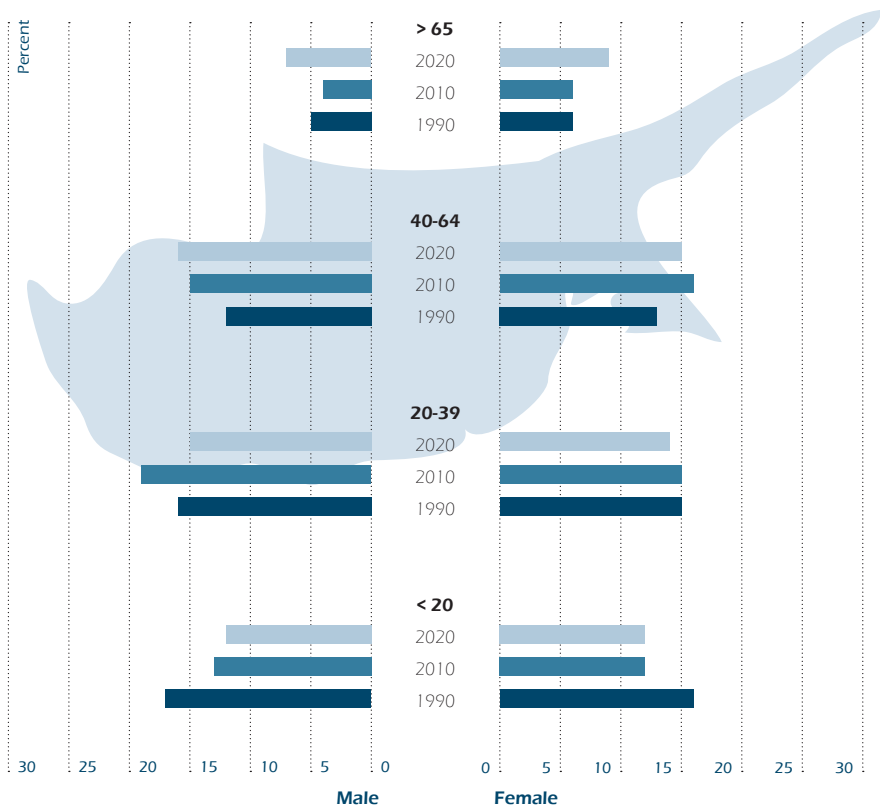
- Working Group on Arrhythmias, Cardiac Pacing and Electrophysiology of the Croatian Cardiac Society –
Chairman: Prof. Dubravko Petrač
- Croatian Registry on Cardiac Pacing, ICD and Electrophysiology

CYPRUS



1. Statistics

Age pyramid for Cyprus





Healthcare data

Hospitals (per 100.000 population)	12,23	2008
Beds (per 100.000 population)	300	2009
Density of physicians (per 1.000 population)	2,53	2006
Density of nurses (per 1.000 population)	4,36	2006

Demographic information

Population	1.102.677	2010
Population annual growth rate (%)	1,7	2010
Life expectancy at birth	78,0	2010
Death rate (per 1.000 population)	6,55	2008
Live births (per 1.000 population)	11,61	2008

Economic information

Gross domestic product (U.S dollar-billions)	22,75*	2010
Gross domestic product per capita (U.S dollar-units)	27.721,84*	2010
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

2009	29%
2010	30%

3. Healthcare System

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

Basic insurance availability

No

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	85%	85%
Uninsured citizens	15%	15%

Distribution of insurance modality

	2009	2010
Public insurance company	70%	85%
Private insurance company	30%	15%
Private co-payment	not available	not available

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation**Yes**

Cardiologist

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

Cardiologist

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

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

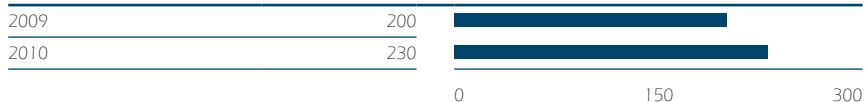
Number of medical faculties***0**

* Medical school to be established in 2012

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

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

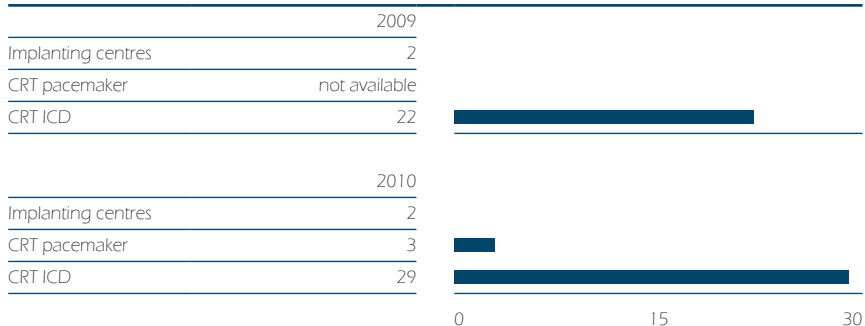
2009	
Implanting centres	5
New implants	not available
Replacements	not available
2010	
Implanting centres	5
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

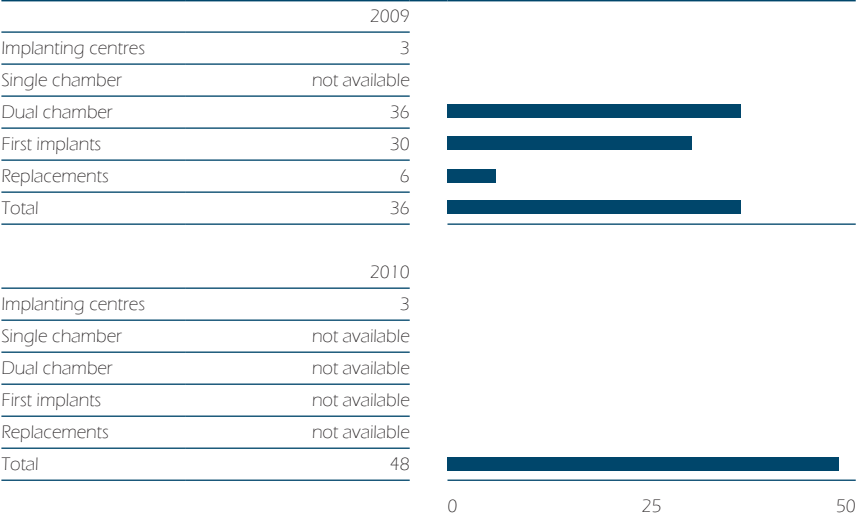


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

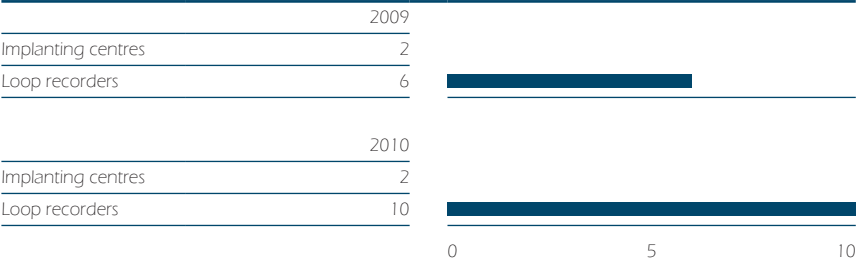


Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%



9. Device specific

Availability of remote monitoring of devices*

Yes

* Very limited

National registry for

ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	2	2
Number of ablations performed	20	30
Number of ablations per centre	10	15
Number of AF ablations	0	0

Availability of a national registry for interventional electrophysiology

No

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	☐	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☐
Lack of referral	☐	☐	☐	☐	☐
Lack of trained personnel	☐	☐	☐	☐	☐
Low awareness of guidelines	☐	☐	☐	☐	☐
Lack of operators	☐	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

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

CZECH REPUBLIC



1. Statistics

Age pyramid for Czech Republic



Healthcare data

Hospitals (per 100.000 population)	2,44	2008
Beds (per 100.000 population)	7 18,37	2008
Density of physicians (per 1.000 population)	3,57	2007
Density of nurses (per 1.000 population)	8,43	2007

Demographic information

Population	10.201.707	2010
Population annual growth rate (%)	-0,1	2010
Life expectancy at birth	77,0	2010
Death rate (per 1.000 population)	10,24	2009
Live births (per 1.000 population)	11,28	2009

Economic information

Gross domestic product (U.S dollar-billions)	195,23*	2010
Gross domestic product per capita (U.S dollar-units)	18.721,63*	2010
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

2009	50,3%
2010	not available

3. Healthcare System

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

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	99,9%	99,9%*
Uninsured citizens	0,1%	0,1%

* estimative

Distribution of insurance modality

	2009	2010
Public insurance company	99,8%	99,8%
Private insurance company	0,1%	0,1%
Private co-payment	0,1%	0,1%

Possibility of subscribing to private health insurance plans

No

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability*

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

* There are some changes in reimbursement policy in the Czech Republic every year.

Treatment availability

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

4. Education

National accreditation availability

Device therapy*	☒
Invasive electrophysiology**	☒
None	☐

* ICD and PM Accreditation

** EP Accreditation

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist, licence for EP diagnostics, licence for ablations

Specialty required for ICD or pacemaker implants Yes

Cardiologist, surgeon, licence for implantation, follow-up

Official national competency guidelines for electrophysiological studies or catheter ablation Yes

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

Required period of training to perform implantations Yes*

* Requires certain number of implantations

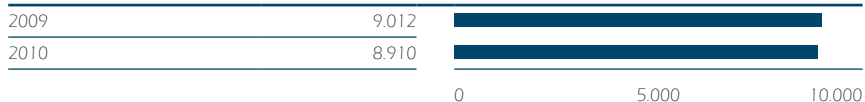
Training centres availability

Pacemaker	15
ICD implantation	15
Electrophysiological studies and catheter ablation	15
CRT implantation	15
Atrial fibrillation ablation	7

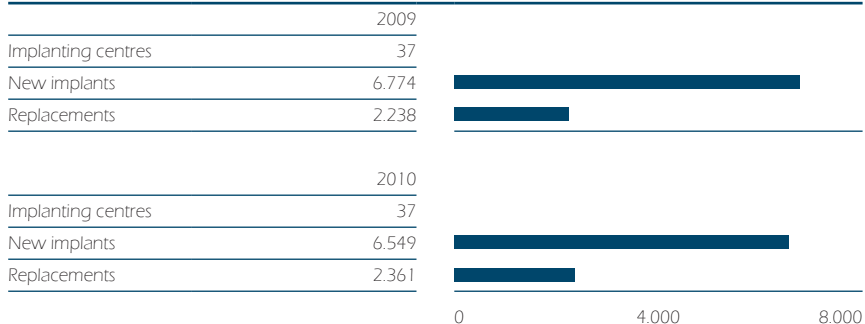
Number of medical faculties 7**Percentage of academic facilities among practicing EP and implant centres** not available

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

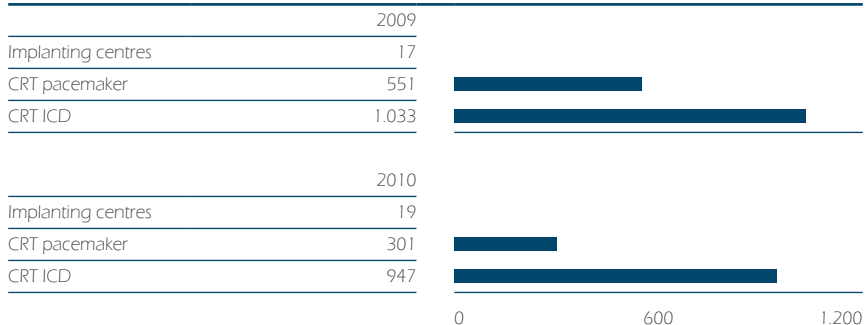


Specialty performing implants

Cardiologists	90%
Surgeons	10%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

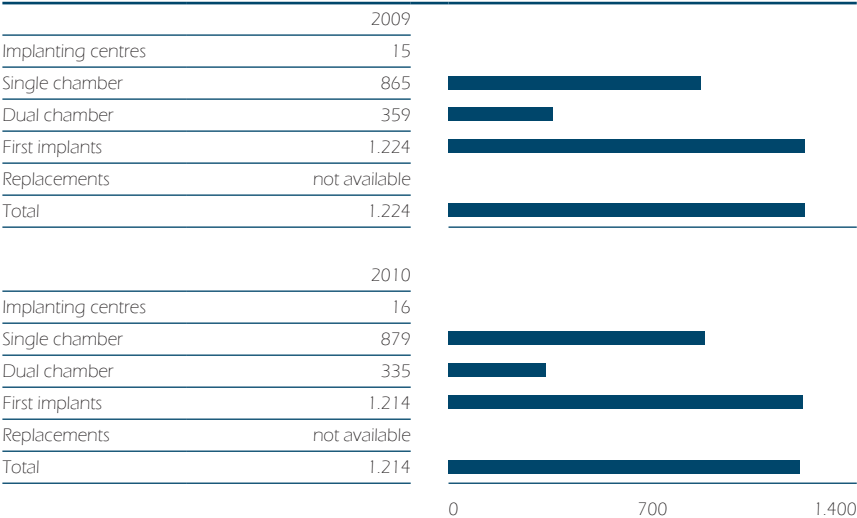


Specialty performing implants

Cardiologists	95%
Surgeons	5%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

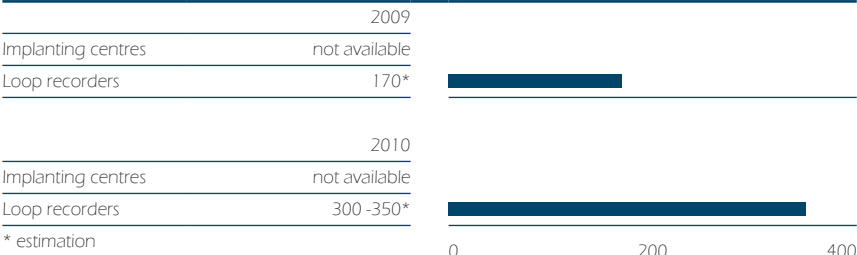


Specialty performing implants

Cardiologists	95%
Surgeons	5%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	not available
Surgeons	not available



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing**	☒
Electrophysiology**	☒
None	☐

* ICD registry online

** PM registry online

*** Ablation registry online

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

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	18	20
Number of ablations performed	3.980	4.150
Number of ablations per centre	221	208
Number of AF ablations	1.215	1.382

Availability of a national registry for interventional electrophysiology

Yes

Ablation registry online

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☒
U.S.	☐
European	☐

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

Sources:

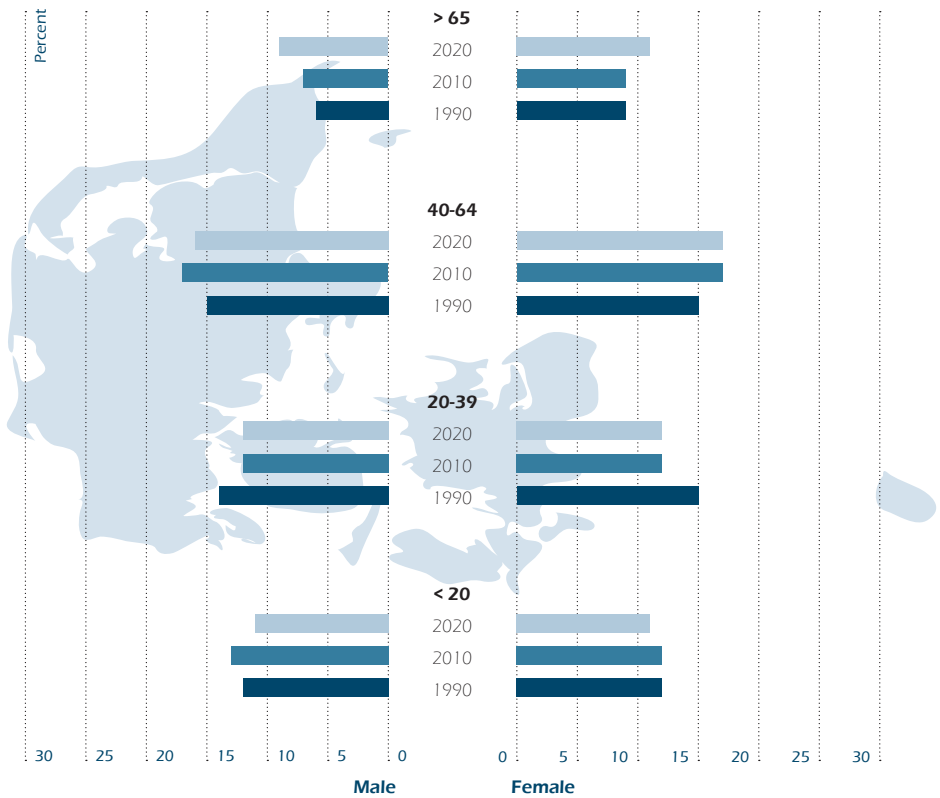
- Working Group on Arrhythmias and Cardiac Pacing, Czech Society of Cardiology – Chairman: Cihak Robert MD, PhD
- Ablation registry – Cihak Robert MD, PhD
- Pacemaker registry – Taborsky Milos MD, PhD, FESC
- ICD registry – Bytesnik Jan, MD, PhD.

DENMARK



1. Statistics

Age pyramid for Denmark





Healthcare data

Hospitals (per 100.000 population)	1,09	2005
Beds (per 100.000 population)	356,97	2008
Density of physicians (per 1.000 population)	3,2	2006
Density of nurses (per 1.000 population)	9,61	2006

Demographic information

Population	5.515.575	2010
Population annual growth rate (%)	0,3	2010
Life expectancy at birth	78,0	2010
Death rate (per 1.000 population)	10,16	2006
Live births (per 1.000 population)	11,96	2006

Economic information

Gross domestic product (U.S dollar-billions)	304,56*	2010
Gross domestic product per capita (U.S dollar-units)	55.112,71*	2010
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

2009	not available
2010	not available

3. Healthcare System

Denmark has a National healthcare system which provides universal coverage for all residents. Hospital care, general practitioner 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

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	100%	100%
Private insurance company	not available	not available
Private co-payment	not available	not available

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy*	☒
Invasive electrophysiology*	☒
None	☐

* The Danish National Board of Health

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist with special electrophysiology training

Specialty required for ICD or pacemaker implants Yes

Cardiologist with special electrophysiology training

Official national competency guidelines for electrophysiological studies or catheter ablation Yes

Danish Society of Cardiology

Required period of training to perform implantations 5 years**Training centres availability**

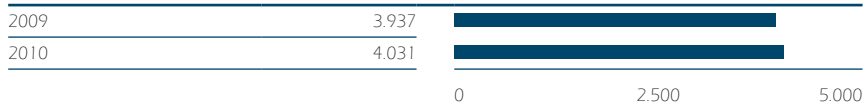
Pacemaker	5
ICD implantation	5
Electrophysiological studies and catheter ablation	6
CRT implantation	5
Atrial fibrillation ablation	6

Number of medical faculties 4**Percentage of academic facilities among practicing EP and implant centres** 83%

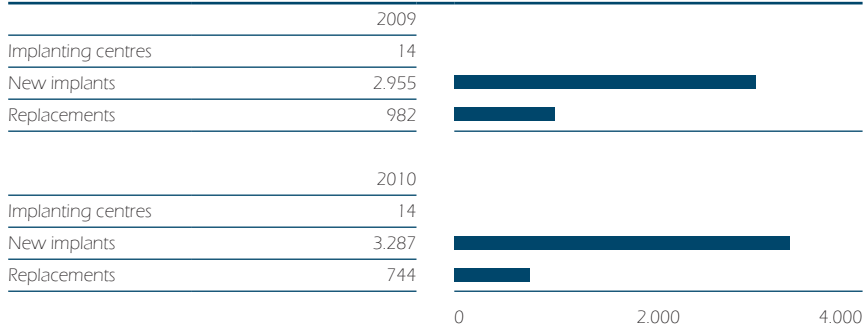


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

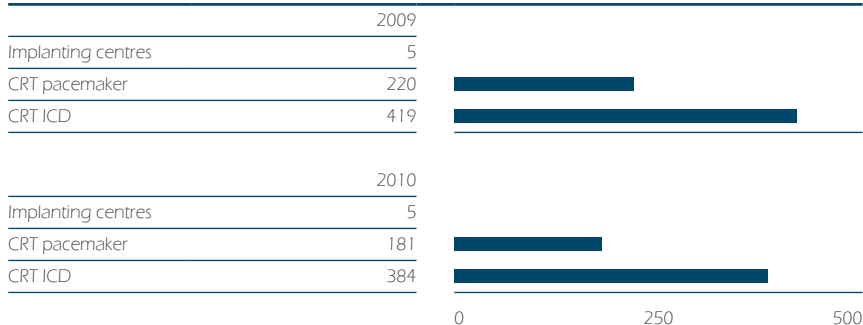


Specialty performing implants

Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

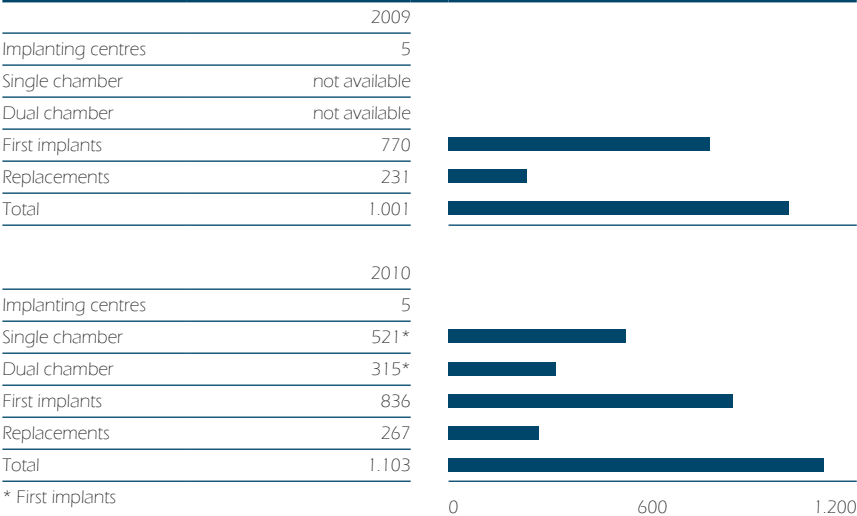


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

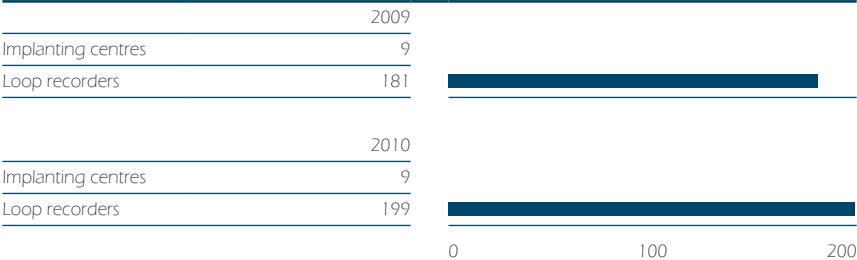


Specialty performing implants

Cardiologists	100%
Surgeons	0%

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

Yes

National registry for

ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* Danish ICD register

** Danish Pacemaker register

*** Ablation.dk since 2010

Availability of a national quality insurance system or complication registry

Yes

Danish ICD and pacemaker register

Infection, lead displacement, reoperation.

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	6	6
Number of ablations performed	2.684	2.724
Number of ablations per centre	447	454
Number of AF ablations	1.237	1.290

Availability of a national registry for interventional electrophysiology

Yes

Ablation.dk

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	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐
Lack of referral	☒	☐	☐	☐	☐
Lack of trained personnel	☒	☐	☐	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☒	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

Sources:

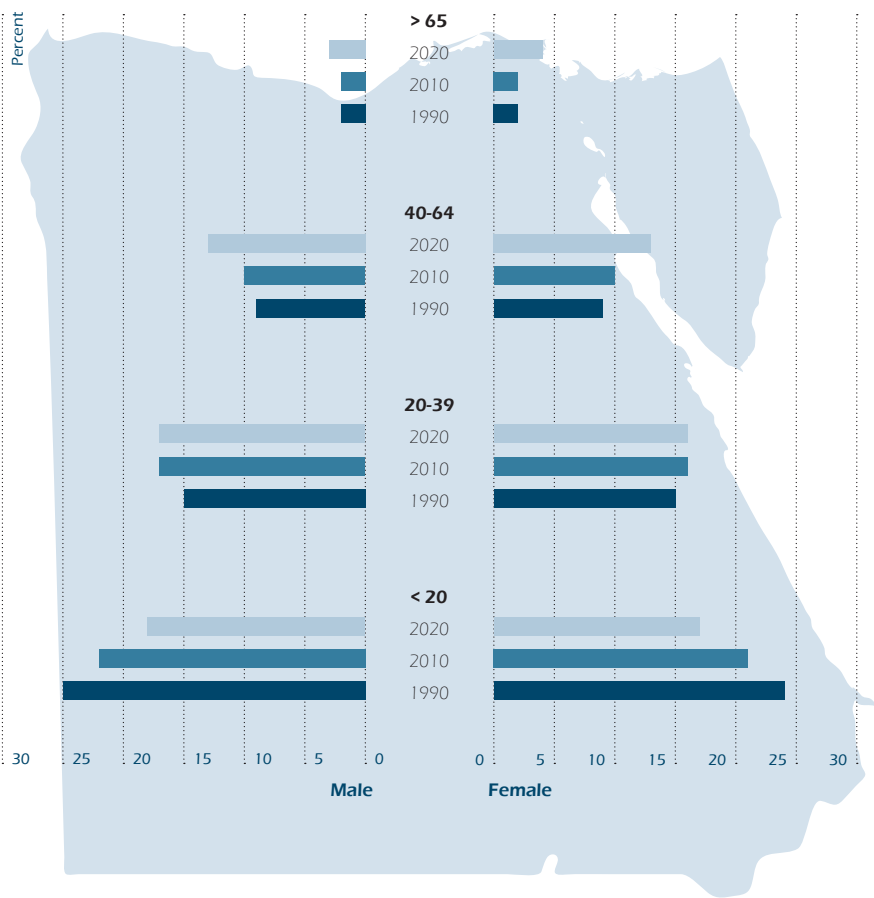
- Danish Society of Cardiology, Working group on pacemakers/ICDs and arrhythmias – President: Prof. Sam Riahi
- Danish Pacemaker and ICD registry in addition to Arne Johannessen, Christian Gerdes, Elsebeth Friis, Jens Brock Johansen, Jerzy Malczynski, Peter Steen Hansen and Regitze Videbæk

EGYPT



1. Statistics

Age pyramid for Egypt





Healthcare data

Hospitals (per 100.000 population)	not available	not available
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	80.471.869	2010
Population annual growth rate (%)	2	2010
Life expectancy at birth	72,0	2010
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)	216,83*	2010
Gross domestic product per capita (U.S dollar-units)	2.771,41*	2010
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

2009	not available
2010	0,12%

3. Healthcare System

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

Basic insurance availability

No

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	54%	64%
Uninsured citizens	46%	36%

Distribution of insurance modality

	2009	2010
Public insurance company	54%	64%
Private insurance company	1%	6%
Private co-payment	60-65%	30%*

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

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☒
Pacemakers*	☒
Ablation**	☒
Not necessary	☐

* VVIR, DDD & CRT with Ministry of Health, with Health Insurance Organization, ** for 3D mapping
Private insurance companies pay all devices up to CRT-D and 3D mapping, but this covers 0.6% of the total population.



Reimbursement availability

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

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

** ICD primary prevention is not supported by neither public nor private health system.

Treatment availability

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

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

In Ain Shams University a special certificate for devices and invasive electrophysiology will be validated in October 2011. Candidates will be able to attend special courses for 4 semesters to prepare themselves for the exam and to pass the test (prerequisites and credit hours are derived from the EHRA certificate for devices and electrophysiology).

National accreditation for physicians

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

Cardiologists who are interested in devices and invasive electrophysiology obtain their training in university hospitals. The university hospitals have suitable labs for those services.

National accreditation for centres

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

* University hospitals, military hospitals, NHI and some private hospitals have EP labs suitable for invasive electrophysiology and device implantation.

National Society supporting EHRA accreditation system

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

The Egyptian cardiac rhythm association is planning to start accreditation in cooperation with Ain Shams university certificate of devices and EP.

Specialty required for catheter ablation Yes

Cardiologist, subspecialty electrophysiologist

Specialty required for ICD or pacemaker implants Yes

Cardiologist, subspecialty electrophysiologist

Official national competency guidelines for electrophysiological studies or catheter ablation No

Required period of training to perform implantations 4 years

Training centres availability

Pacemaker	28
ICD implantation	11
Electrophysiological studies and catheter ablation	24
CRT implantation	11
Atrial fibrillation ablation	6

Number of medical faculties 22

Percentage of academic facilities among practicing EP and implant centres 28%

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

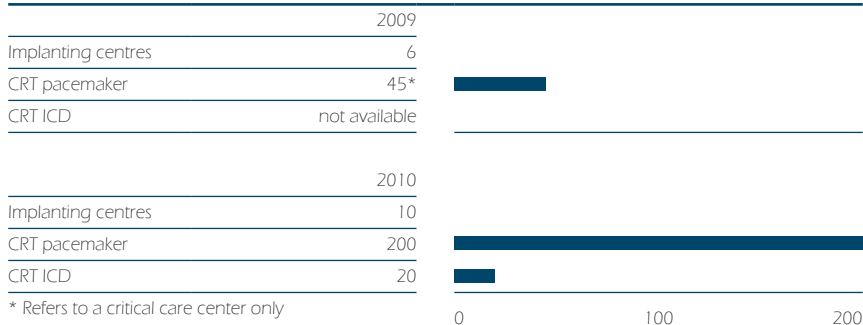
2009	
Implanting centres	15
New implants	not available
Replacements	not available
2010	
Implanting centres	28
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	89%
Surgeons	11%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

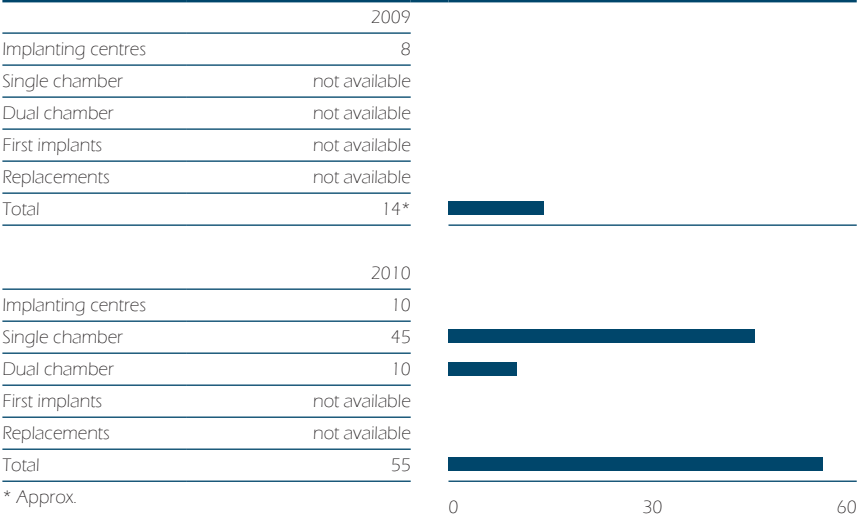


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

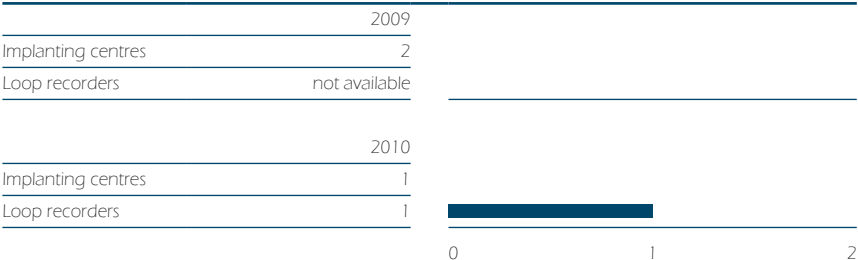


Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%

9. Device specific

Availability of remote monitoring of devices

No

National registry for

ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	6	24
Number of ablations performed	859*	836
Number of ablations per centre	143	35**
Number of AF ablations	not available	32***

* Approx.

** However, it varies between university and private hospitals.

*** Is calculated as the average of 160 ablations in 5 years.

Availability of a national registry for interventional electrophysiology

No

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	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☒	☐	☐	☐
Low awareness of guidelines	☐	☐	☐	☒	☐
Lack of operators	☐	☒	☐	☐	☐
Others: Lack of population awareness of the device therapy and its indications, No media interaction about this topic.	☐	☐	☐	☐	☒

1 = no obstacle

5 = great obstacle

Sources:

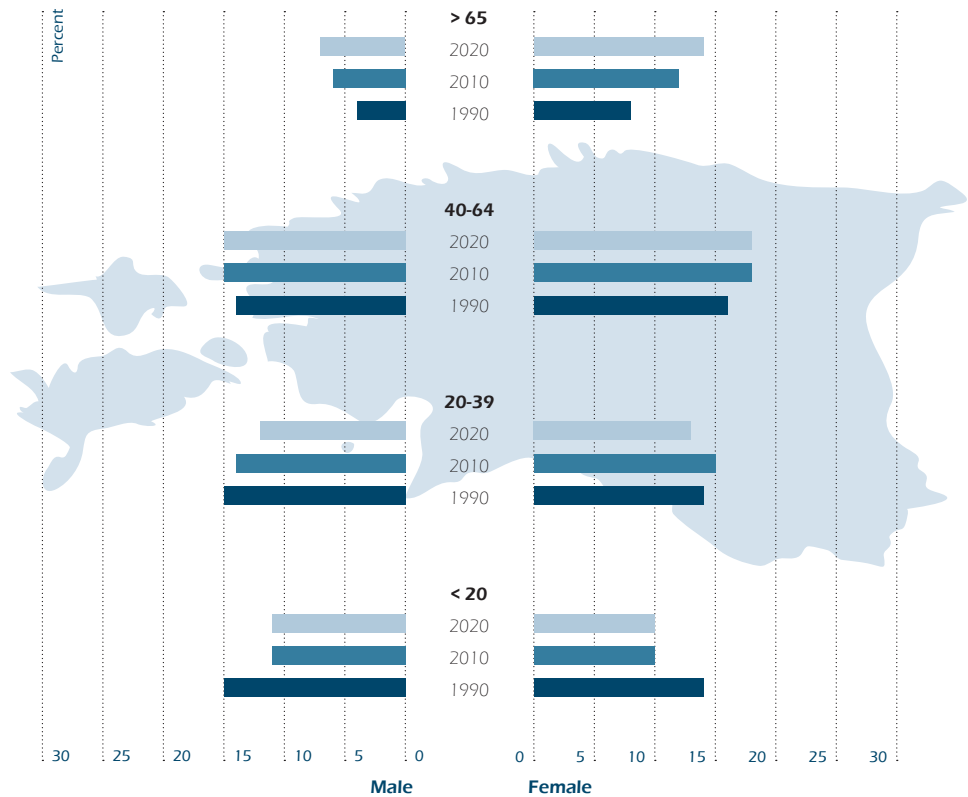
- Egyptian Cardiac Rhythm Association/Egyptian Society of Cardiology – Prof. Wagdy Galal, Prof. Mervat About Maaty, Prof. Mohammed Hassan Khalil.
- Hospital registries and distributors data.

ESTONIA



1. Statistics

Age pyramid for Estonia





Healthcare data

Hospitals (per 100.000 population)	4,48	2008
Beds (per 100.000 population)	571,35	2008
Density of physicians (per 1.000 population)	3,29	2006
Density of nurses (per 1.000 population)	6,55	2006

Demographic information

Population	1.291.170	2010
Population annual growth rate (%)	-0,6	2010
Life expectancy at birth	73,0	2010
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)	19,22*	2010
Gross domestic product per capita (U.S dollar-units)	14.416,52*	2010
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

2009	not available
2010	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 availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	95%	95%
Uninsured citizens	5%	5%

Distribution of insurance modality

	2009	2010
Public insurance company	95%	95%
Private insurance company	1%	1%
Private co-payment	1%	1%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation**Yes**

Cardiologist

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

Cardiologist or cardiac surgeon

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

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

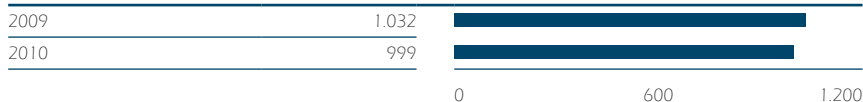
Number of medical faculties**1****Percentage of academic facilities among practicing EP and implant centres****50%/20%***

* 50% among EP centres, 20% among implant centres

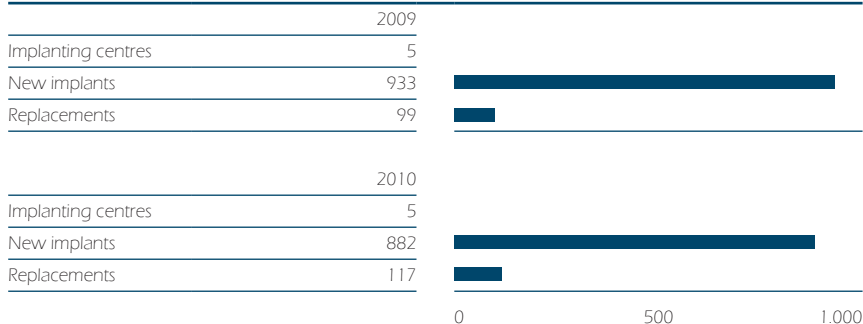


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

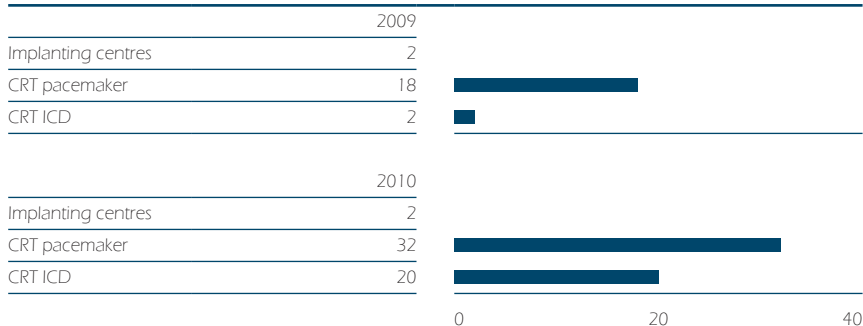


Specialty performing implants

Cardiologists	62%
Surgeons	38%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

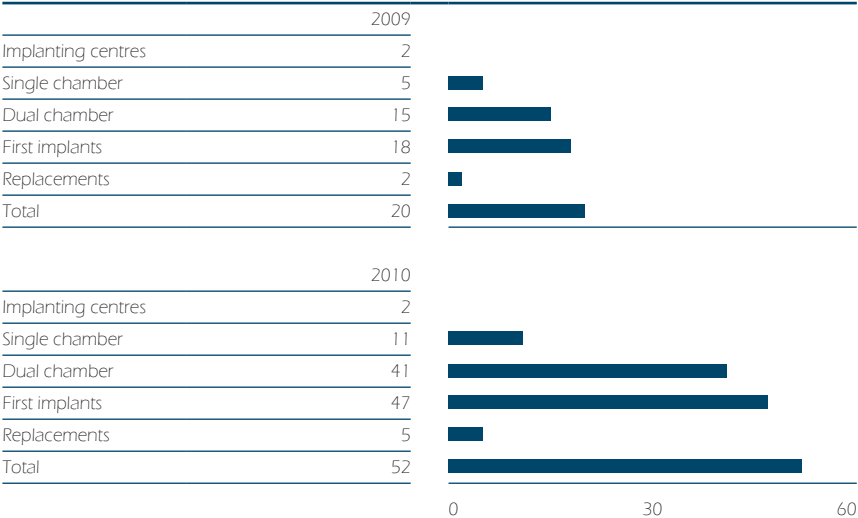


Specialty performing implants

Cardiologists	85%
Surgeons	15%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

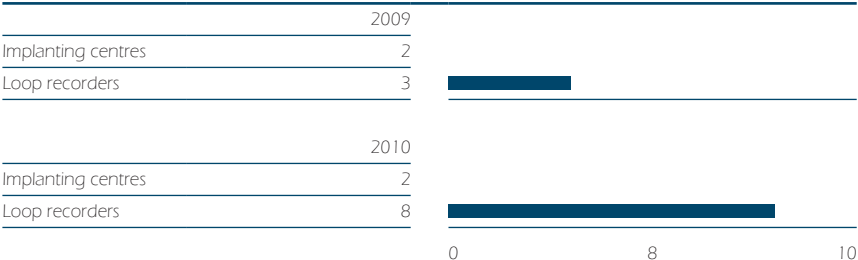


Specialty performing implants

Cardiologists	58%
Surgeons	42%

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

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology	☐
None	☐

* Estonian Pacemaker and ICD implantation registry

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

Yes

„Ravimiamet“, function of the State Agency of Medicines

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	2	2
Number of ablations performed	420	447
Number of ablations per centre	210	223
Number of AF ablations	97	112

Availability of a national registry for interventional electrophysiology

No

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☐
U.S.	☐
European	☒

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

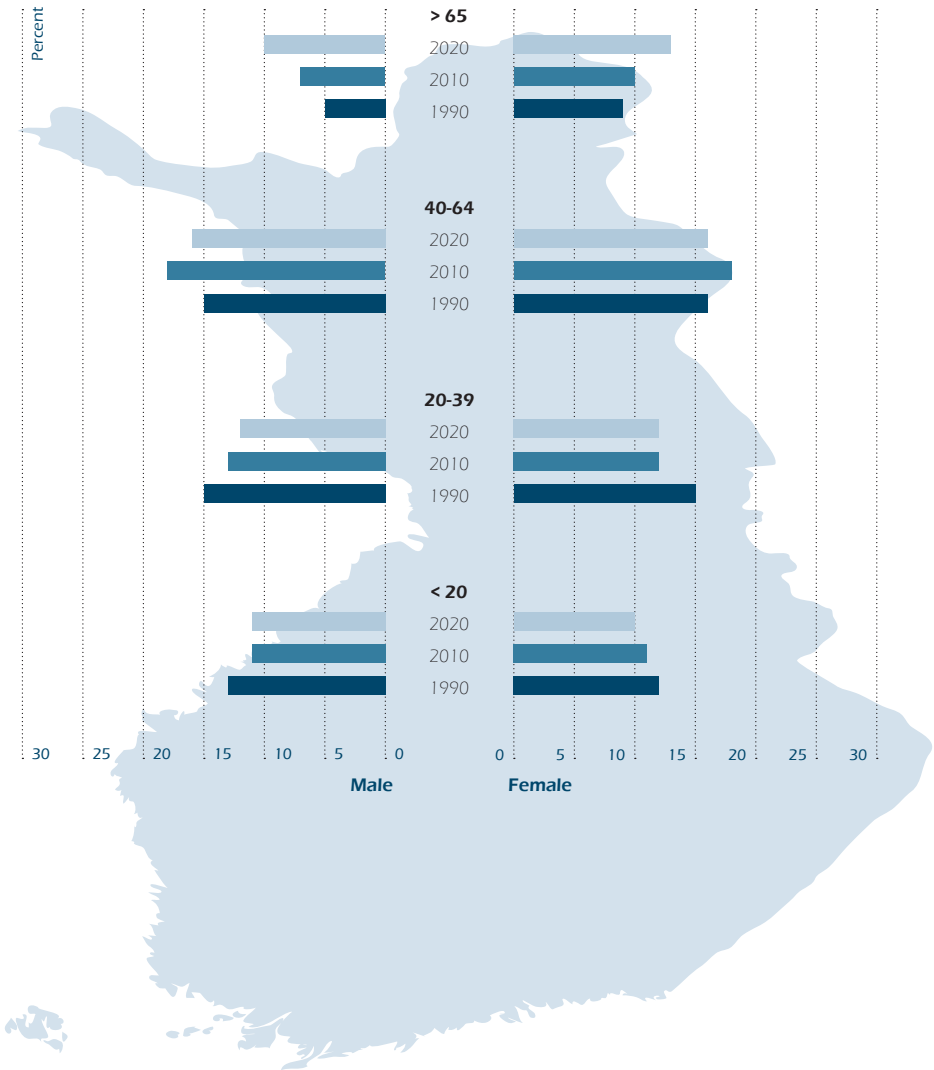
Sources: Working Group of Arrhythmias of Estonian Society of Cardiology – Dr. Jüri Voitk

FINLAND



1. Statistics

Age pyramid for Finland





Healthcare data

Hospitals (per 100.000 population)	5,82	2008
Beds (per 100.000 population)	652,26	2008
Density of physicians (per 1.000 population)	3,31	2007
Density of nurses (per 1.000 population)	8,55	2006

Demographic information

Population	5.255.068	2010
Population annual growth rate (%)	0,1	2010
Life expectancy at birth	79,0	2010
Death rate (per 1,000 population)	9,35	2009
Live births (per 1,000 population)	11,32	2009

Economic information

Gross domestic product (U.S dollar-billions)	231,98*	2010
Gross domestic product per capita (U.S dollar-units)	43.134,00*	2010
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

2009	not available
2010	not available

3. Healthcare System

Finland has a compulsory health care system which is tax based. It provides comprehensive coverage for the entire population. The Ministry of Social Affairs and Health issues the legislation on health and social care policies and monitors the implementation. At local level, the municipal health committee and council make decisions on the planning and organization of healthcare. (Highlights on health in Finland, WHO, 2004)

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	76%	75,4%
Private insurance company	5,3%	1,7%
Private co-payment	18,7%	22,9%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒

Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation

No

There is no official specialty requirement, but in practice it is performed only by cardiologists or pediatric cardiologist

Specialty required for ICD or pacemaker implants

No

There is no official specialty requirement, but in practice it is performed by cardiologists, pediatric cardiologist and occasionally also by surgeons or specialists of internal medicine

Official national competency guidelines for electrophysiological studies or catheter ablation

No

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

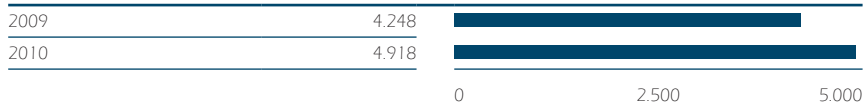
71/21%*

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

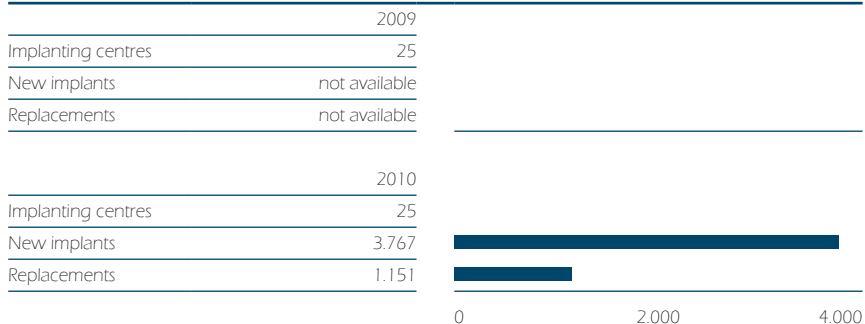


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

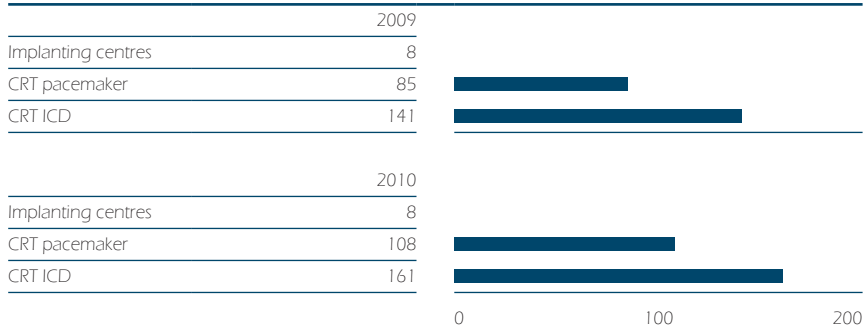


Specialty performing implants

Cardiologists	95%
Surgeons	5%
Internal medicine	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

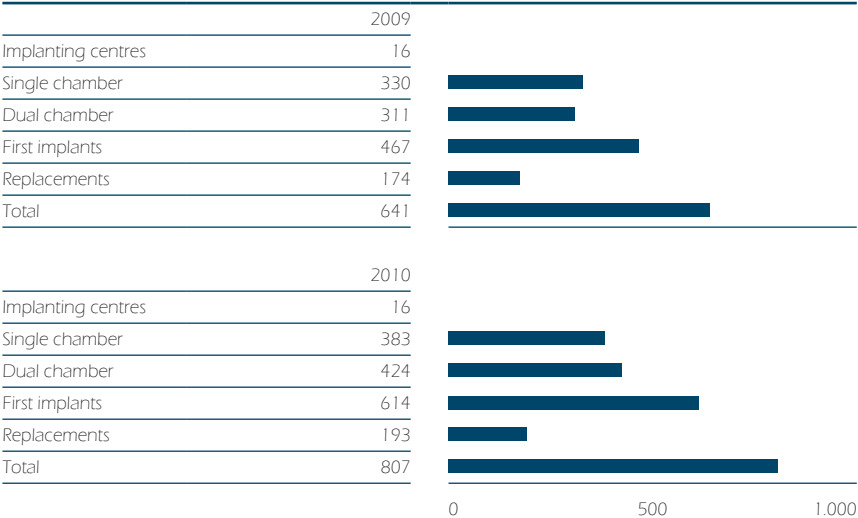


Specialty performing implants

Cardiologists	95%
Surgeons	5%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

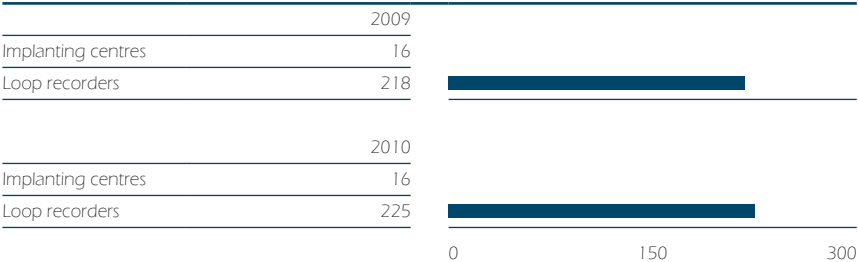


Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	95%
Surgeons	5%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry

Yes

National Agency for Medicines and Medical Devices Department

Availability of a national institution coordinating and guiding device recalls

Yes

National Agency for Medicines and Medical Devices Department

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	7	7
Number of ablations performed	1.307	1.521
Number of ablations per centre	186	217
Number of AF ablations	345	391

Availability of a national registry for interventional electrophysiology

No

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☒
U.S.	☒
European	☒

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

Sources:

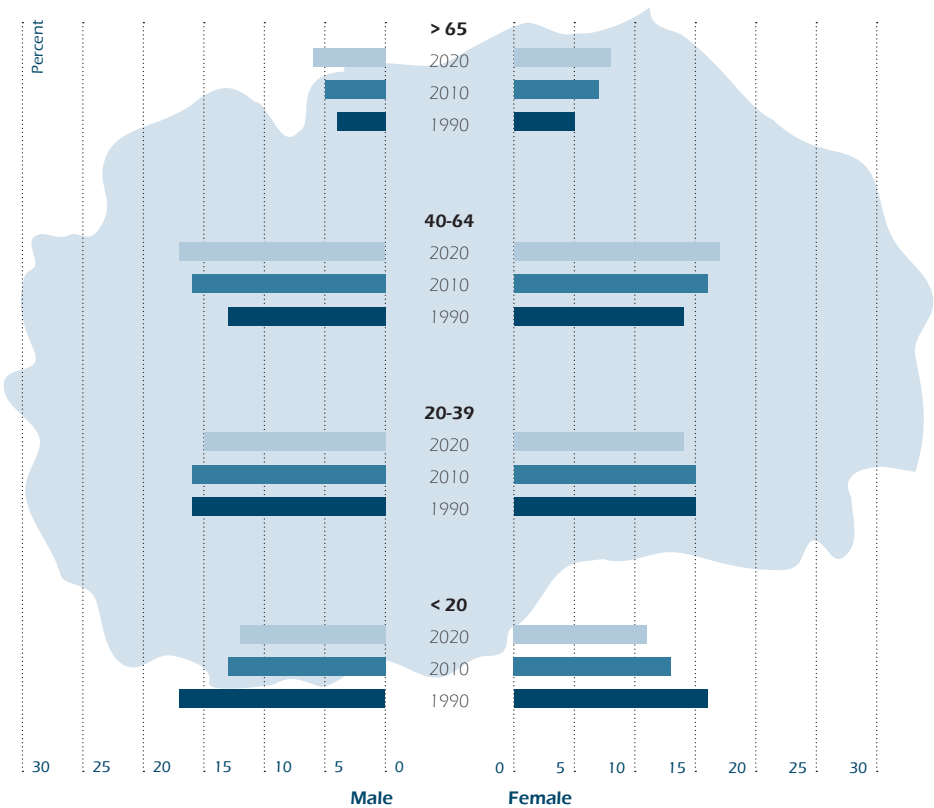
– Finnish Cardiac Society, Working Group of Arrhythmia and Pacing – Dr. Antti Hedman

FYR MACEDONIA



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	2.072.086	2010
Population annual growth rate (%)	0,3	2010
Life expectancy at birth	75,0	2010
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)	9,58*	2010
Gross domestic product per capita (U.S dollar-units)	4.633,97*	2010
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

2009	not available
2010	57%

3. Healthcare System

The healthcare system in the former Yugoslav Republic of Macedonia is based on a National Health system which is administrated by the Ministry of Health. A system of compulsory health insurance was established to coordinate health insurance for the population and to oversee health services. Private healthcare system is also available where reimbursement for treatment is limited to certain procedures.

(Healthcare systems in transition, 2000)

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	90%	90%
Uninsured citizens	10%	10%

Distribution of insurance modality

	2009	2010
Public insurance company	90%	90%
Private insurance company	10%	10%
Private co-payment	0%	0%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒

In private hospitals only privately funded treatment, no co-payment in public hospitals.



Reimbursement availability

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

Treatment availability

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

* Private hospitals, ** public hospitals

In private hospitals there are no restrictions and the indications follow ESC guidelines. In public hospitals, the procedures are restricted to a certain number of treatment/budget.

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐
Licence to practice Cardiology	

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐
Hospitals are certified to practice specific procedures	

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist

Specialty required for ICD or pacemaker implants Yes

Cardiologist

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

* The only period required is until competence is certified to perform independent implantations.

Training centres availability

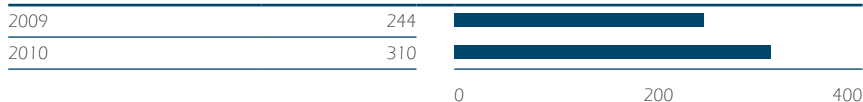
Pacemaker	2
ICD implantation	2
Electrophysiological studies and catheter ablation	2
CRT implantation	2
Atrial fibrillation ablation	0

Number of medical faculties 3**Percentage of academic facilities among practicing EP and implant centres** 50%

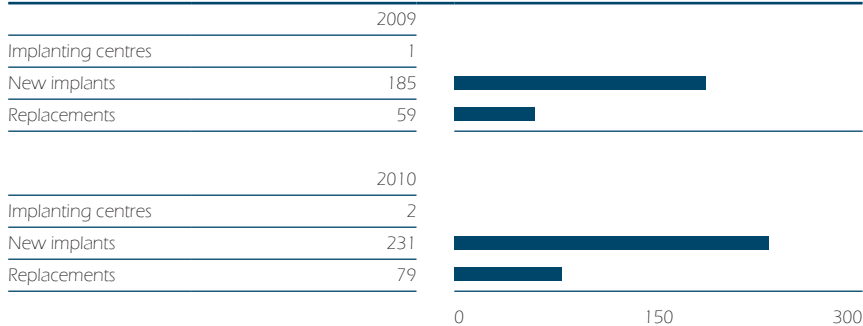


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

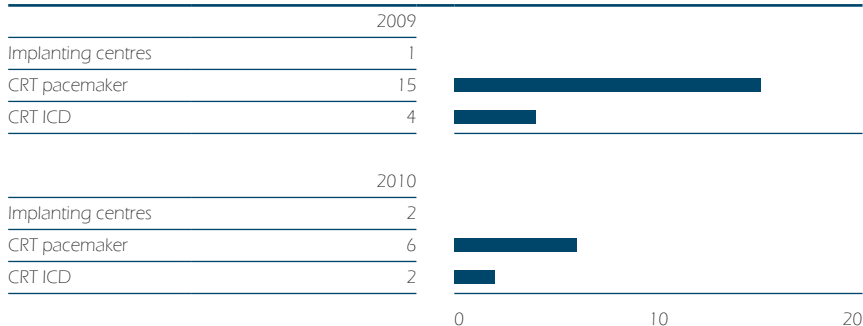


Specialty performing implants

Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

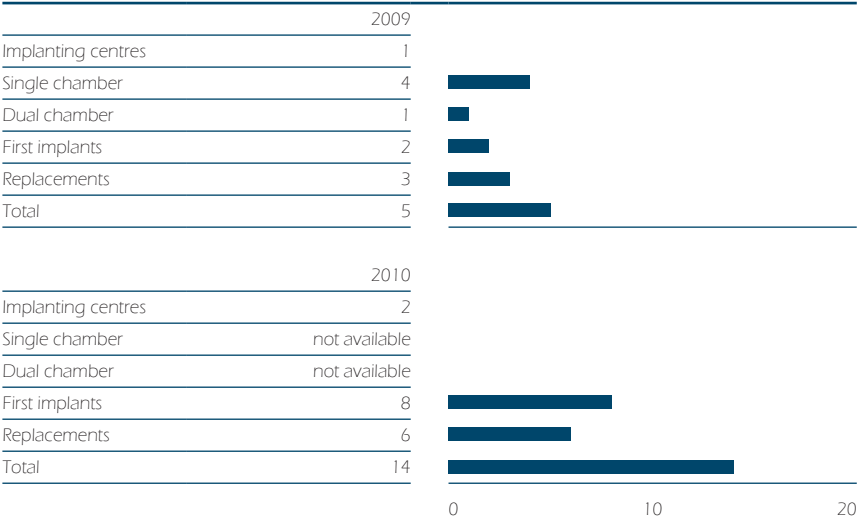


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

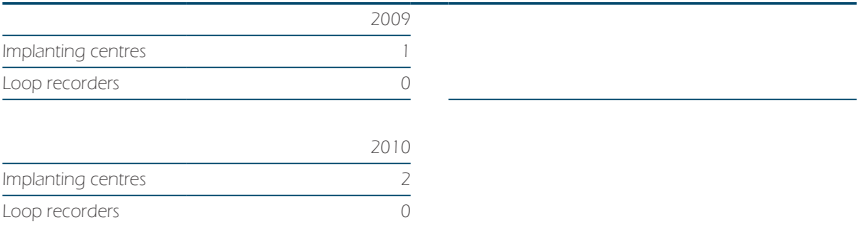


Specialty performing implants

Cardiologists	100%
Surgeons	0%

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

Yes

National registry for

ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	1	2*
Number of ablations performed	69	30*
Number of ablations per centre	69	15*
Number of AF ablations	0	0*

* Presented data is only from one lab (private hospital). Data is not the average of both EP labs.

Availability of a national registry for interventional electrophysiology

No

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	☐	☒	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☒
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☒	☐	☐	☐
Low awareness of guidelines	☐	☒	☐	☐	☐
Lack of operators	☐	☒	☐	☐	☐

1 = no obstacle

5 = great obstacle

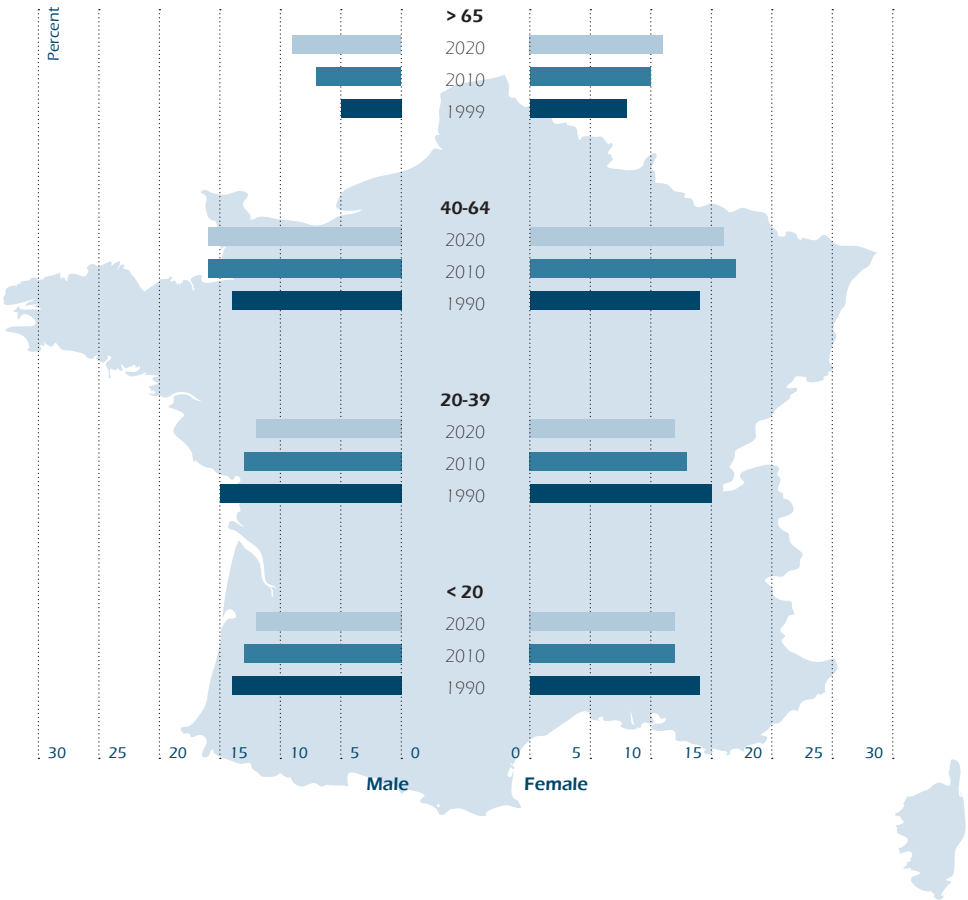
Sources: Group on Electrophysiology and Cardiac Pacing – Former Yugoslav Republic of Macedonia –
President: Nikola Gjorgov, MD, PhD, FESC

FRANCE



1. Statistics

Age pyramid for France





Healthcare data

Hospitals (per 100.000 population)	4,91	2008
Beds (per 100.000 population)	709,24	2008
Density of physicians (per 1.000 population)	3,42	2007
Density of nurses (per 1.000 population)	7,8	2007

Demographic information

Population	64.768.389	2010
Population annual growth rate (%)	0,5	2010
Life expectancy at birth	81,0	2010
Death rate (per 1.000 population)	8,57	2008
Live births (per 1.000 population)	12,81	2008

Economic information

Gross domestic product (U.S dollar-billions)	2.555,44*	2010
Gross domestic product per capita (U.S dollar-units)	40.591,43*	2010
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

2009	not available
2010	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 uninsured citizens

	2009	2010
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	40%	40%

Possibility of subscribing to private health insurance plans Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary*	☒

* All interventional procedures covered by the public health system



Reimbursement availability

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

Treatment availability

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

* Body issuing the guidelines: HAS

4. Education

National accreditation availability

Device therapy*	☒
Invasive electrophysiology*	☒
None	☐

* DIU de Rythmologie et Stimulation Cardiaque

National accreditation for physicians

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

National accreditation for centres

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

* Except for conventional (VVI,DDD) pace-maker implantation

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation **Yes**

Cardiologist

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

Cardiologist for ICD and CRT, Surgeon may implant conventional (VVI,DDD) pacemakers

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

French Society of cardiology guidelines

Required period of training to perform implantations **2 years****Training centres availability***

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

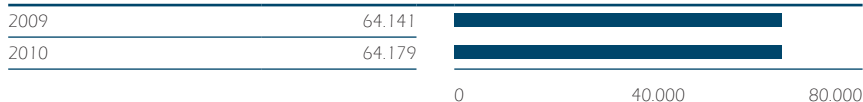
* Estimated

Number of medical faculties **28****Percentage of academic facilities among practicing EP and implant centres** **100%**



5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

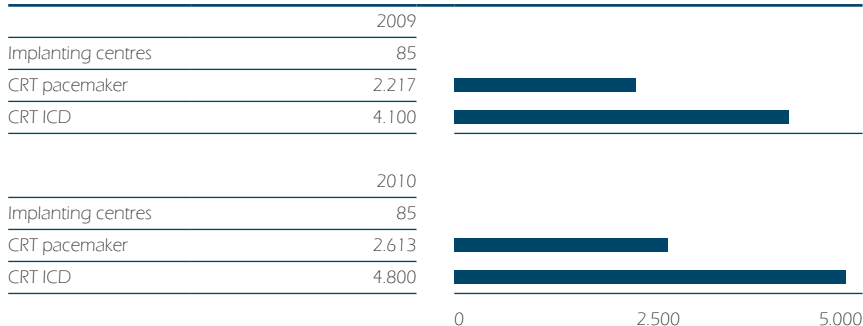
	2009	
Implanting centres	520	
New implants	not available	
Replacements	not available	
	2010	
Implanting centres	520	
New implants	not available	
Replacements	not available	

Specialty performing implants

Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

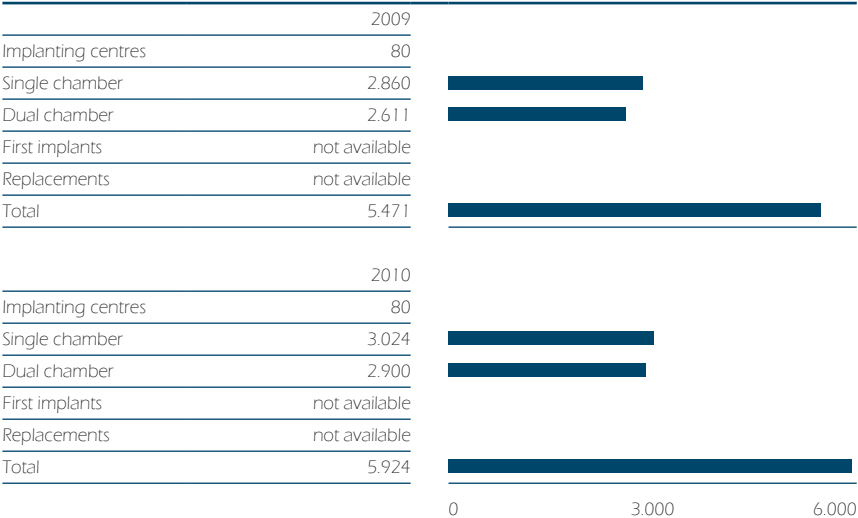


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

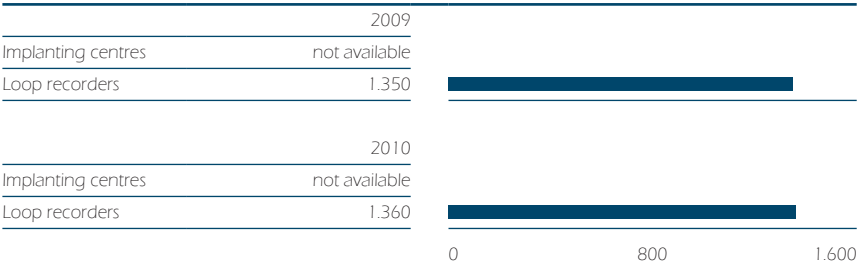


Specialty performing implants

Cardiologists	100%
Surgeons	0%

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

Yes

National registry for

ICD*	☒
Pacing**	☒
Electrophysiology	☐
None	☐

* STIDEFIX (mandatory)

** STIDEFIX (Optional)

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

Yes

AFSSAPS (National agency)

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	not available	130
Number of ablations performed	26.050	28.800
Number of ablations per centre	not available	not available
Number of AF ablations	6.150	7.400

Availability of a national registry for interventional electrophysiology

No

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☒
U.S.	☐
European	☒

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

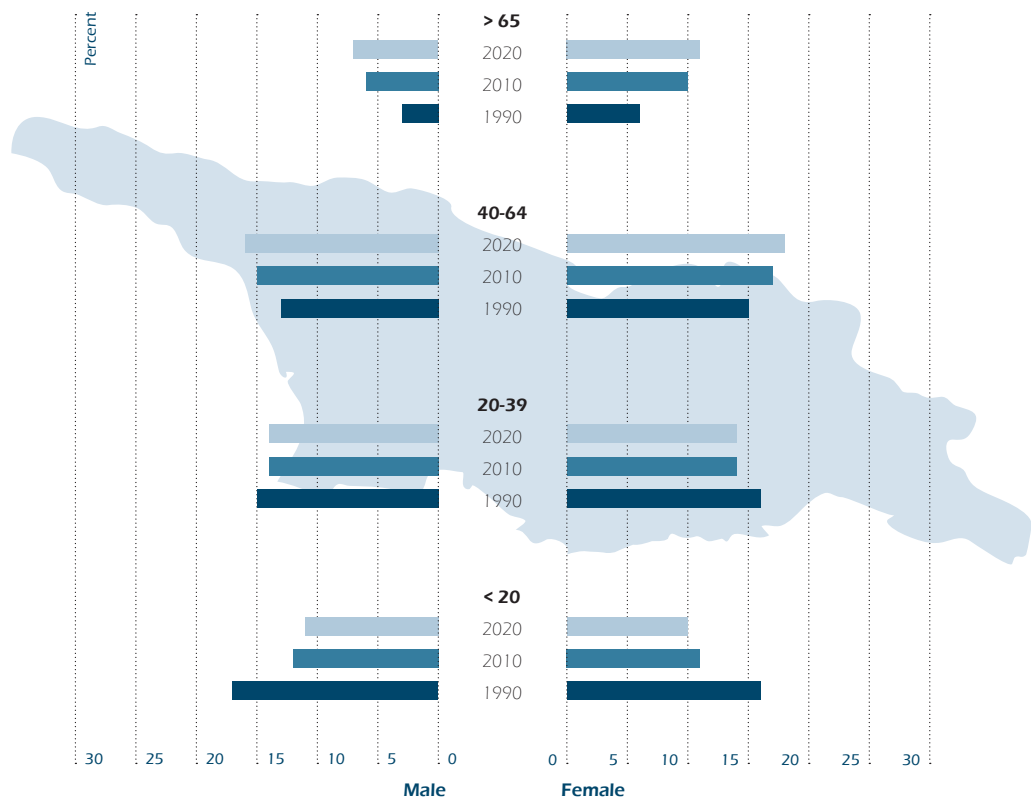
Sources: Groupe de Rythmologie et Stimulation Cardiaque de la Société Française de Cardiologie –
Chairman: Dr. Philippe Mabo, National Registry

GEORGIA



1. Statistics

Age pyramid for Georgia



Healthcare data

Hospitals (per 100.000 population)	5,99	2009
Beds (per 100.000 population)	309,08	2009
Density of physicians (per 1.000 population)	4,55	2007
Density of nurses (per 1.000 population)	3,63	2007

Demographic information

Population	4.600.825	2010
Population annual growth rate (%)	-0,3	2010
Life expectancy at birth	77,0	2010
Death rate (per 1.000 population)	8,65	2001
Live births (per 1.000 population)	10,66	2005

Economic information

Gross domestic product (U.S dollar-billions)	11,23*	2010
Gross domestic product per capita (U.S dollar-units)	2.559,69*	2010
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

2009	38%
2010	not available

3. Healthcare System

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

Basic insurance availability

No

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	40%	33%
Uninsured citizens	60%	67%

Distribution of insurance modality

	2009	2010
Public insurance company	15%	25%
Private insurance company	35%	8%
Private co-payment	50%	67%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☒
Pacemakers	☒
Ablation	☒
Not necessary	☐

Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist

Specialty required for ICD or pacemaker implants Yes

Cardiologist, surgeon

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

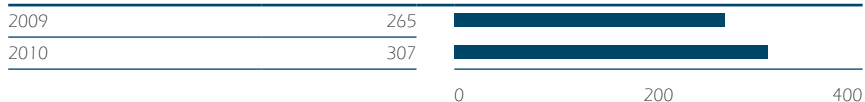
Pacemaker	0
ICD implantation	0
Electrophysiological studies and catheter ablation	0
CRT implantation	0
Atrial fibrillation ablation	0

Number of medical faculties 6**Percentage of academic facilities among practicing EP and implant centres** 40%



5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

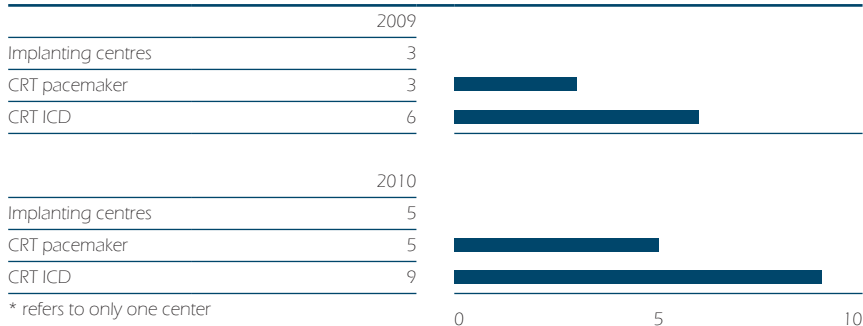
2009	
Implanting centres	5
New implants	not available
Replacements	not available
2010	
Implanting centres	7
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	90%
Surgeons	10%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

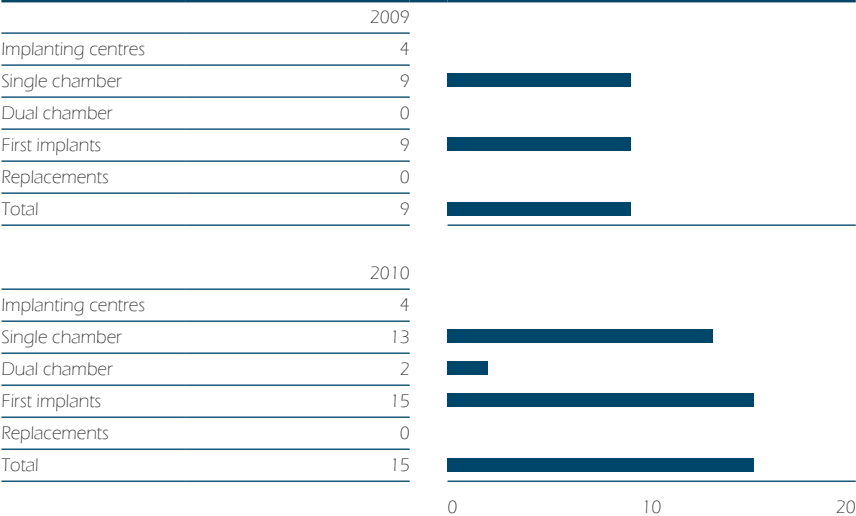


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

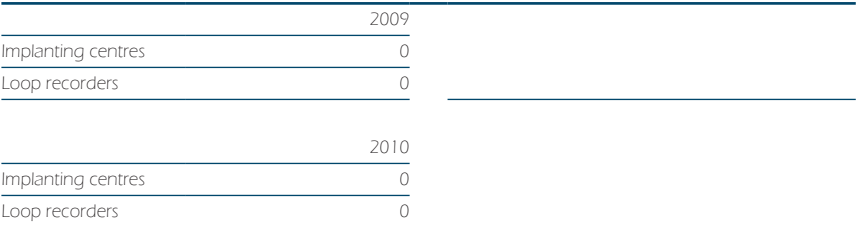


Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	0%
Surgeons	0%

9. Device specific

Availability of remote monitoring of devices

No

National registry for

ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	4	5
Number of ablations performed	150	184
Number of ablations per centre	37	37
Number of AF ablations	4	44

Availability of a national registry for interventional electrophysiology

No

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	☐	☐	☐	☐	☒
Lack of referral	☐	☐	☐	☐	☒
Lack of trained personnel	☐	☐	☐	☐	☒
Low awareness of guidelines	☐	☐	☐	☐	☒
Lack of operators	☐	☐	☐	☒	☐

1 = no obstacle

5 = great obstacle

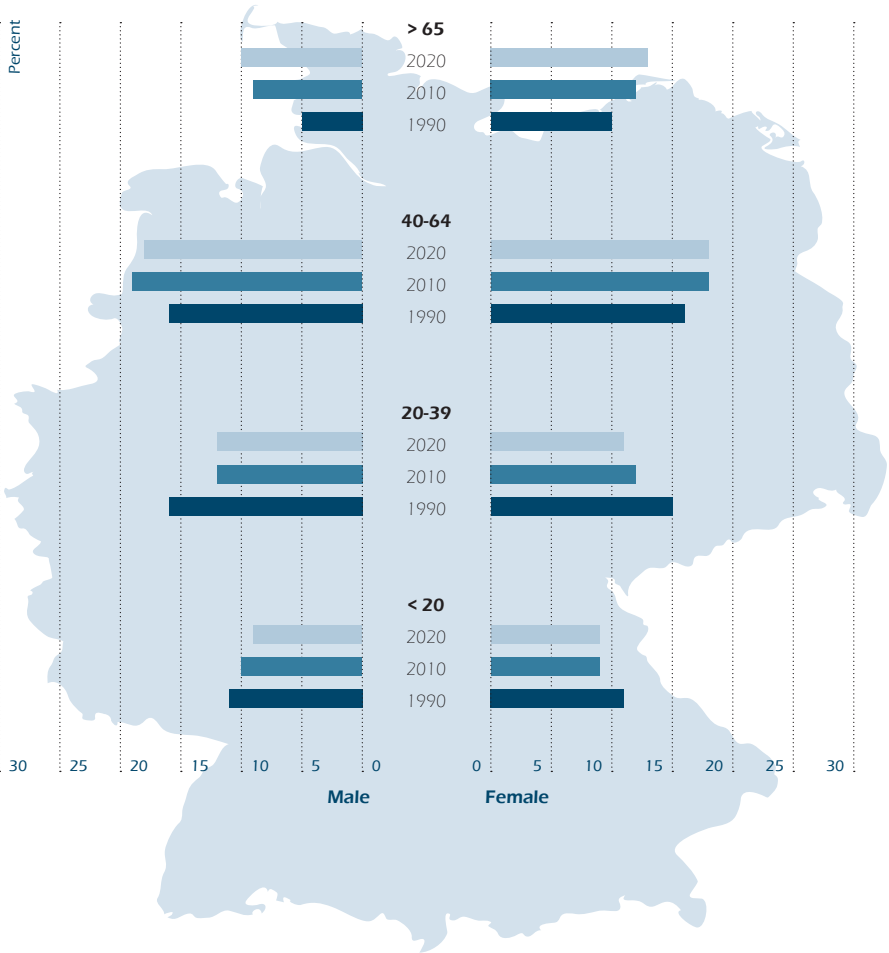
Sources: Working Group on arrhythmias – Georgia, Dr. Giorgi Papiashvili

GERMANY



1. Statistics

Age pyramid for Germany





Healthcare data

Hospitals (per 100.000 population)	4,05	2008
Beds (per 100.000 population)	821,26	2008
Density of physicians (per 1.000 population)	3,48	2007
Density of nurses (per 1.000 population)	7,81	2006

Demographic information

Population	81.644.454	2010
Population annual growth rate (%)	-0,2	2010
Life expectancy at birth	80,0	2010
Death rate (per 1.000 population)	9,98	2006
Live births (per 1.000 population)	8,12	2009

Economic information

Gross domestic product (U.S dollar-billions)	3.305,90*	2010
Gross domestic product per capita (U.S dollar-units)	40.511,83*	2010
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

2009	0,3%
2010	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 opts for private health insurance, which frequently offers additional benefits.

Basic insurance availability Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	99.88%	not available
Uninsured citizens	0.12%	not available

Distribution of insurance modality

	2009	2010
Public insurance company	85.6%	not available
Private insurance company	10.8%	not available
Private co-payment	26.3%	not available

Possibility of subscribing to private health insurance plans Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation**Yes**

Cardiologist

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

Cardiologist, surgeon

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

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***

* German Cardiac Society (Deutsche Gesellschaft für Kardiologie - Herz- und Kreislaufforschung e.V.), Leitlinien zur elektrophysiologischen Untersuchung, Leitlinien zur Katheterablation

Training centres availability

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

* Approx.

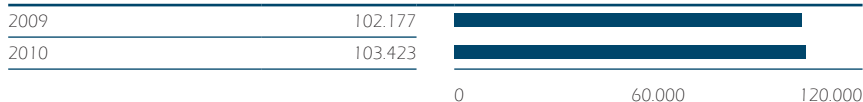
Number of medical faculties**36****Percentage of academic facilities among practicing EP and implant centres****20%***

* Approx.



5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

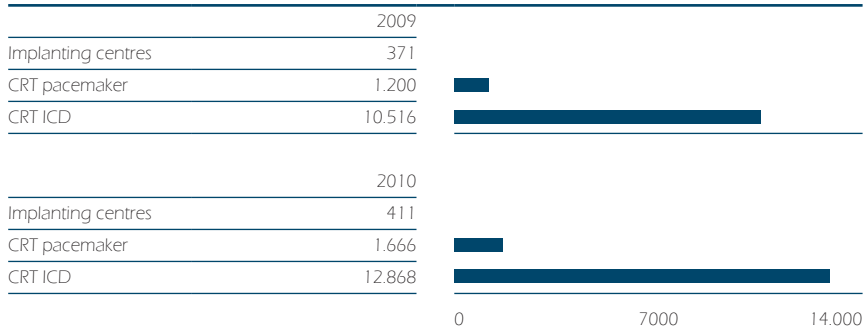
	2009	
Implanting centres	1.048	
New implants	not available	
Replacements	not available	
	2010	
Implanting centres	1.041	
New implants	not available	
Replacements	not available	

Specialty performing implants

Cardiologists	58%
Surgeons	30%
Cardiac Surgeons, pediatric surgeons, pediatric cardiologist	12%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

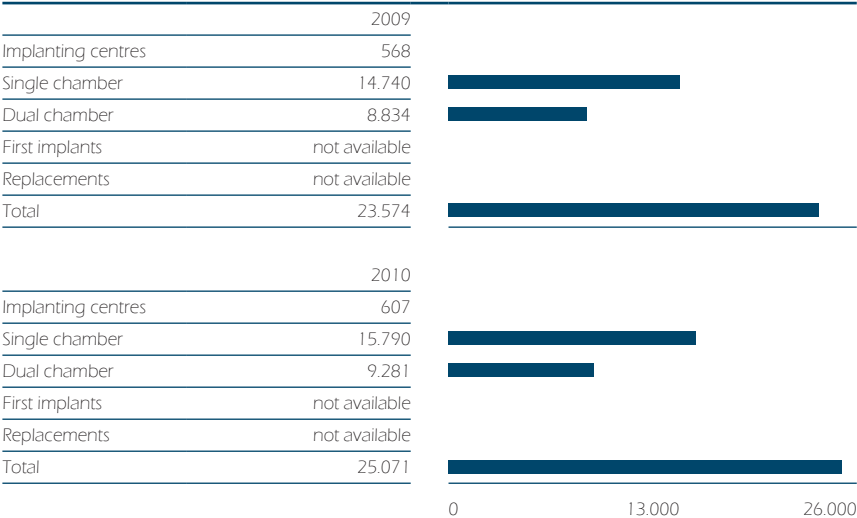


Specialty performing implants

Cardiologists	45%
Surgeons	5%
Both together	50%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

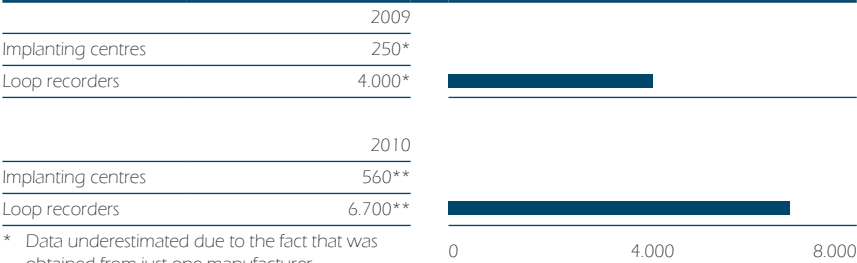


Specialty performing implants

Cardiologists	30%
Surgeons	50%
Other	20%

8. Loop recorders

Loop recorders implanted and number of implanting centres



* Data underestimated due to the fact that was obtained from just one manufacturer.
** Approx.

Specialty performing implants

Cardiologists	not available
Surgeons	not available



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* Device Registry

** Pacemaker Registry

*** Ablation Registry

Availability of a national quality insurance system or complication registry

Yes

BQS Registry

It is compulsory for pacemaker implantation and currently introduced for ICD-Implantation

Availability of a national institution coordinating and guiding device recalls

Yes

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

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	191	200*
Number of ablations performed	40.000*	42.000*
Number of ablations per centre	210*	210*
Number of AF ablations	11.000*	12.000*

* Approx.

Availability of a national registry for interventional electrophysiology

Yes

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

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	☐	☒	☐	☐	☐
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☒	☐	☐	☐
Low awareness of guidelines	☐	☒	☐	☐	☐
Lack of operators	☐	☐	☒	☐	☐

1 = no obstacle

5 = great obstacle

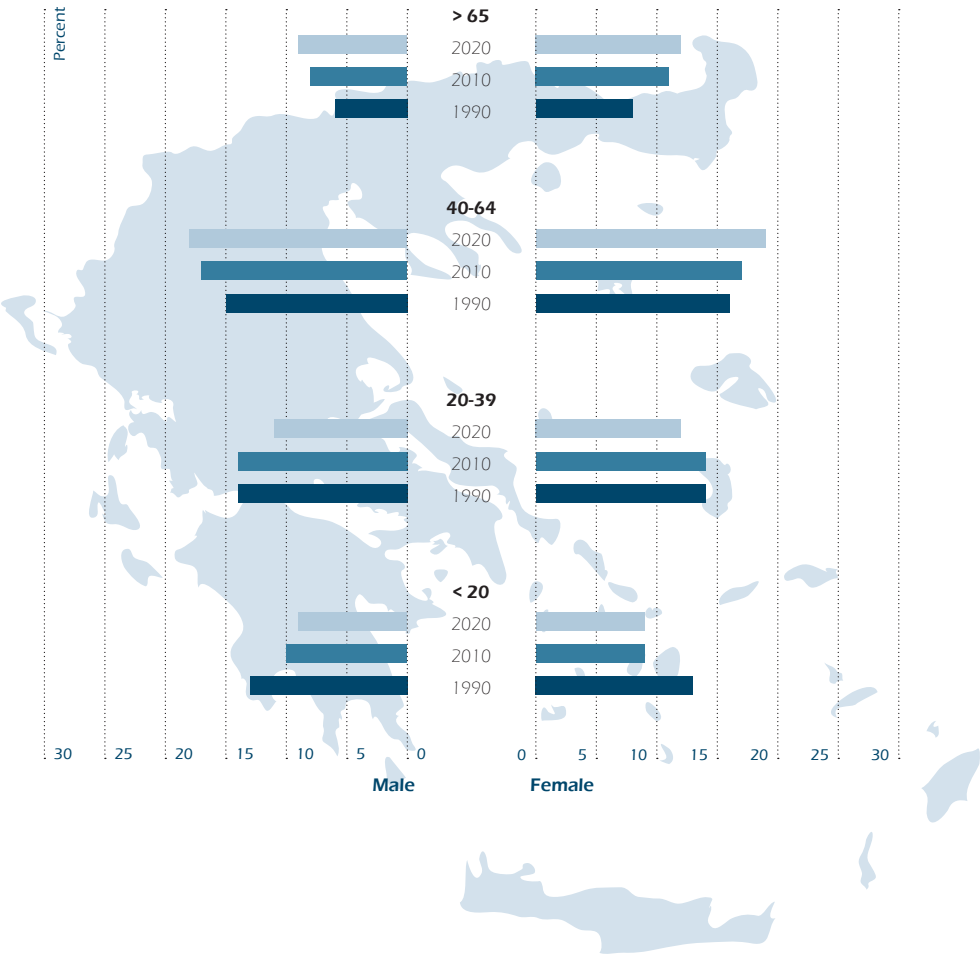
Sources: German Working Group on Cardiac Pacing and Arrhythmia – Chairman: Prof. Dr. Stephan Willems

GREECE



1. Statistics

Age pyramid for Greece





Healthcare data

Hospitals (per 100.000 population)	2,81	2008
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

Population	10.749.943	2010
Population annual growth rate (%)	0,1	2010
Life expectancy at birth	80,0	2010
Death rate (per 1.000 population)	9,6	2009
Live births (per 1.000 population)	10,45	2009

Economic information

Gross domestic product (U.S dollar-billions)	305,01*	2010
Gross domestic product per capita (U.S dollar-units)	27.264,83*	2010
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

2009	not available
2010	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

	2009	2010
Insured citizens	95%	95%
Uninsured citizens	5%	5%

Distribution of insurance modality

	2009	2010
Public insurance company	89%	89%
Private insurance company	10%	10%
Private co-payment	1%	1%

Possibility of subscribing to private health insurance plans Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒

Devices and ablation catheters are covered by insurance



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation is only available for pacemaker therapy.

It's required a minimum of one year of training at an implanting centre

National accreditation for physicians

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

National accreditation for centres

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

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation **Yes**

Cardiology

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

Cardiology

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

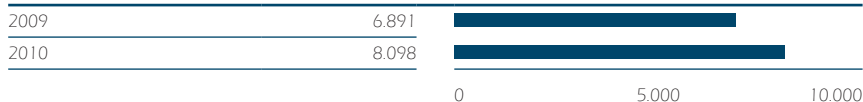
Pacemaker	15
ICD implantation	6
Electrophysiological studies and catheter ablation	8
CRT implantation	8
Atrial fibrillation ablation	6

Number of medical faculties **7****Percentage of academic facilities among practicing EP and implant centres** **35%**

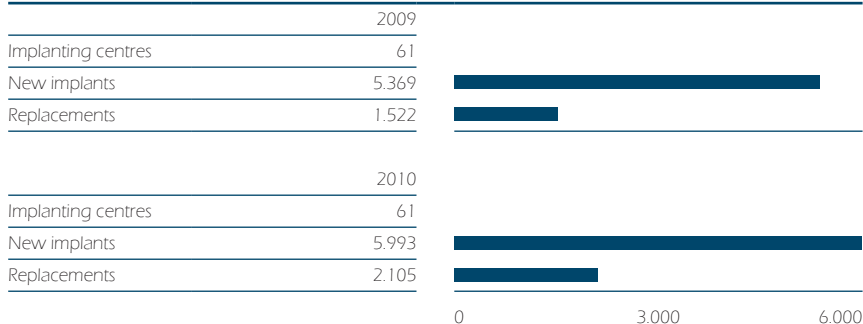


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

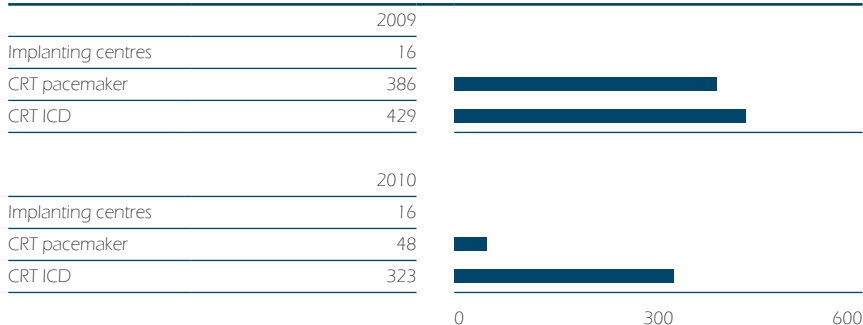


Specialty performing implants

Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

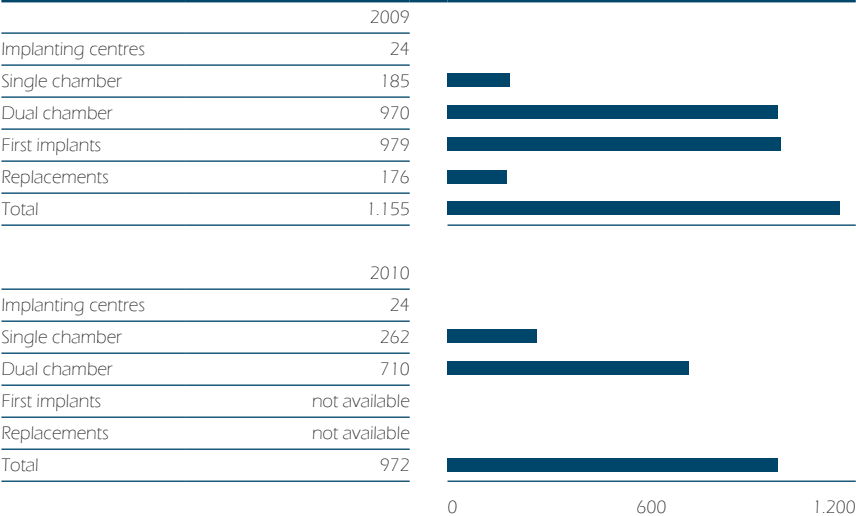


Specialty performing implants

Cardiologists	98%
Surgeons	2%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

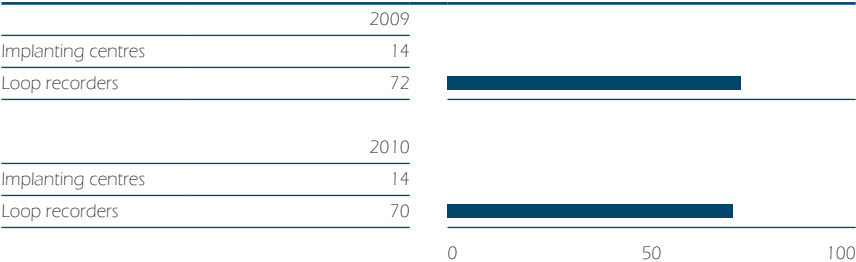


Specialty performing implants

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

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology*	☒
None	☐

* 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

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	23	23
Number of ablations performed	1.192	1.307
Number of ablations per centre	52	57
Number of AF ablations	204	247

Availability of a national registry for interventional electrophysiology

Yes

National Registry of Interventional Electrophysiology

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	☐	☒	☐	☐	☐
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☒	☐	☐	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☐	☒	☐	☐	☐

1 = no obstacle

5 = great obstacle

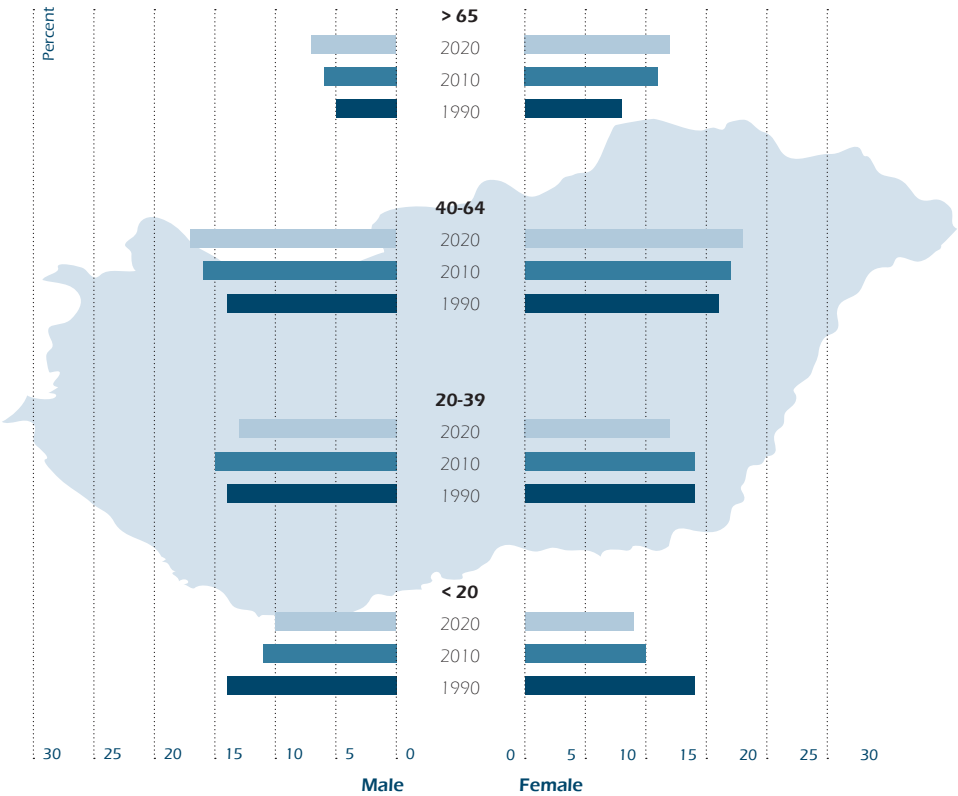
Sources: Hellenic Working Group of Electrophysiology and Pacing – Dr. Michail Efraimidis

HUNGARY



1. Statistics

Age pyramid for Hungary





Healthcare data

Hospitals (per 100.000 population)	1,76	2007
Beds (per 100.000 population)	704,45	2008
Density of physicians (per 1.000 population)	2,78	2007
Density of nurses (per 1.000 population)	9,04	2007

Demographic information

Population	9.992.339	2010
Population annual growth rate (%)	-0,2	2010
Life expectancy at birth	75,0	2010
Death rate (per 1.000 population)	13,01	2009
Live births (per 1.000 population)	9,62	2009

Economic information

Gross domestic product (U.S dollar-billions)	132,28*	2010
Gross domestic product per capita (U.S dollar-units)	13.210,40*	2010
Total expenditure on health as % of GDP	4,8	2009
General government expenditure on health as % of total expenditure on health	98,0	2009
Private expenditure on health as % of total expenditure on health	2,0	2009

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2009	49,8%
2010	not available

3. Healthcare System

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

Basic insurance availability Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	98%	98%
Uninsured citizens	2%	2%

Distribution of insurance modality

	2009	2010
Public insurance company	99%	99%
Private insurance company	0%	1%
Private co-payment	1%	0%

Possibility of subscribing to private health insurance plans Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy*	☒
Invasive electrophysiology**	☒
None	☐

* Arrhythmologist Licence for Pacemaker/ICD/CRT (Device Therapy)

** Arrhythmologist Licence for Electrophysiology and Ablation

EHRA accreditation is welcome, endorsed

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist/cardiologist fellow

Specialty required for ICD or pacemaker implants Yes

Cardiologist/cardiologist fellow, heart surgeon, anaesthesiologist

Official national competency guidelines for electrophysiological studies or catheter ablation Yes

Hungarian Society of Cardiology

Required period of training to perform implantations 2 years

Training centres availability

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

Number of medical faculties 4

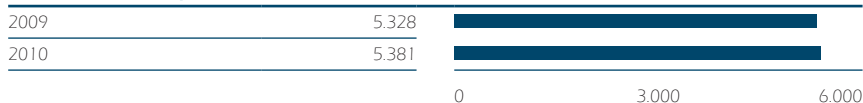
Percentage of academic facilities among practicing EP and implant centres 40%/26,7%*

* 40% of the EP and 26,7% of the implanting centres



5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

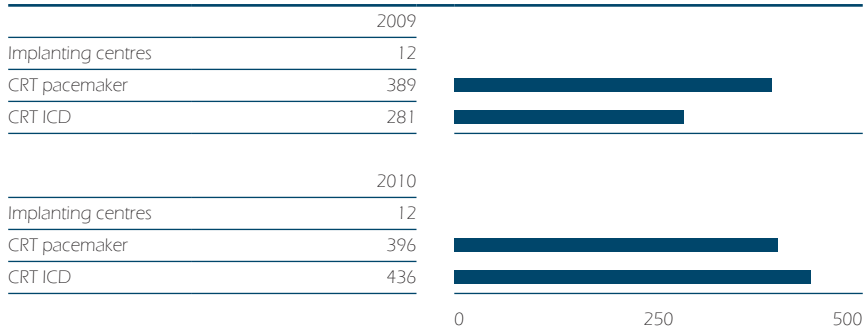
2009	
Implanting centres	15
New implants	not available
Replacements	not available
2010	
Implanting centres	15
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	90%
Surgeons	5%
Others	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

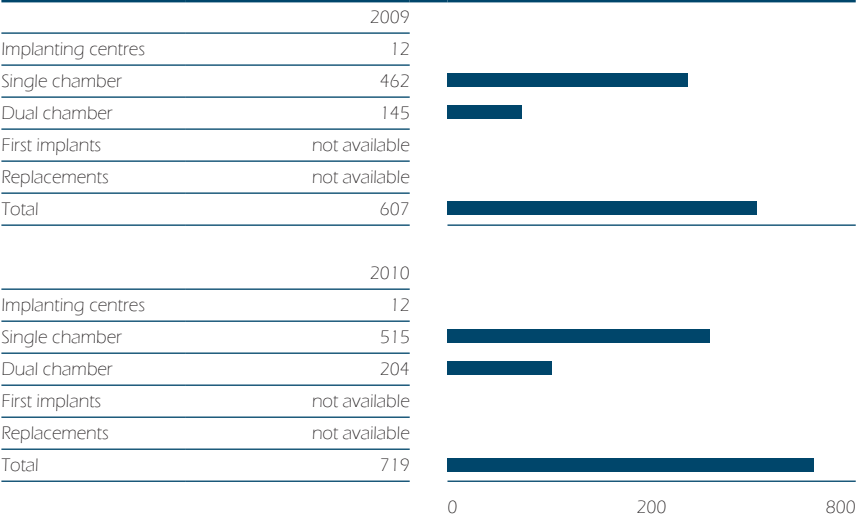


Specialty performing implants

Cardiologists	95%
Surgeons	2%
Others	3%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

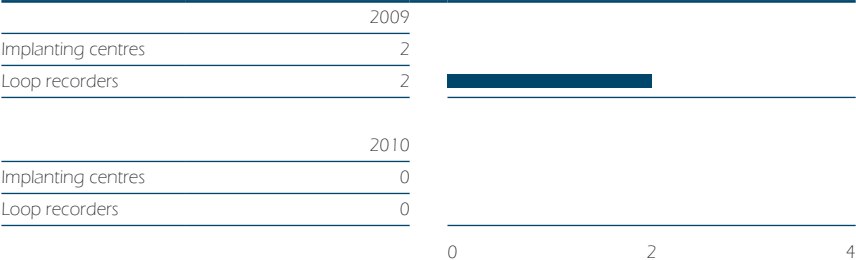


Specialty performing implants

Cardiologists	90%
Surgeons	5%
Others	5%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	0%
Surgeons	0%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology	☐
None	☐

* Hungarian Online Pacemaker Registry

Availability of a national quality insurance system or complication registry

Yes

Hungarian Online Pacemaker Registry and individual paper based data collection from centers

Availability of a national institution coordinating and guiding device recalls

Yes

National Health Insurance Fund

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	10	10
Number of ablations performed	2.498	2.654
Number of ablations per centre	249	265
Number of AF ablations	502*	490

* RFA + CRYO

Availability of a national registry for interventional electrophysiology

No

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☒
U.S.	☒
European	☒

Necessity of guideline translation to national language	Yes
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

Sources:

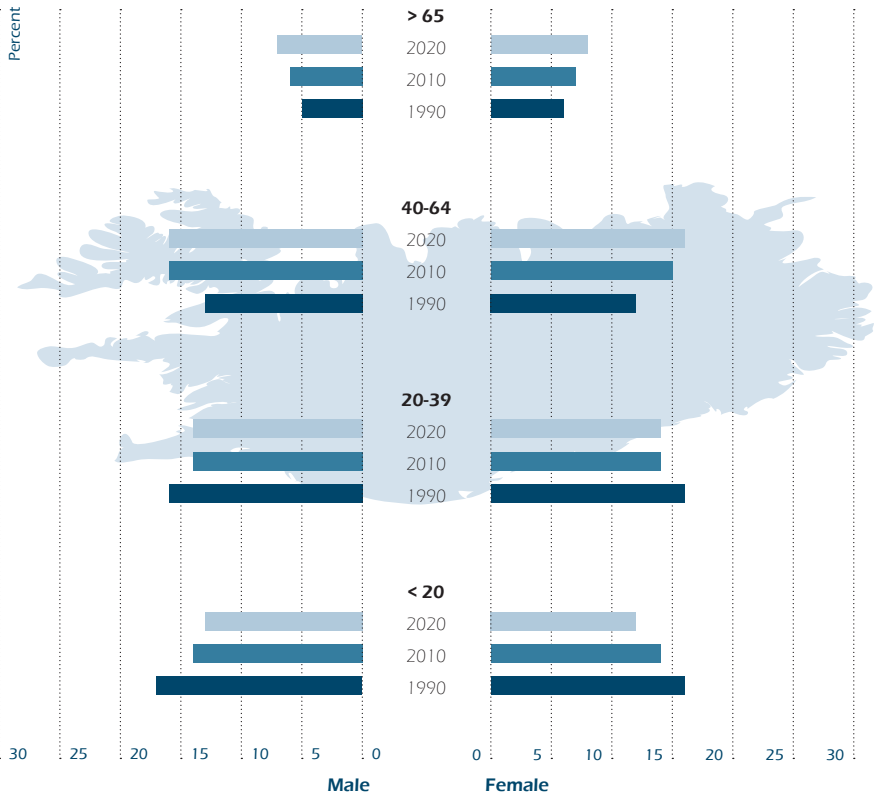
- Working Group on Cardiac Arrhythmias and Pacing, Hungarian Society of Cardiology - László Gellér, MD, PhD.
- Hungarian Central Statistical Office
- National Health Insurance Fund

ICELAND



1. Statistics

Age pyramid for Iceland





Healthcare data

Hospitals (per 100.000 population)	6,76	2005
Beds (per 100.000 population)	578,68	2007
Density of physicians (per 1.000 population)	3,68	2006
Density of nurses (per 1.000 population)	9,43	2004

Demographic information

Population	308.910	2010
Population annual growth rate (%)	0,7	2010
Life expectancy at birth	81,0	2010
Death rate (per 1.000 population)	6,27	2009
Live births (per 1.000 population)	15,75	2009

Economic information

Gross domestic product (U.S dollar-billions)	12,77*	2010
Gross domestic product per capita (U.S dollar-units)	39.562,89*	2010
Total expenditure on health as % of GDP	9,3	2006
General government expenditure on health as % of total expenditure on health	83,1	2006
Private expenditure on health as % of total expenditure on health	16,9	2006

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2009	not available
2010	40%

3. Healthcare System

Iceland has a national healthcare system with universal access.

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	not available	100%
Private insurance company	not available	0%
Private co-payment	not available	0%

Possibility of subscribing to private health insurance plans

No

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation**Yes**

Cardiologist with additional training in electrophysiology

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

Cardiologist, cardiothoracic surgeon

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

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

Number of medical faculties**1***

* University of Iceland in Reykjavik

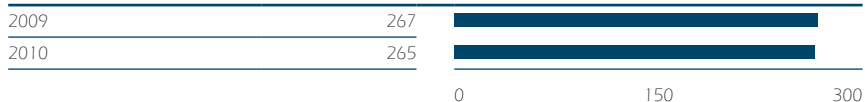
Percentage of academic facilities among practicing EP and implant centres**100%***

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

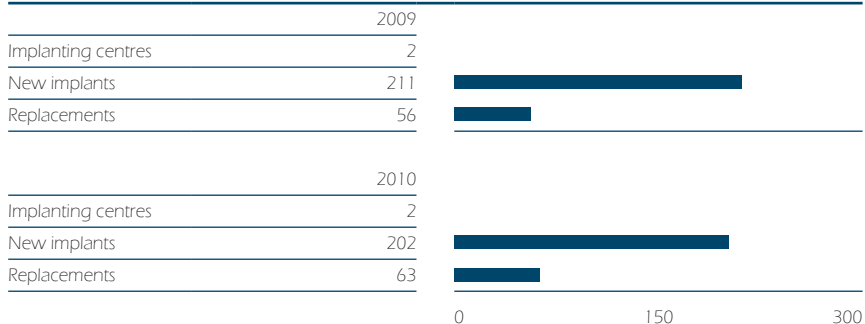


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

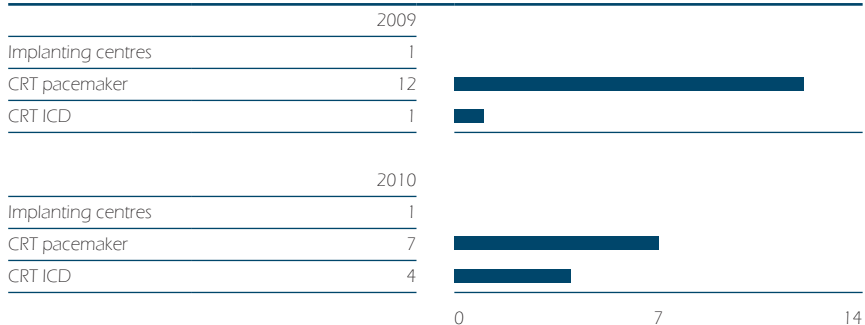


Specialty performing implants

Cardiologists	50%
Surgeons	50%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

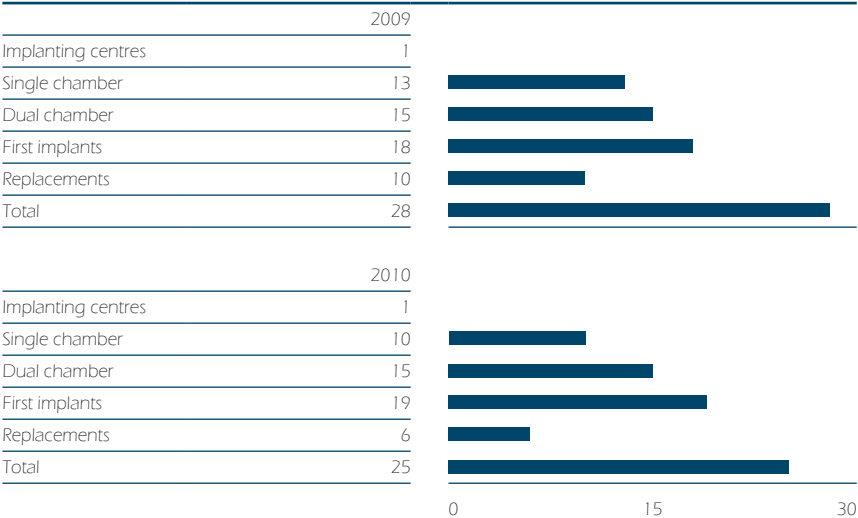


Specialty performing implants

Cardiologists	50%
Surgeons	50%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

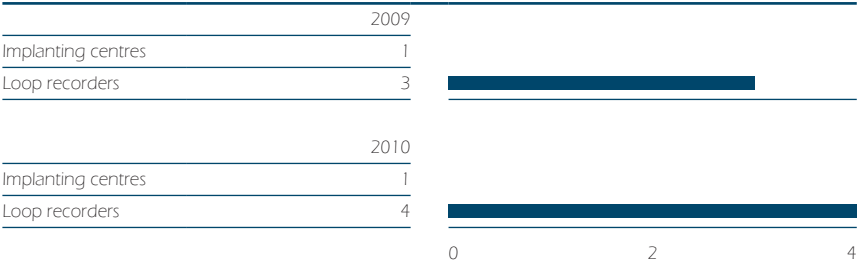


Specialty performing implants

Cardiologists	50%
Surgeons	50%

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

Yes

National registry for

ICD	☐
Pacing*	☒
Electrophysiology	☐
None	☐

* The Icelandic Pacemaker Registry

Availability of a national quality insurance system or complication registry

Yes

The Surgeon General Office

Availability of a national institution coordinating and guiding device recalls

Yes

The Surgeon General Office

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	1	1
Number of ablations performed	94	70
Number of ablations per centre	94	70
Number of AF ablations	12	13

Availability of a national registry for interventional electrophysiology

No

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☐
U.S.	☐
European	☒

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

Sources:

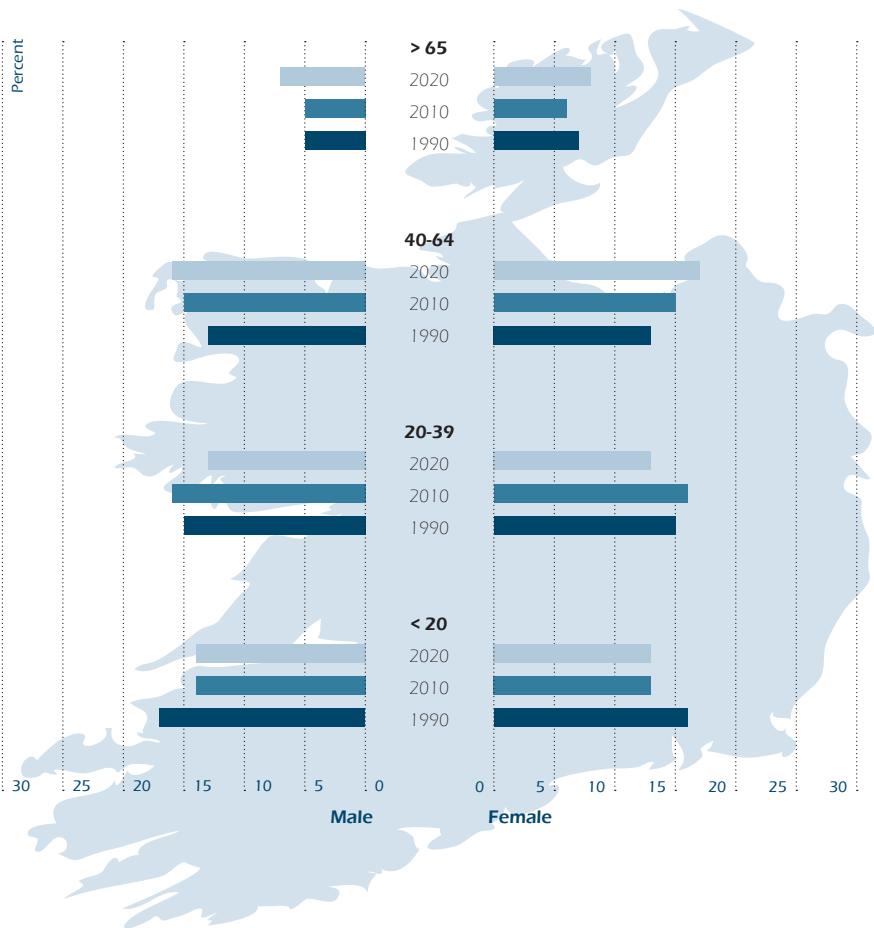
- The Icelandic Cardiac Society – David O. Arnar MD PhD EMPH, Gizur Gottskalksson MD, Margret Vigfusdottir
- Landspítali – The National University Hospital of Iceland Pacemaker Clinic
- Landspítali – The National University Hospital of Iceland Division of Cardiology, Section of Electrophysiology

IRELAND



1. Statistics

Age pyramid for Ireland





Healthcare data

Hospitals (per 100.000 population)	3,98	2008
Beds (per 100.000 population)	516,73	2007
Density of physicians (per 1.000 population)	3,03	2007
Density of nurses (per 1.000 population)	15,5	2007

Demographic information

Population	4.622.917	2010
Population annual growth rate (%)	1	2010
Life expectancy at birth	80,0	2010
Death rate (per 1.000 population)	6,48	2009
Live births (per 1.000 population)	16,66	2009

Economic information

Gross domestic product (U.S dollar-billions)	204,14*	2010
Gross domestic product per capita (U.S dollar-units)	45.642,49*	2010
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

2009	33,5%
2010	not available

3. Healthcare System

A person living in Ireland for at least one year is considered by the Health Services Executive 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 Health Services Executive 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 Health Services Executive 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

	2009	2010
Insured citizens	>30%	>30%
Uninsured citizens	<70%	<70%

Distribution of insurance modality

	2009	2010
Public insurance company	32%	32%
Private insurance company	47,2%	47,2%
Private co-payment	not available	not available

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

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

National accreditation for physicians

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

Subspecialty register for cardiology run by Royal College of Physicians of Ireland

National accreditation for centres

Required for practice*	☒
Not required for practice	☐
Accreditation not available	☐
* Health Services Executive	

National Society supporting EHRA accreditation system

Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it's not homologated to national certification	☐
No	☒
Almost all EP doctors in Ireland have completed EP fellowship programs in the United States	

Specialty required for catheter ablation Yes

Cardiac electrophysiologist
Almost all EP doctors in Ireland have completed EP fellowship programs in the United States

Specialty required for ICD or pacemaker implants Yes

Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation No

Required period of training to perform implantations No*

* 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

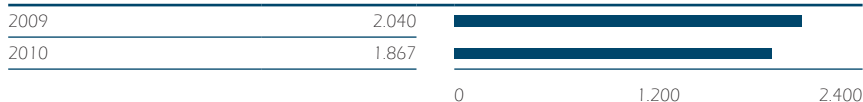
Number of medical faculties 5

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

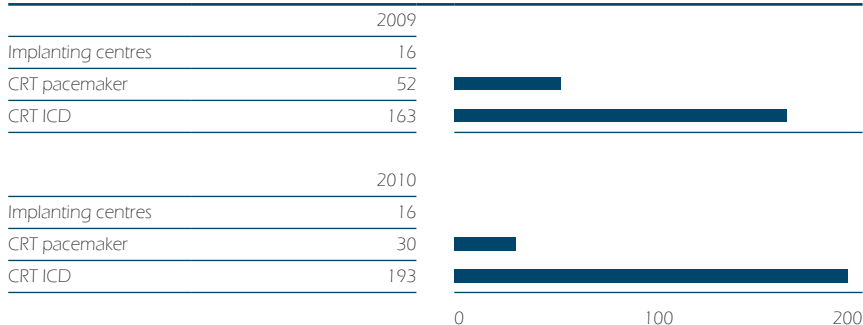
2009	
Implanting centres	16
New implants	not available
Replacements	not available
2010	
Implanting centres	16
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

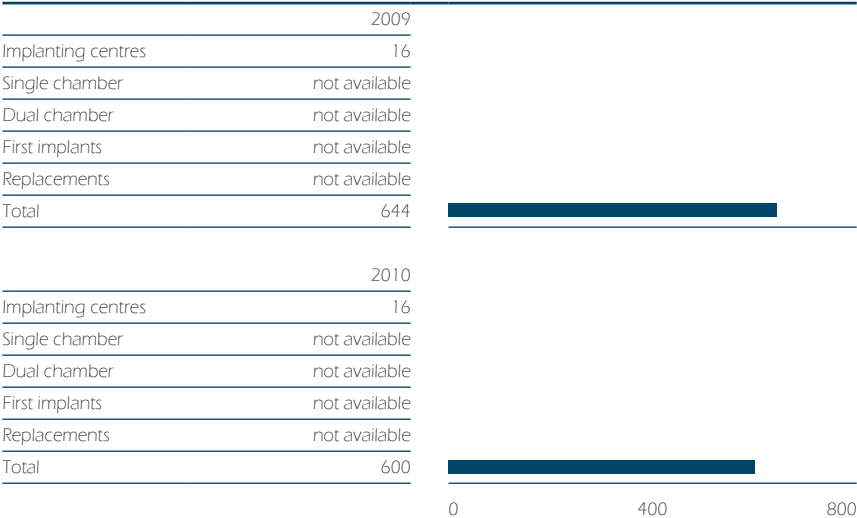


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

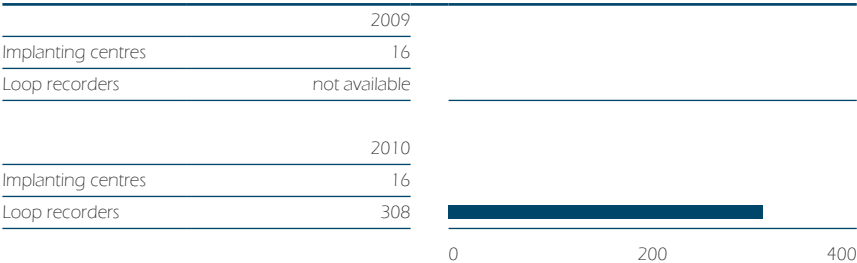


Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology	☐
None	☐

* G-Pace

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

Yes

Irish Medicines Board

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	11	11
Number of ablations performed	800*	800*
Number of ablations per centre	72,7	72,7
Number of AF ablations	350*	350*

* Approx.

Availability of a national registry for interventional electrophysiology

No

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	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐
Lack of referral	☒	☐	☐	☐	☐
Lack of trained personnel	☒	☐	☐	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☒	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

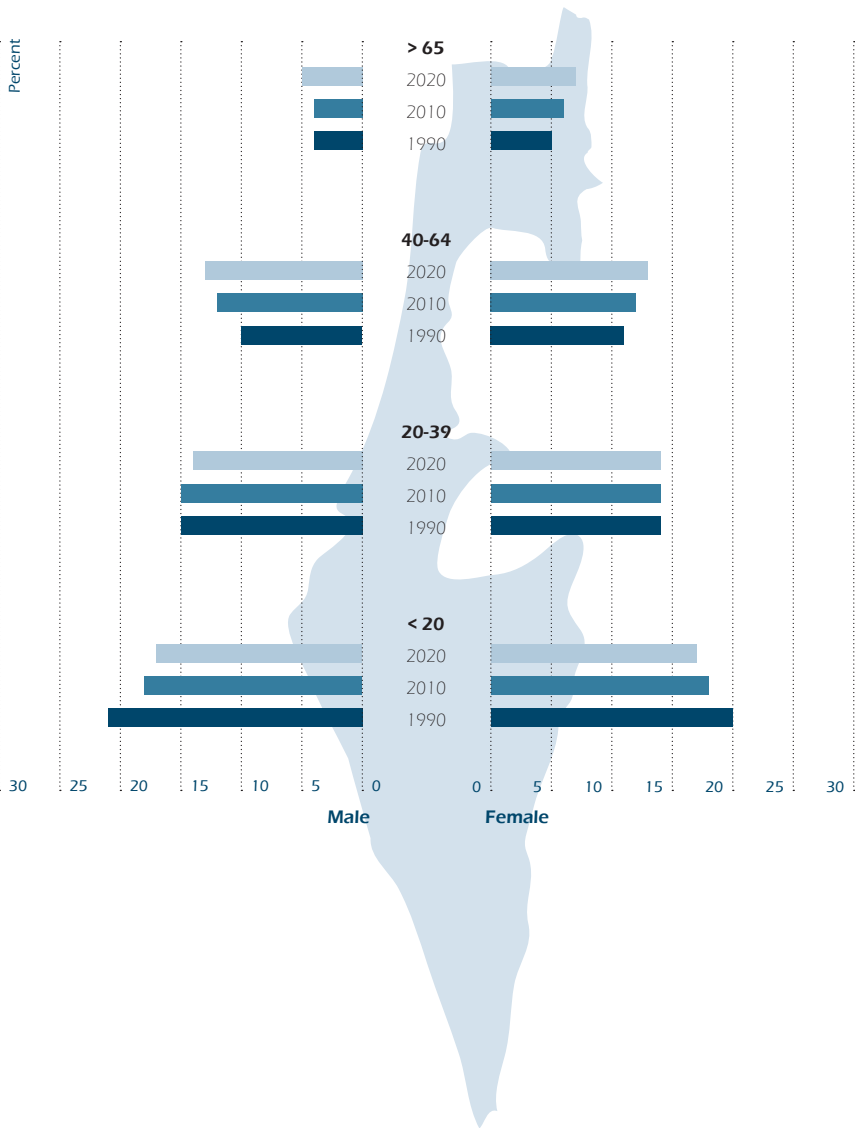
Sources: Electrophysiology Subgroup of Irish Cardiac Society – Chairman: David Keane

ISRAEL



1. Statistics

Age pyramid for Israel



Healthcare data

Hospitals (per 100.000 population)	1,55	2009
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	7.353.985	2010
Population annual growth rate (%)	1.6	2010
Life expectancy at birth	81,0	2010
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)	201,25*	2010
Gross domestic product per capita (U.S dollar-units)	27.085,13*	2010
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

2009	not available
2010	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

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	99%	99%
Uninsured citizens	1%	1%

Distribution of insurance modality

	2009	2010
Public insurance company	94%	94%
Private insurance company	1%	1%
Private co-payment	5%	5%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒

ICD therapy is covered by most health Funds for MADIT-II/SCD-HeFT indications beginning 2011. In 2010, only MADIT-I indication was covered.

Reimbursement availability

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

Treatment availability

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

In 2010, ICD therapy were approved for MADIT-I indications by all Health funds and for MADIT-II indications by some. For 2011, all health Funds will approve MADIT-II, SCD-HeFT and MADIT-CRT indications for ICD and CRT-D.

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

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

National accreditation for centres

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

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation **No**

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

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

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

Training centres availability

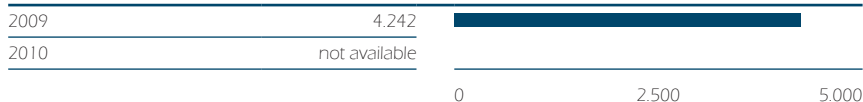
Pacemaker	17
ICD implantation	17
Electrophysiological studies and catheter ablation	12
CRT implantation	12
Atrial fibrillation ablation	7

Number of medical faculties **4**

Percentage of academic facilities among practicing EP and implant centres **90%**

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

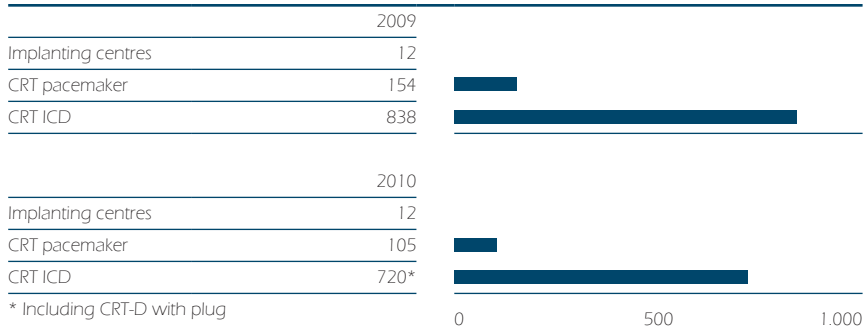
	2009	
Implanting centres	17	
New implants	not available	
Replacements	not available	
	2010	
Implanting centres	17	
New implants	not available	
Replacements	not available	

Specialty performing implants

Cardiologists	5%
Surgeons	5%
Other: Cardiac electrophysiologists	90%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

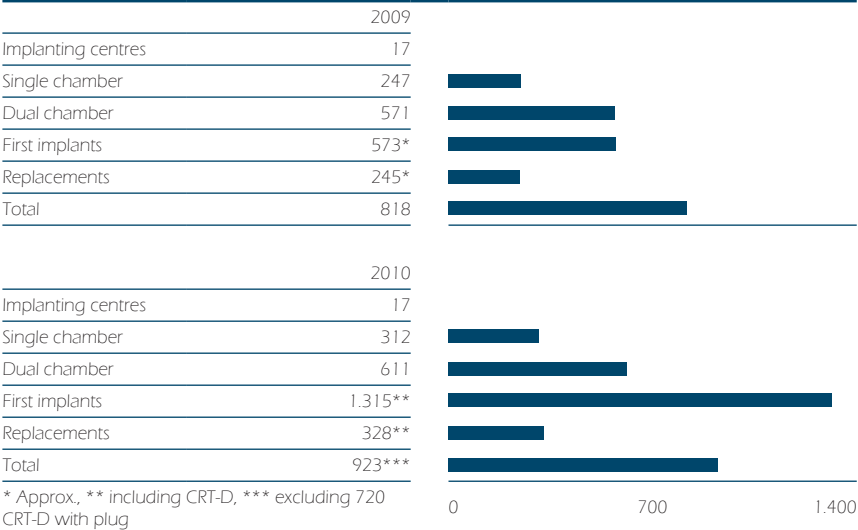


Specialty performing implants

Cardiologists	0%
Surgeons	0%
Other: Cardiac electrophysiologists	100%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

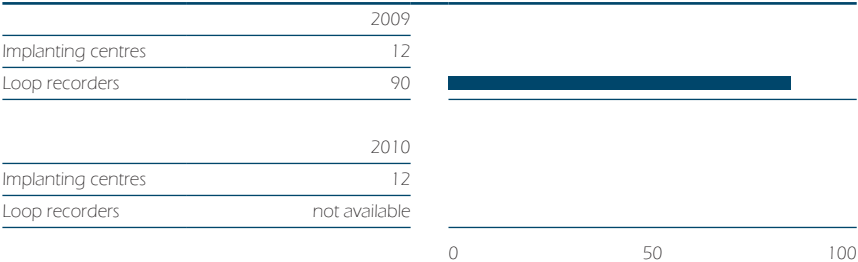


Specialty performing implants

Cardiologists	5%
Surgeons	5%
Other: Cardiac electrophysiologists	90%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	0%
Surgeons	0%
Other: Cardiac electrophysiologists	100%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing	☐
Electrophysiology	☐
None	☐

* Israel National ICD Registry

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	12	12
Number of ablations performed	not available	not available
Number of ablations per centre	not available	not available
Number of AF ablations	not available	not available

Availability of a national registry for interventional electrophysiology

No

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☒
U.S.	☐
European	☐

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

Sources:

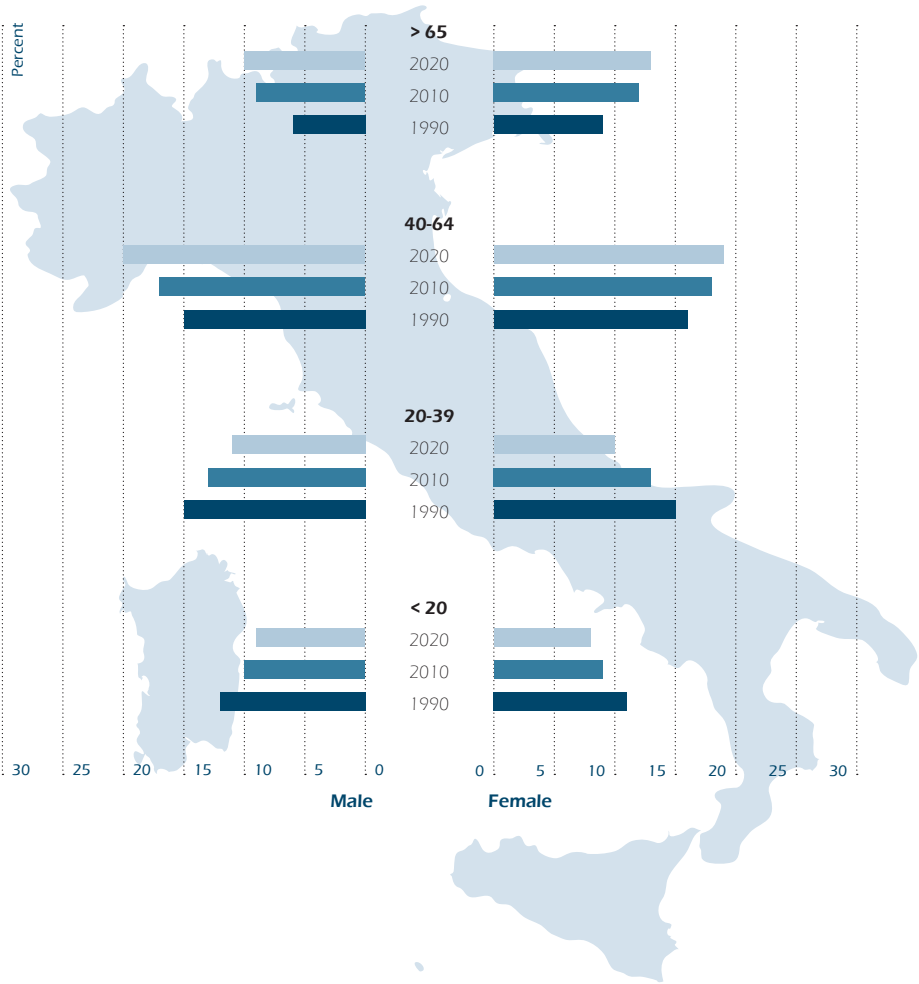
Israel Working Group of Pacing and Electrophysiology, Israel Heart Society – Secretary: Sami Viskin

ITALY



1. Statistics

Age pyramid for Italy





Healthcare data

Hospitals (per 100.000 population)	2,08	2008
Beds (per 100.000 population)	370,07	2008
Density of physicians (per 1.000 population)	3,65	2006
Density of nurses (per 1.000 population)	7,01	2006

Demographic information

Population	60.748.965	2010
Population annual growth rate (%)	0,5	2010
Life expectancy at birth	82,0	2010
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)	2.036,69*	2010
Gross domestic product per capita (U.S dollar-units)	33.828,55*	2010
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

2009	not available
2010	0,8%

3. Healthcare System

National Health System

Basic insurance availability Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	0%	0%

Possibility of subscribing to private health insurance plans Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒

Reimbursement availability

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

Treatment availability

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

* Although the private hospitals are reimbursed by the National Health System, the annual budget should not be overcome.

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

* The AIAC (Italian Association for Cardiac Pacing and Arrhythmology) is planning an accreditation examination based on EHRA model.

Specialty required for catheter ablation **No**

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

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

Italian Federation of Cardiology (Federazione Italiana di Cardiologia)) and the AIAC (Italian Association for Cardiac Pacing and Arrhythmology)

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

Training centres availability

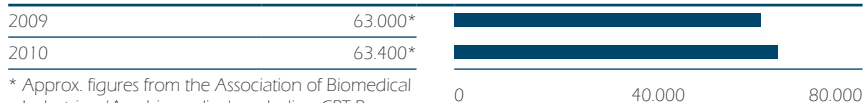
Pacemaker	not available
ICD implantation	not available
Electrophysiological studies and catheter ablation	not available
CRT implantation	not available
Atrial fibrillation ablation	not available

Number of medical faculties **24**

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

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

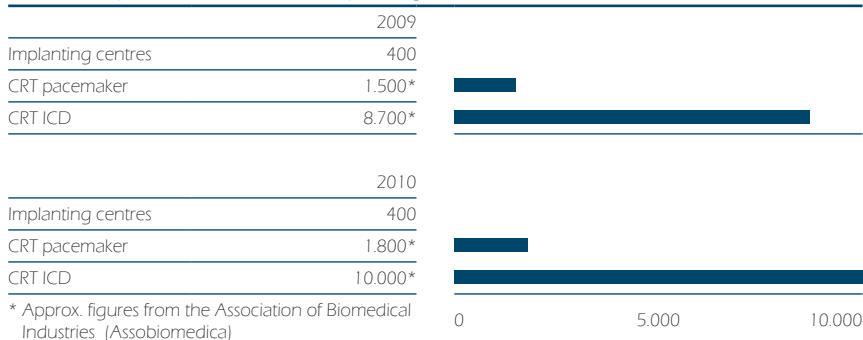
	2009	
Implanting centres	470	
New implants	not available	
Replacements	not available	
	2010	
Implanting centres	420	
New implants	not available	
Replacements	not available	

Specialty performing implants

Cardiologists	not available
Surgeons	not available

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

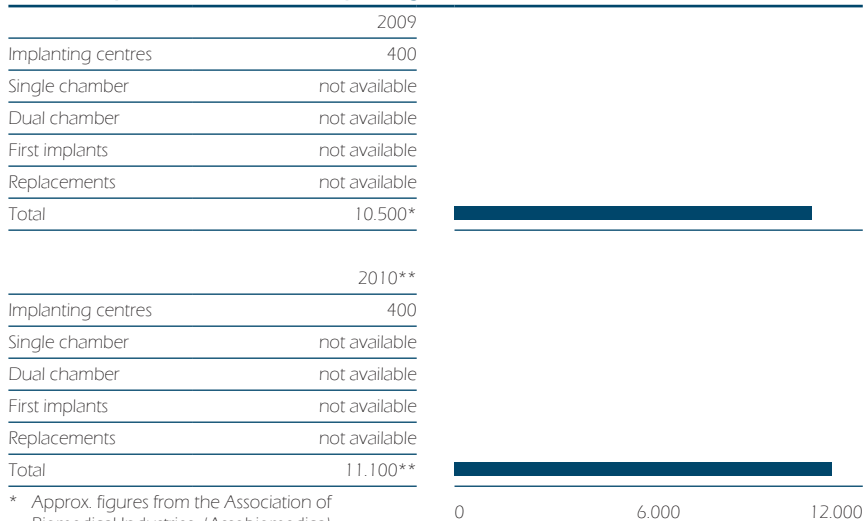


Specialty performing implants

Cardiologists	not available
Surgeons	not available

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

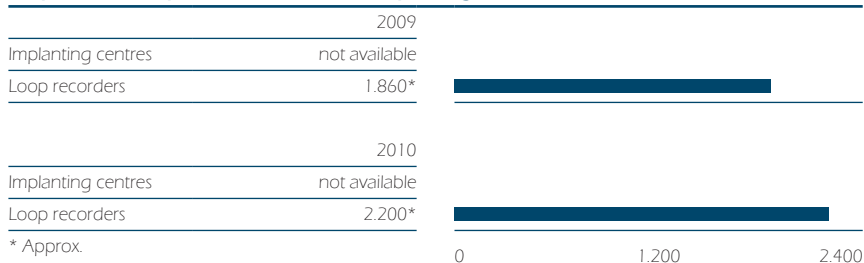


Specialty performing implants

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

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology*	☒
None	☐

* 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

	2009	2010
Number of ablation centres	95*	160*
Number of ablations performed	not available	not available
Number of ablations per centre	not available	not available
Number of AF ablations	not available	not available

* Approx. figures from the Association of Biomedical Industries (Assobiomedica)

Availability of a national registry for interventional electrophysiology

No

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	☐	☐	☐	☒	☐
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☐	☒	☐	☐	☐

1 = no obstacle

5 = great obstacle

Sources:

- Italian Association of Arrhythmias and Cardiac Pacing (AIAC) – Dr. Giosuè Mascioli
- Association of Biomedical Industries - Assobiomedica
- AIAC Registry
- National Institute of Statistics (Istituto nazionale di statistica – Istat)

Note: ICD figures based on data derived from first three quarters of 2010 implants.



KOSOVO

Pending data submission.

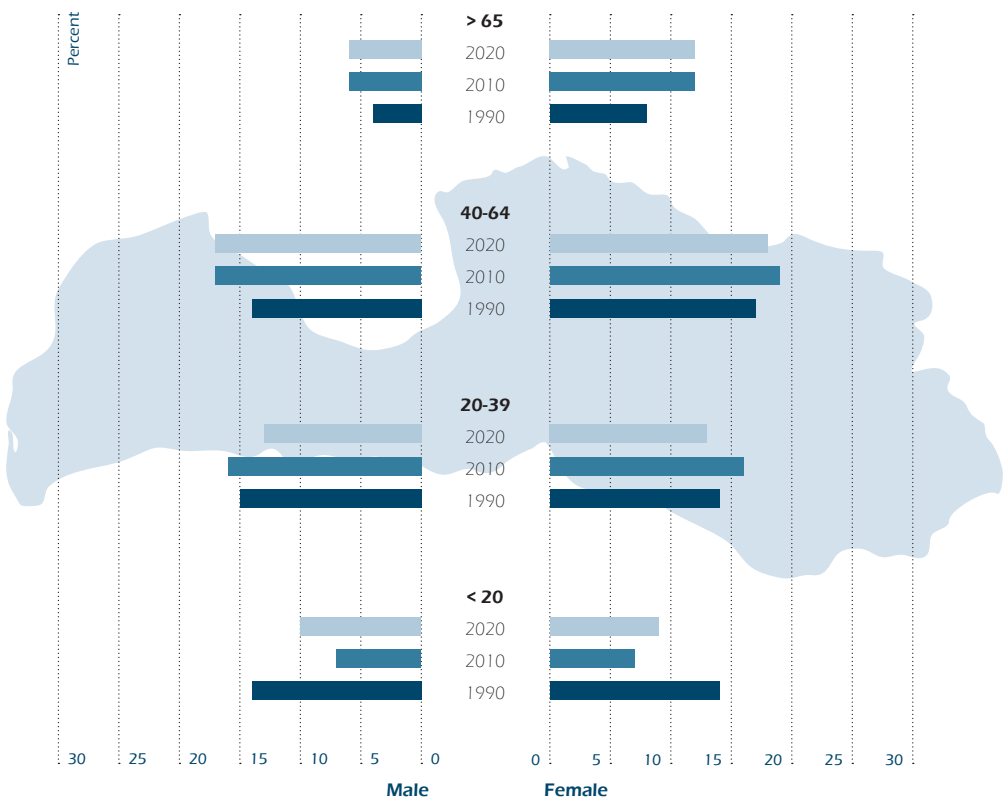


LATVIA



1. Statistics

Age pyramid for Latvia





Healthcare data

Hospitals (per 100.000 population)	3,06	2009
Beds (per 100.000 population)	640,14	2009
Density of physicians (per 1.000 population)	3,05	2007
Density of nurses (per 1.000 population)	5,48	2007

Demographic information

Population	2.083.703	2010
Population annual growth rate (%)	-0,6	2010
Life expectancy at birth	72,0	2010
Death rate (per 1.000 population)	13,69	2008
Live births (per 1.000 population)	10,57	2008

Economic information

Gross domestic product (U.S dollar-billions)	23,39*	2010
Gross domestic product per capita (U.S dollar-units)	10.377,78*	2010
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

2009	53,2%
2010	not available

3. Healthcare System

In Latvia, the National Healthcare system is divided between the Ministry of Welfare and municipalities. It is a decentralized 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

	2009	2010
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	92%	91%
Private insurance company	8%	9%
Private co-payment	0%	0%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☒
Pacemakers	☒
Ablation	☐
Not necessary	☐



Reimbursement availability

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

Treatment availability

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

* There are differences between numbers of patients, capacity of Latvian Centre of Cardiology and economical situation in Country/Health Economic and financial support from Government.

4. Education

National accreditation availability

Device therapy*	☒
Invasive electrophysiology*	☒
None	☐

* Method certificates

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation**Yes**

Cardiologist, licence for EP diagnostics, licence for ablations (cardiac surgeons – if performing catheter ablation with a surgical approach)

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

Cardiologist, cardiac surgeon

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

National Society, Guidelines of Competency

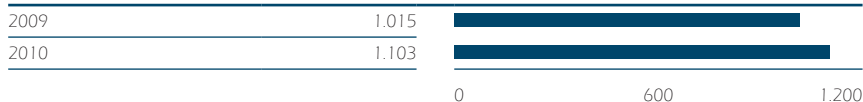
Required period of training to perform implantations**2 years****Training centres availability**

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

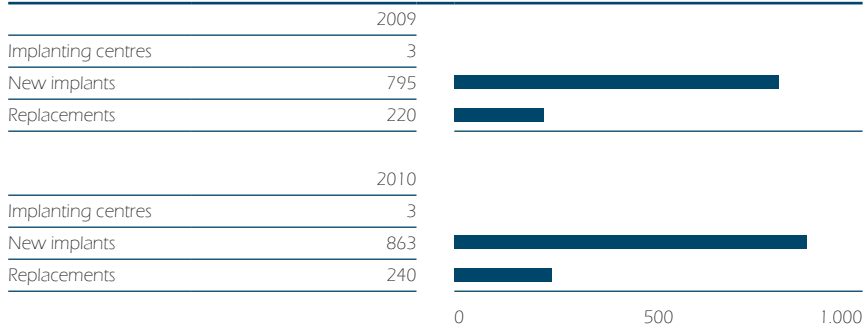
Number of medical faculties**2****Percentage of academic facilities among practicing EP and implant centres****100%**

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

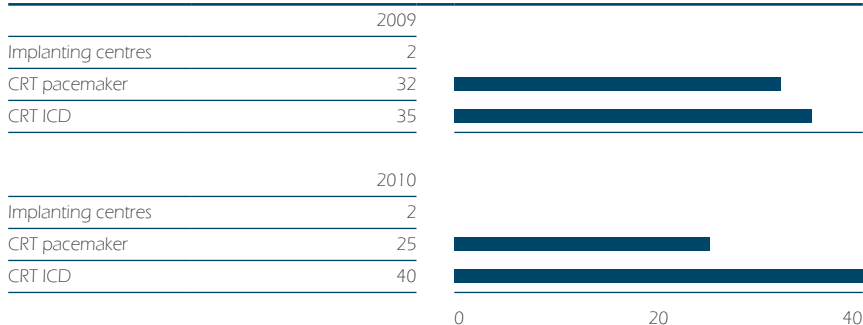


Specialty performing implants

Cardiologists	50%
Surgeons	50%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

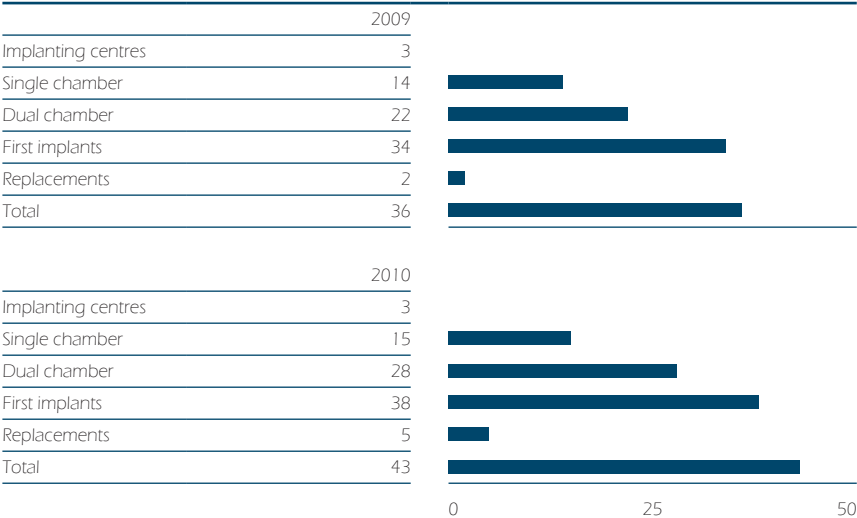


Specialty performing implants

Cardiologists	60%
Surgeons	40%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

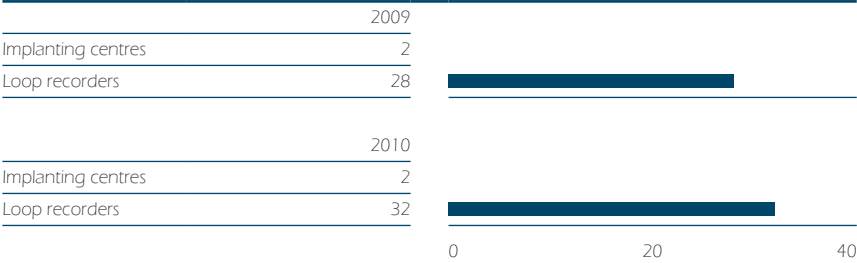


Specialty performing implants

Cardiologists	50%
Surgeons	50%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	60%
Surgeons	40%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* National Register of ICD

** National Register of Pacing

*** National Register of Electrophysiology

Availability of a national quality insurance system or complication registry

Yes

Health Statistics and Medical Technologies State Agency in collaboration 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

	2009	2010
Number of ablation centres	2	2
Number of ablations performed	315	395
Number of ablations per centre	157,5	177,9
Number of AF ablations	28	35

Availability of a national registry for interventional electrophysiology

Yes

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☒
U.S.	☐
European	☒

Necessity of guideline translation to national language	Yes
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

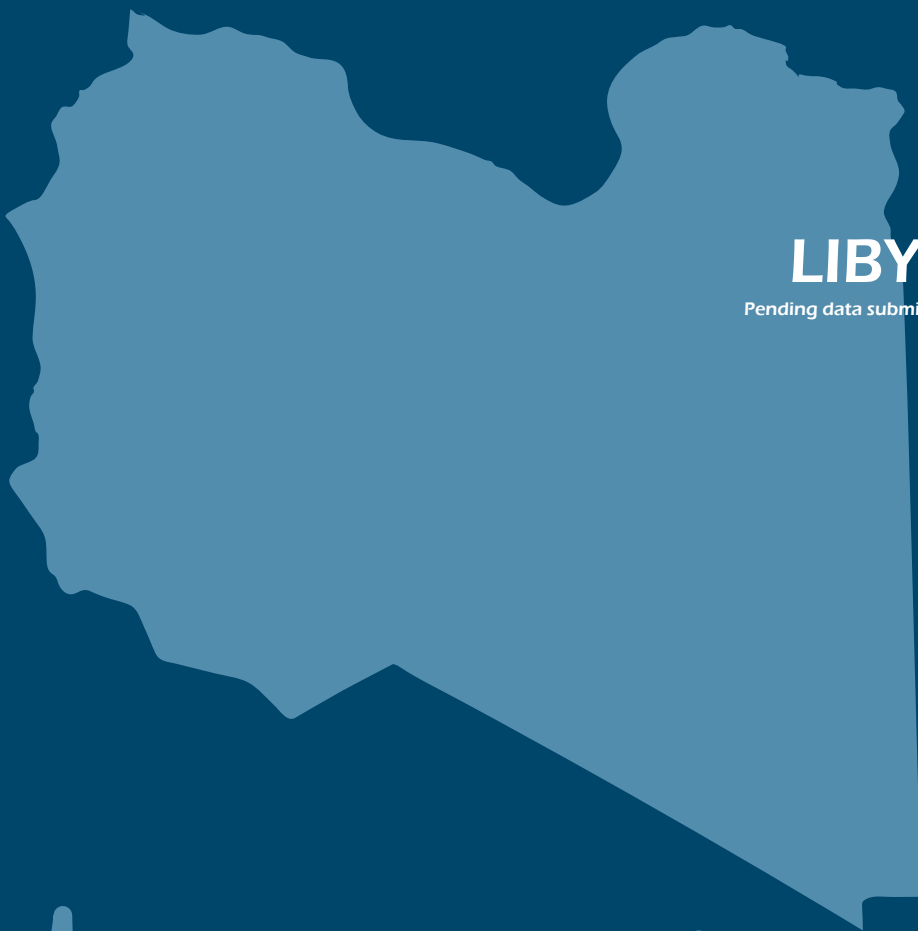
Sources: Latvian National Society of Cardiology, National Working Group on Arrhythmology –
Chairman: Prof. Oskars Kalejs



LEBANON

Pending data submission.





LIBYA

Pending data submission.



LITHUANIA



1. Statistics

Age pyramid for Lithuania





Healthcare data

Hospitals (per 100.000 population)	3,36	2008
Beds (per 100.000 population)	683,66	2008
Density of physicians (per 1.000 population)	4,07	2007
Density of nurses (per 1.000 population)	7,35	2007

Demographic information

Population	3,545,319	2010
Population annual growth rate (%)	-0,3	2010
Life expectancy at birth	75,0	2010
Death rate (per 1.000 population)	12,59	2009
Live births (per 1.000 population)	10,98	2009

Economic information

Gross domestic product (U.S dollar-billions)	35,73*	2010
Gross domestic product per capita (U.S dollar-units)	10.765,34*	2010
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

2009	55.4%
2010	56.1%

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.

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	98%	98%
Uninsured citizens	2%	2%

Distribution of insurance modality

	2009	2010
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	7%	0%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☒
Invasive electrophysiology	☒
None	☐
State Health Care Accreditation Agency	

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist

Specialty required for ICD or pacemaker implants Yes

Cardiologist, cardiac surgeon

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

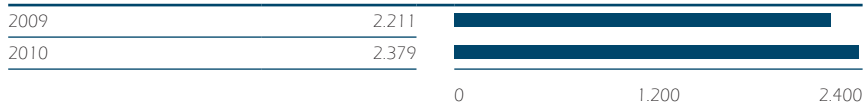
Pacemaker	2
ICD implantation	2
Electrophysiological studies and catheter ablation	2
CRT implantation	2
Atrial fibrillation ablation	2

Number of medical faculties 2**Percentage of academic facilities among practicing EP and implant centres** 50%

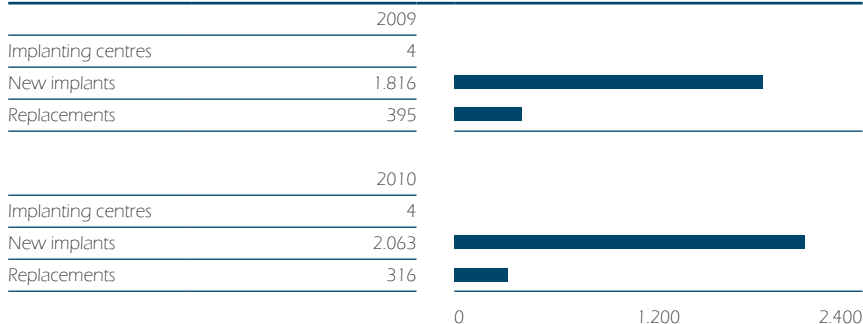


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

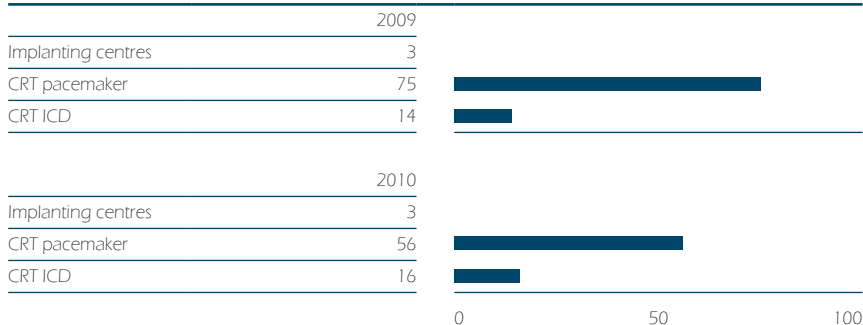


Specialty performing implants

Cardiologists	99,5%
Surgeons	0,5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

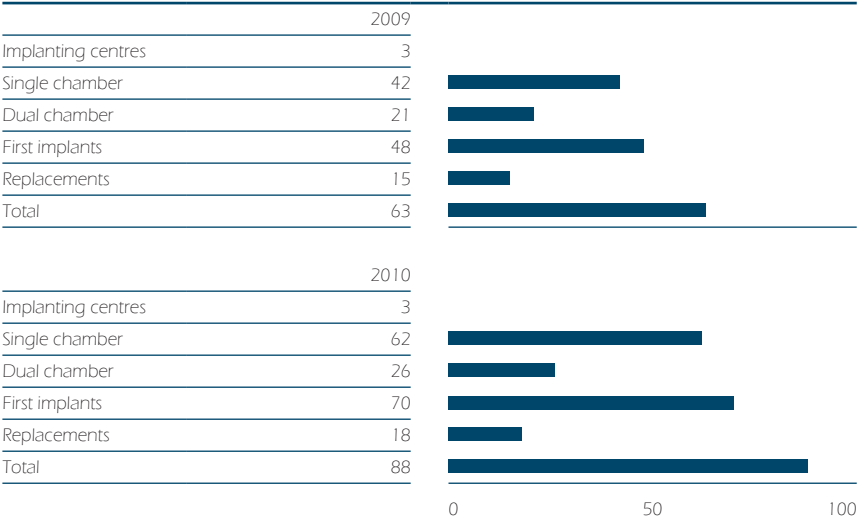


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

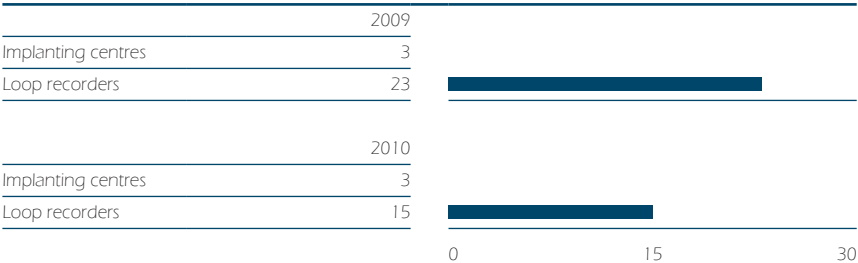


Specialty performing implants

Cardiologists	100%
Surgeons	0%

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

No

No reimbursement

National registry for

ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry

Yes

State Health Care Accreditation Agency

Availability of a national institution coordinating and guiding device recalls

Yes

State Health Care Accreditation Agency

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	3	3
Number of ablations performed	785	804
Number of ablations per centre	262	268
Number of AF ablations	65	73

Availability of a national registry for interventional electrophysiology

No

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	☐	☐	☐	☐	☒
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☒	☐	☐	☐
Lack of operators	☐	☐	☒	☐	☐

1 = no obstacle

5 = great obstacle

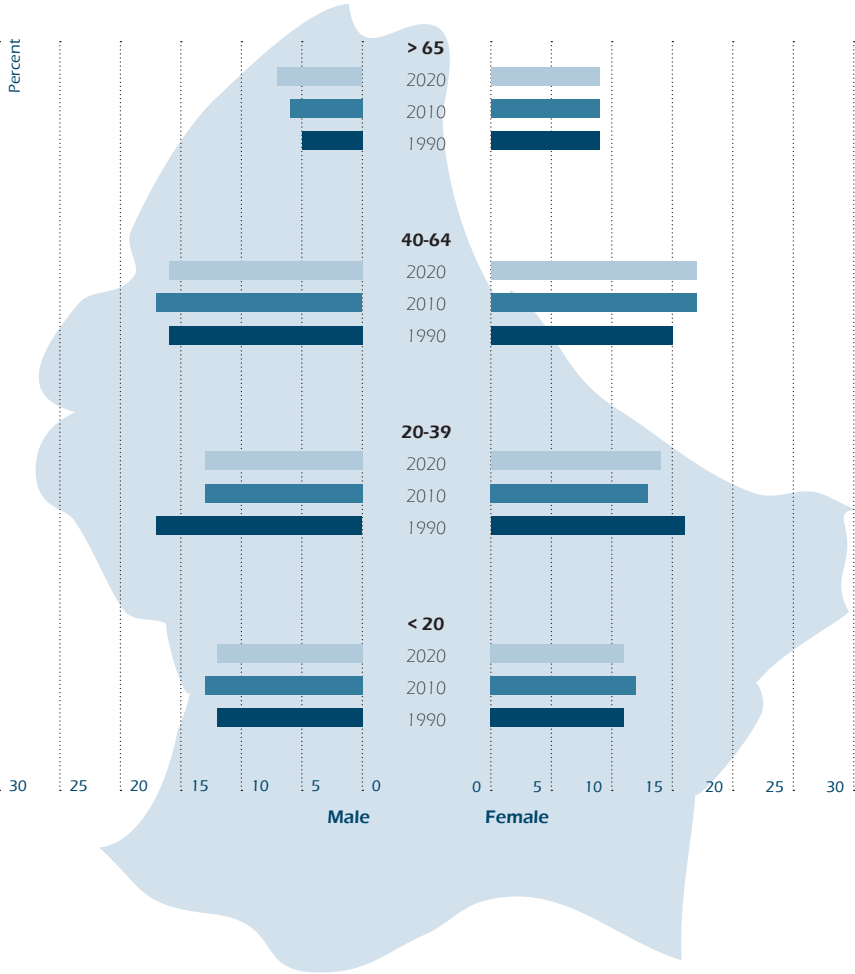
Sources: Lithuanian Working Group on Cardiac Pacing and Electrophysiology –
Chairman: Prof. Audrius Aidietis

LUXEMBOURG



1. Statistics

Age pyramid for Luxembourg





Healthcare data

Hospitals (per 100.000 population)	3,96	2004
Beds (per 100.000 population)	556,84	2008
Density of physicians (per 1.000 population)	2,9	2005
Density of nurses (per 1.000 population)	10,23	2005

Demographic information

Population	497.538	2010
Population annual growth rate (%)	1,2	2010
Life expectancy at birth	79,0	2010
Death rate (per 1.000 population)	7,21	2008
Live births (per 1.000 population)	11,54	2008

Economic information

Gross domestic product (U.S dollar-billions)	52,43*	2010
Gross domestic product per capita (U.S dollar-units)	104.390,27*	2010
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

2009	not available
2010	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

	2009	2010
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	100%	100%
Private insurance company	58%	58%
Private co-payment	not available	not available

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist

Specialty required for ICD or pacemaker implants Yes

Cardiologist, surgeon

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

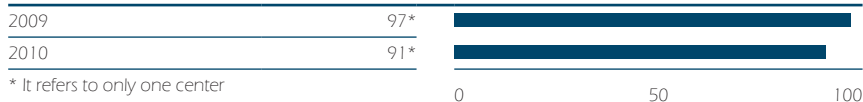
Pacemaker	0
ICD implantation	0
Electrophysiological studies and catheter ablation	0
CRT implantation	0
Atrial fibrillation ablation	0

Number of medical faculties 0**Percentage of academic facilities among practicing EP and implant centres** 0%

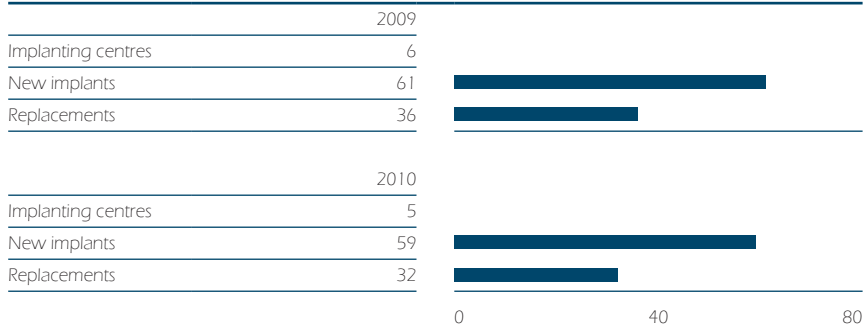


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

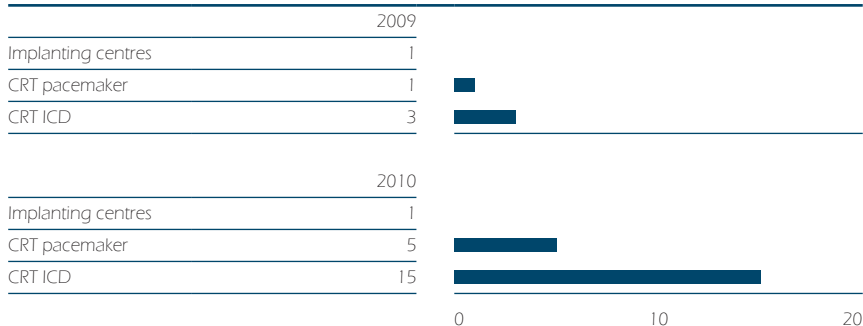


Specialty performing implants

Cardiologists	97%
Surgeons	3%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

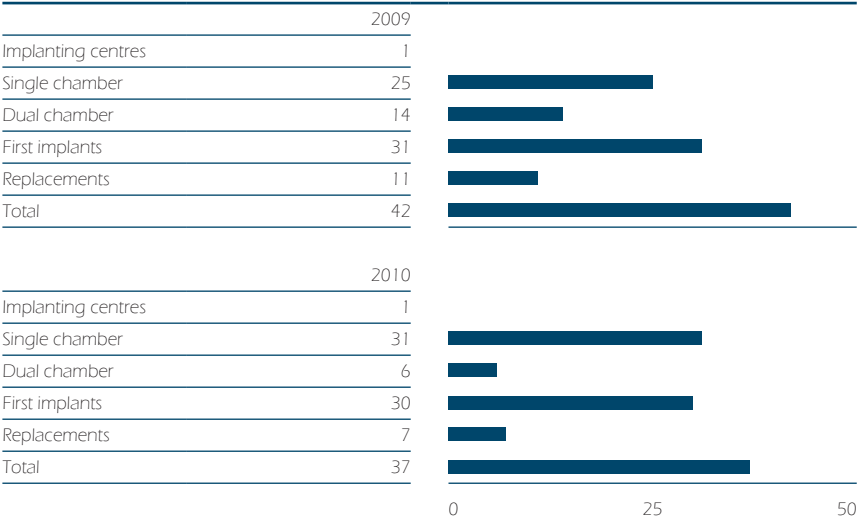


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

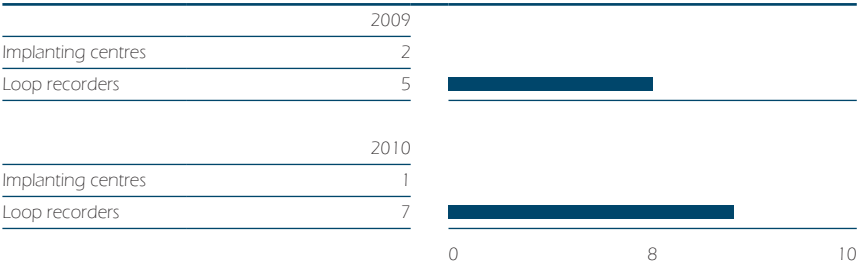


Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing	☐
Electrophysiology*	☒
None	☐

* INCCI

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

Yes

Ministry of health: Direction de la santé

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	1	1
Number of ablations performed	107	93
Number of ablations per centre	107	93
Number of AF ablations	20	12

Availability of a national registry for interventional electrophysiology

Yes

INCCI

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	☐	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☐	☐	☐
Lack of referral	☐	☐	☐	☐	☐
Lack of trained personnel	☐	☐	☐	☐	☐
Low awareness of guidelines	☐	☐	☐	☐	☐
Lack of operators	☐	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

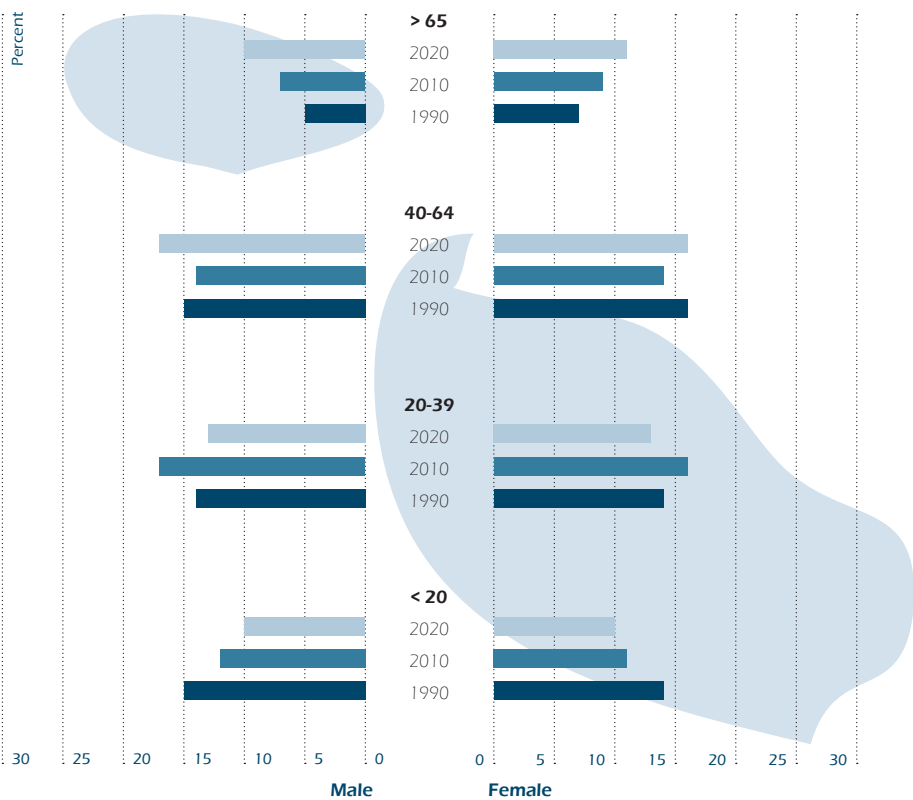
Sources: Luxembourg Society of Cardiology – Dr. Camille Pesch, INCCI Luxembourg

MALTA



1. Statistics

Age pyramid for Malta





Healthcare data

Hospitals (per 100.000 population)	1,94	2009
Beds (per 100.000 population)	482,23	2009
Density of physicians (per 1.000 population)	3,32	2007
Density of nurses (per 1.000 population)	5,83	2007

Demographic information

Population	406.771	2010
Population annual growth rate (%)	0,4	2010
Life expectancy at birth	80,0	2010
Death rate (per 1.000 population)	7,87	2008
Live births (per 1.000 population)	10,19	2008

Economic information

Gross domestic product (U.S dollar-billions)	7,80*	2010
Gross domestic product per capita (U.S dollar-units)	18.586,23*	2010
Total expenditure on health as % of GDP	8,3	2006
General government expenditure on health as % of total expenditure on health	77,7	2006
Private expenditure on health as % of total expenditure on health	22,3	2006

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2009	not available
2010	not available

3. Healthcare System

National Health Service providing free health care to all the population.

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	25%	25%
Uninsured citizens	75%	75%

Distribution of insurance modality

	2009	2010
Public insurance company	0%	0%
Private insurance company	25%	25%
Private co-payment	0%	0%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒

Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it's not homologated to national certification	☐
No	☒
Not yet in place	

Specialty required for catheter ablation **No**

Not formalised

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

Not formalised

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

Not formalised

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

Not formalised

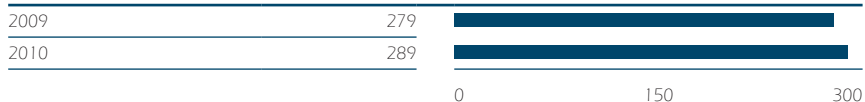
Training centres availability

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

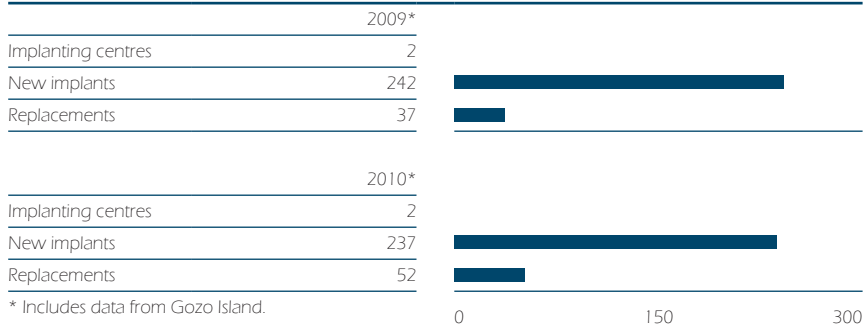
Number of medical faculties **1****Percentage of academic facilities among practicing EP and implant centres** **100%**

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

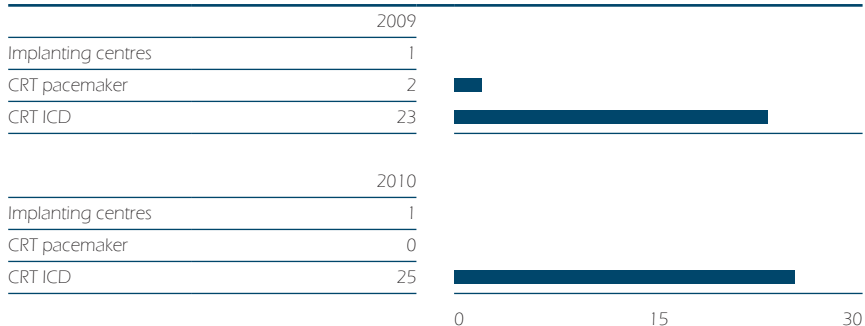


Specialty performing implants

Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

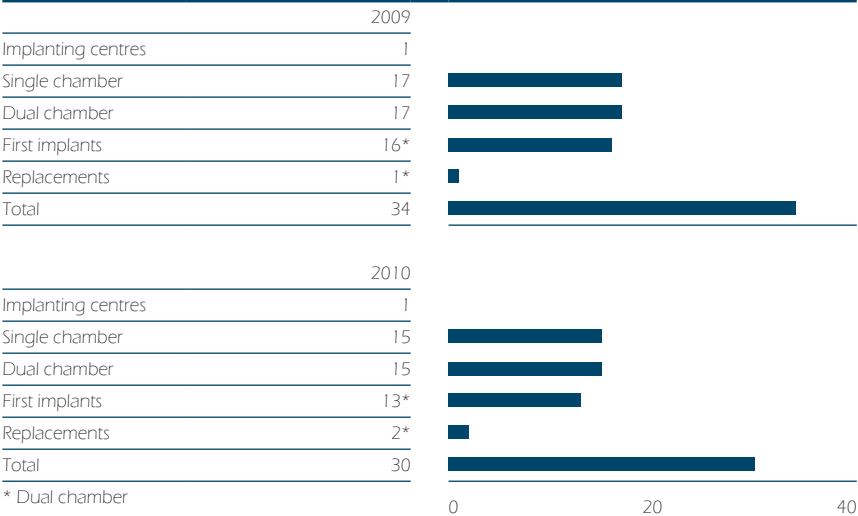


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

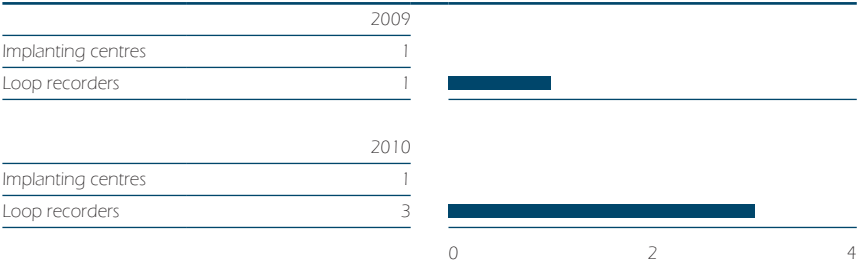


Specialty performing implants

Cardiologists	100%
Surgeons	0%

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

Yes

National registry for

ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	1	1
Number of ablations performed	15	13
Number of ablations per centre	15	13
Number of AF ablations	0	0

Availability of a national registry for interventional electrophysiology

No

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☐
U.S.	☐
European	☒

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

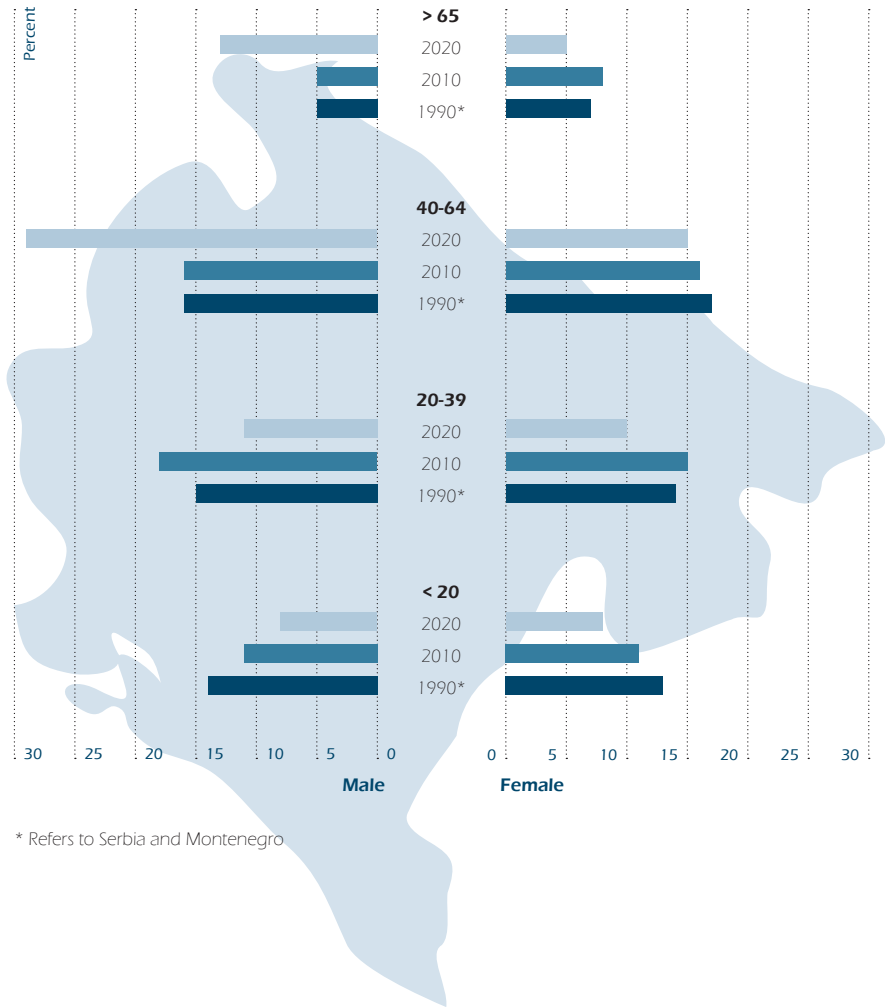
Sources: Maltese Cardiac Society – Prof Albert Fenech and Dr Oscar Aquilina

MONTENEGRO



1. Statistics

Age pyramid for Montenegro





Healthcare data

Hospitals (per 100.000 population)	1,74	2009
Beds (per 100.000 population)	385,88	2009
Density of physicians (per 1.000 population)	2	2006
Density of nurses (per 1.000 population)	not available	not available

Demographic information

Population	666.730	2010
Population annual growth rate (%)	-0,8	2010
Life expectancy at birth	78,0	2010
Death rate (per 1.000 population)	9,01	2008
Live births (per 1.000 population)	13,13	2008

Economic information

Gross domestic product (U.S dollar-billions)	3,88*	2010
Gross domestic product per capita (U.S dollar-units)	2.648*	2010
Total expenditure on health as % of GDP	6,8	2006
General government expenditure on health as % of total expenditure on health	79,5	2006
Private expenditure on health as % of total expenditure on health	20,5	2006

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2009	54,5%
2010	not available

3. Healthcare System

The healthcare system in Montenegro, a country of about 650.000 inhabitants, is organised through the House of Health. There is a primary healthcare system and family doctors and a total of 6 general hospitals, 3 specialised clinics and 1 clinical center of Montenegro.

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	90%	not available
Uninsured citizens	10%	not available

Distribution of insurance modality

	2009	2010
Public insurance company	100%	not available
Private insurance company	0%	not available*
Private co-payment	0%	not available*

* At the moment, the private insurance companies and co-payments are in process of reorganization.

Possibility of subscribing to private health insurance plans

No

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy*	☒
Invasive electrophysiology**	☒
None	☐

* Center for pacemakers and electrophysiology Clinical center of Montenegro

** As of April 2011, invasive electrophysiology accreditation will be available.

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist

Specialty required for ICD or pacemaker implants Yes

Cardiologist or vascular surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation No**Required period of training to perform implantations** 6 months - 1 year**Training centres availability**

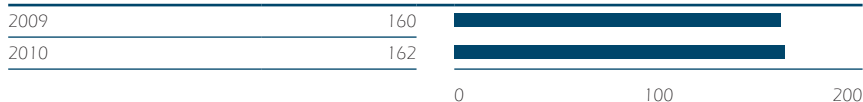
Pacemaker	1
ICD implantation	1
Electrophysiological studies and catheter ablation	0
CRT implantation	1
Atrial fibrillation ablation	0

Number of medical faculties 1**Percentage of academic facilities among practicing EP and implant centres** not available

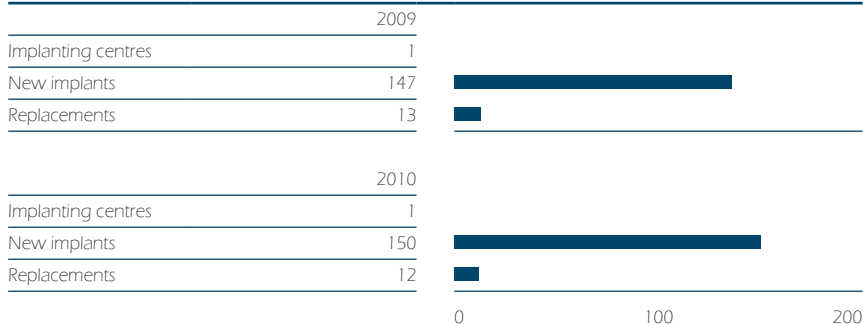


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

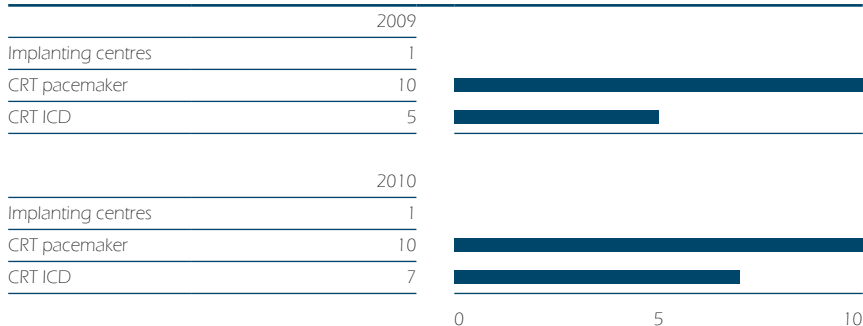


Specialty performing implants

Cardiologists	30%
Surgeons	70%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

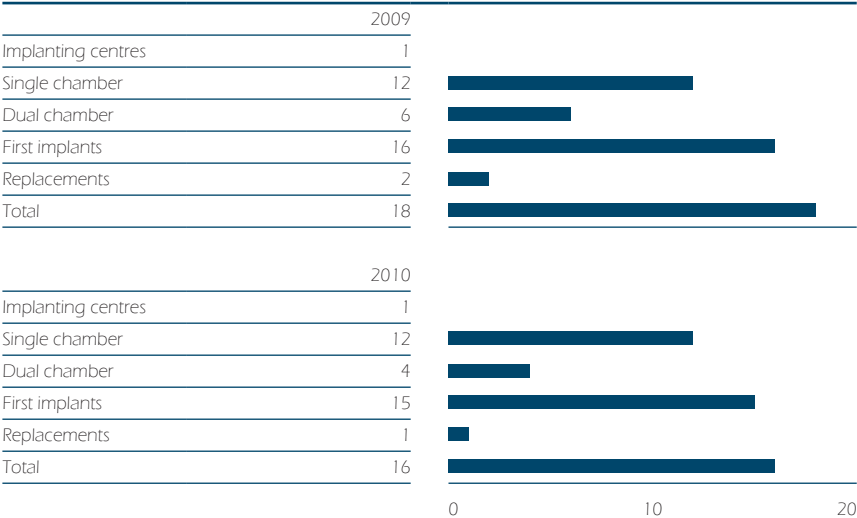


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

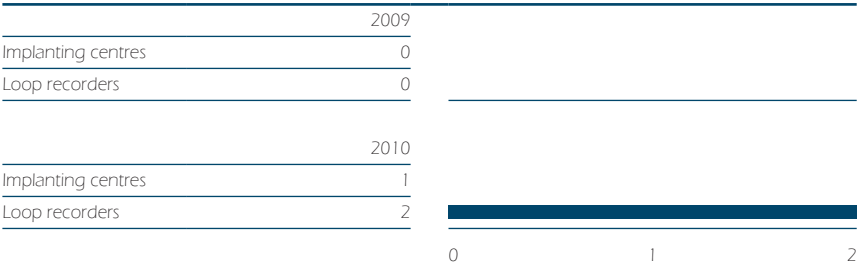


Specialty performing implants

Cardiologists	50%
Surgeons	50%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	0%
Surgeons	100%

9. Device specific

Availability of remote monitoring of devices

No

High price for devices and system control

National registry for

ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry

No

The EHRA invitation will be a great inspiration to start developing a quality insurance system.

Availability of a national institution coordinating and guiding device recalls

Yes

National Agency for controlling drugs and devices

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	0	0
Number of ablations performed	0	0
Number of ablations per centre	0	0
Number of AF ablations	0	0

Availability of a national registry for interventional electrophysiology

No

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	☐	☐	☒	☐	☐
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☐	☐	☒	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☐	☐	☐	☒	☐

1 = no obstacle

5 = great obstacle

Sources: National Society of Cardiology of Montenegro – Chief: Ljilja Music, Clinical Center Montenegro



MOROCCO

Pending data submission.

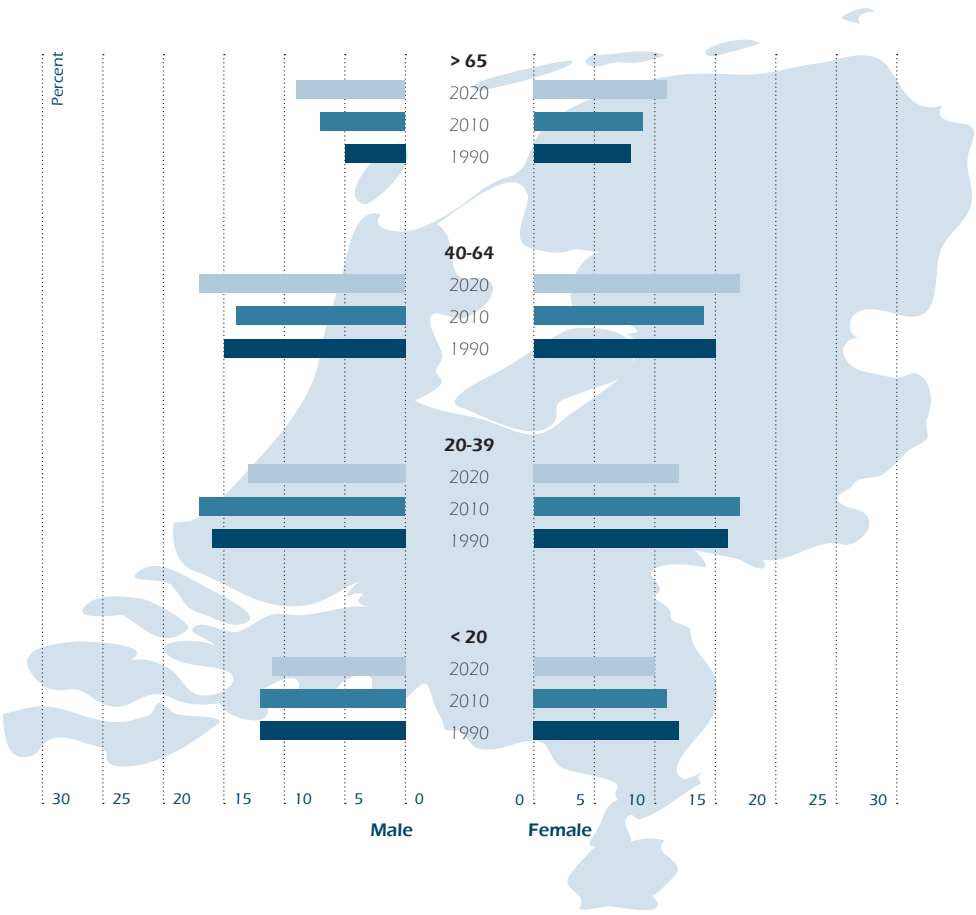


NETHERLANDS



1. Statistics

Age pyramid for Netherlands





Healthcare data

Hospitals (per 100.000 population)	1,11	2008
Beds (per 100.000 population)	425,29	2008
Density of physicians (per 1.000 population)	3,93	2007
Density of nurses (per 1.000 population)	15,05	2007

Demographic information

Population	16.783.092	2010
Population annual growth rate (%)	0,4	2010
Life expectancy at birth	80,0	2010
Death rate (per 1.000 population)	8,16	2009
Live births (per 1.000 population)	11,24	2009

Economic information

Gross domestic product (U.S dollar-billions)	770,31*	2010
Gross domestic product per capita (U.S dollar-units)	46.418,33*	2010
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

2009	29%
2010	29%

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

	2009	2010
Insured citizens	90%	90%
Uninsured citizens	10%	10%

Distribution of insurance modality

	2009	2010
Public insurance company	90%	90%
Private insurance company	10%	10%
Private co-payment	0%	0%

Possibility of subscribing to private health insurance plans Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology*	☒
None	☐

* Netherlands Heart Rhythm Association

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Electrophysiologist

Specialty required for ICD or pacemaker implants Yes

ICD Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation Yes

NVVC Praktijkrichtlijnen voor ICD centra

Required period of training to perform implantations 2 years**Training centres availability**

Pacemaker	17
ICD implantation	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
2010	not available

Pacemaker units implanted and number of implanting centres

	2009
Implanting centres	100
New implants	not available
Replacements	not available

	2010
Implanting centres	100
New implants	not available
Replacements	not available

Specialty performing implants

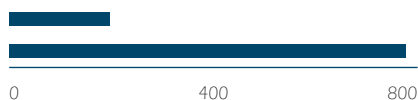
Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

	2009
Implanting centres	19
CRT pacemaker	not available
CRT ICD	not available

	2010
Implanting centres	19
CRT pacemaker	196
CRT ICD	776

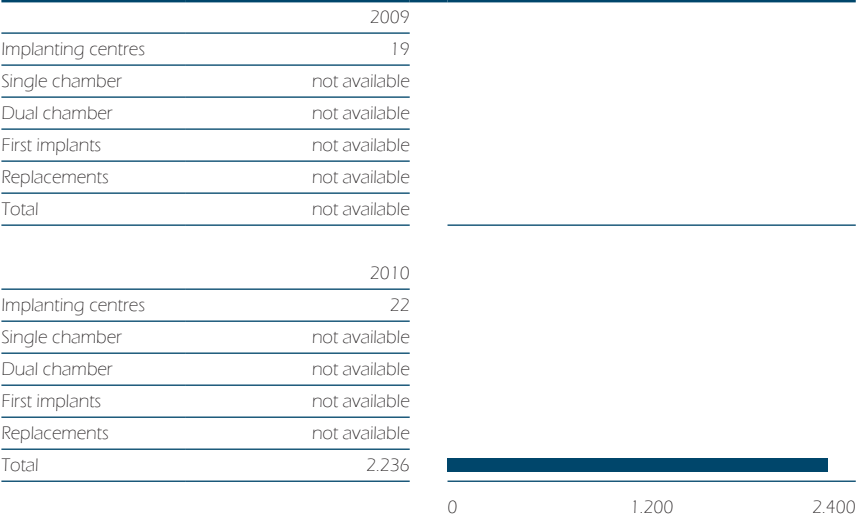


Specialty performing implants

Cardiologists	95%
Surgeons	5%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	95%
Surgeons	5%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2009
Implanting centres	not available
Loop recorders	not available

	2010
Implanting centres	not available
Loop recorders	not available

Specialty performing implants

Cardiologists	100%
Surgeons	0%

9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology	☐
None	☐

* Dutch ICD/Pacemaker Registration (DIPR)

Availability of a national quality insurance system or complication registry

Yes

DIPR

Availability of a national institution coordinating and guiding device recalls

Yes

Device Committee NHRA

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	14	15
Number of ablations performed	not available	not available
Number of ablations per centre	not available	not available
Number of AF ablations	not available	not available

Availability of a national registry for interventional electrophysiology

No

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☒
U.S.	☒
European	☐

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

Sources:

- Netherlands Heart Rhythm Association (NHRA) – Chairman: Associate Professor C.C. de Cock
- Dutch ICD and Pacemaker Registration (DIPR)

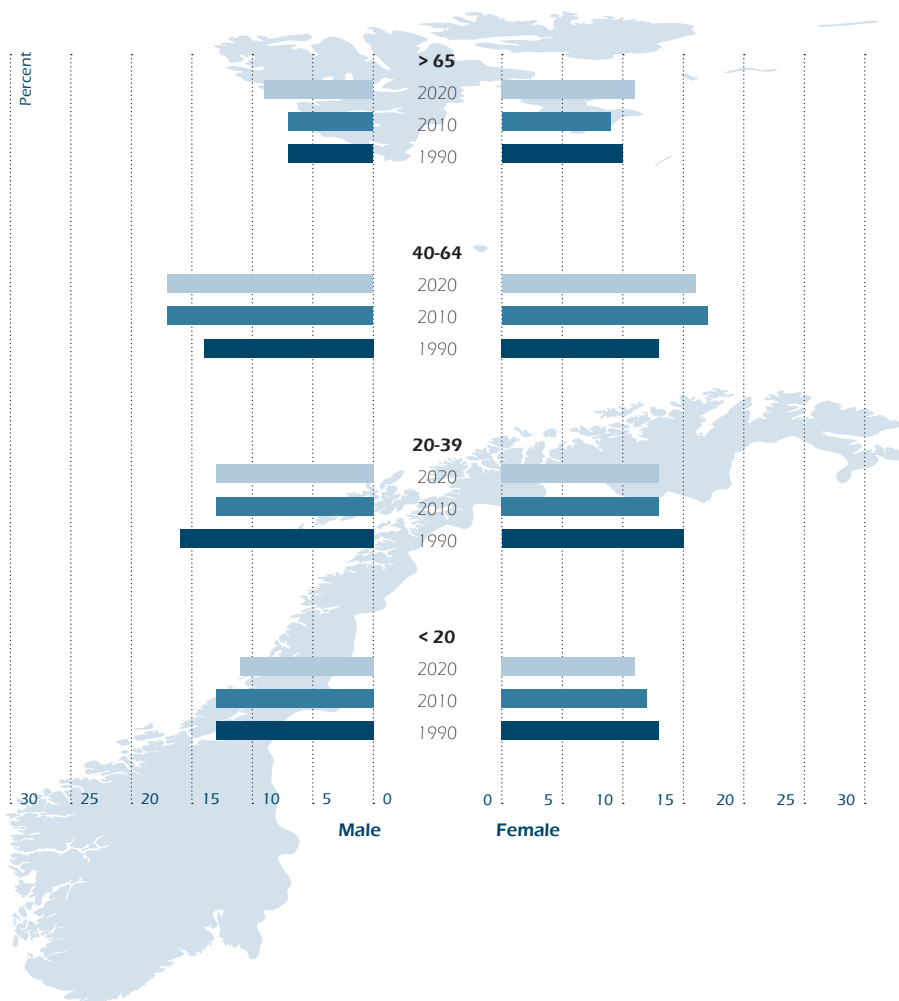
Note: Due to a change in data based national registry the number of all devices is substantially underestimated.

NORWAY



1. Statistics

Age pyramid for Norway





Healthcare data

Hospitals (per 100.000 population)	1,38	2008
Beds (per 100.000 population)	351,66	2008
Density of physicians (per 1.000 population)	3,8	2007
Density of nurses (per 1.000 population)	15,47	2007

Demographic information

Population	4.261.733	2010
Population annual growth rate (%)	0,3	2010
Life expectancy at birth	80,0	2010
Death rate (per 1.000 population)	8,56	2009
Live births (per 1.000 population)	12,8	2009

Economic information

Gross domestic product (U.S dollar-billions)	413,51*	2010
Gross domestic product per capita (U.S dollar-units)	84.543,44*	2010
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

2009	30%
2010	not available

3. Healthcare System

In Norway, the healthcare system is nationally organised. The hospitals have free admission.

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	100%	100%
Private insurance company	0%	0%
Private co-payment	3%	3%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation**Yes**

Cardiologist

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

Cardiologist

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

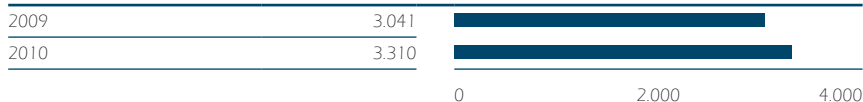
Pacemaker	5
ICD implantation	5
Electrophysiological studies and catheter ablation	4
CRT implantation	5
Atrial fibrillation ablation	4

Number of medical faculties**5****Percentage of academic facilities among practicing EP and implant centres****22%**

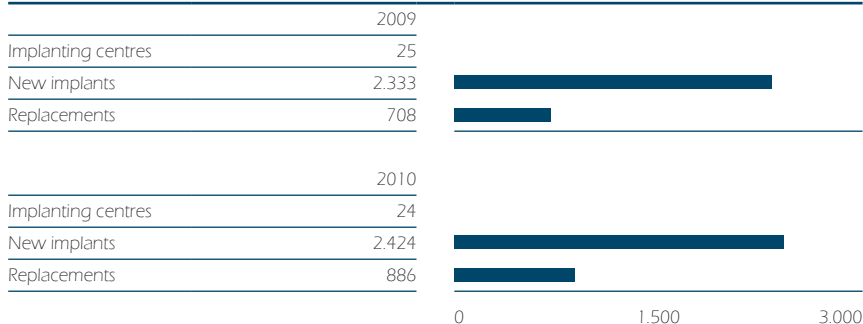


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

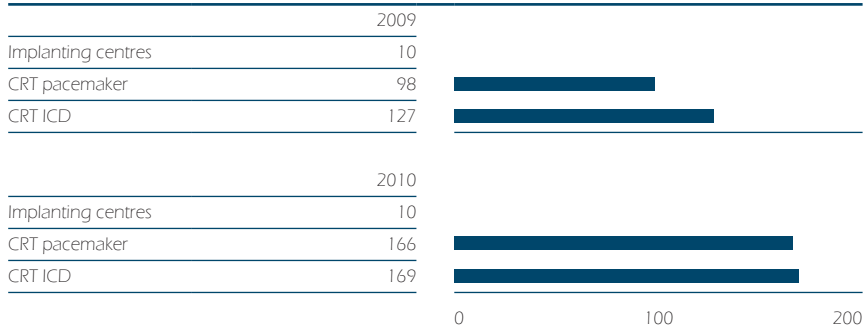


Specialty performing implants

Cardiologists	98,5%
Surgeons	1,5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

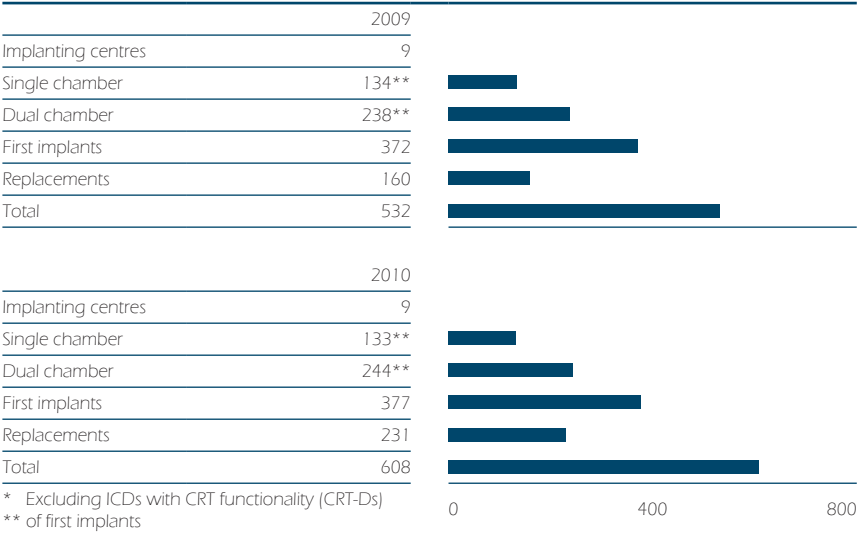


Specialty performing implants

Cardiologists	99%
Surgeons	1%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres*

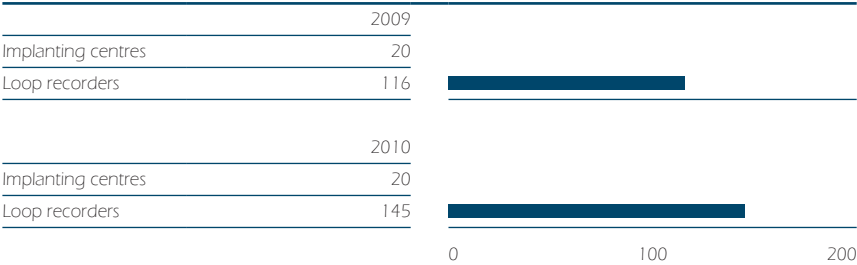


Specialty performing implants

Cardiologists	100%
Surgeons	0%

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

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology	☐
None	☐

* Norwegian Pacemaker Registry

Availability of a national quality insurance system or complication registry

Yes

Norwegian Pacemaker Registry. Incomplete complication registry.

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	5	5
Number of ablations performed	1.167	1.280
Number of ablations per centre	233	256
Number of AF ablations	337	417

Availability of a national registry for interventional electrophysiology

No

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☐
U.S.	☒
European	☒

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

Sources:

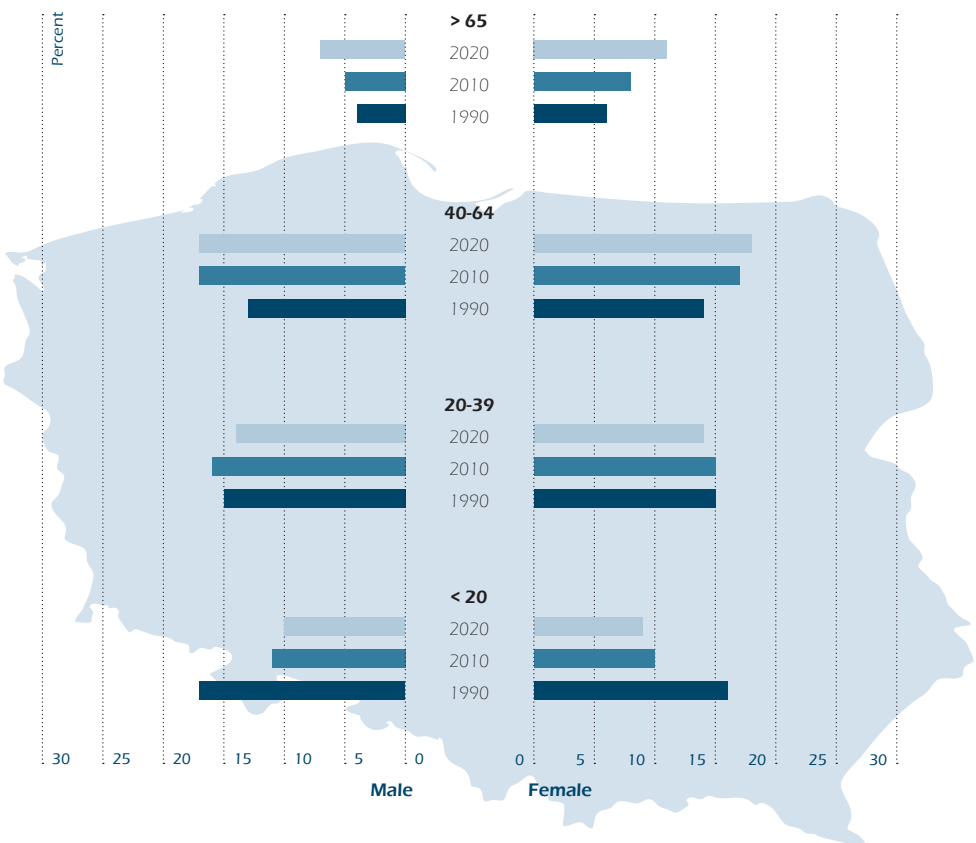
- Norwegian Working Group of arrhythmias – Erik Kongsgaard
- Norwegian pacemaker registry

POLAND



1. Statistics

Age pyramid for Poland





Healthcare data

Hospitals (per 100.000 population)	2,16	2008
Beds (per 100.000 population)	662,13	2008
Density of physicians (per 1.000 population)	2,03	2006
Density of nurses (per 1.000 population)	4,69	2006

Demographic information

Population	38.463.689	2010
Population annual growth rate (%)	-0,1	2010
Life expectancy at birth	76,0	2010
Death rate (per 1.000 population)	9,95	2008
Live births (per 1.000 population)	10,95	2009

Economic information

Gross domestic product (U.S dollar-billions)	438,88*	2010
Gross domestic product per capita (U.S dollar-units)	11.521,64*	2010
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

2009	not available
2010	not available

3. Healthcare System

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

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	98%	98%
Uninsured citizens	2%	2%

Distribution of insurance modality

	2009	2010
Public insurance company	98%*	98%
Private insurance company	1%*	1%
Private co-payment	5%*	6%

* Approx.

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒

There is the possibility to perform procedures in private centres, but it is very rare in common praxis. Private centres have contracts with the National Health Fund and all procedures are reimbursed.



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy*	☒
Invasive electrophysiology*	☒
None	☐

* Polish Cardiac Society and it's branch Heart Rhythm Division
Heart Rhythm Divisions's accreditation needs acceptance of the Board of Polish Cardiac Society.

National accreditation for physicians

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

* Licence for phisicans practice - imposed by the Polish Medical Association

National accreditation for centres

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

* Accreditation (three levels A, B and C) are imposed by the Heart Rhythm Divisions's but, every decision needs acceptance of the Board of Polish Cardiac Society.

National Society supporting EHRA accreditation system

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

* We are planning to accept EHRA's accreditation as equivalent to the national (planned) accreditation. Our national certification will consist in an adaptation of the EHRA certification system with stronger requirements of practical experience.

Specialty required for catheter ablation **No****Specialty required for ICD or pacemaker implants** **No**

Today there no specialty required to perform Catheter ablation, but in the future cardiology will be mandatory.

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

National competency guidelines are planned.

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

Until now, the chief of department of the hospital would decide on the required period of training but, the Heart Rhythm Division of Polish Cardiac Society started with the elaboration of the necessary requirements.

Training centres availability

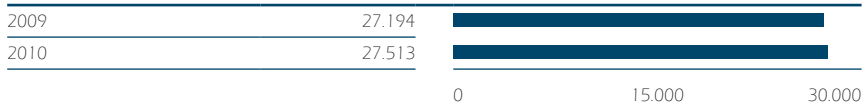
Pacemaker	65
ICD implantation	39
Electrophysiological studies and catheter ablation	11
CRT implantation	18
Atrial fibrillation ablation	6

Number of medical faculties **15****Percentage of academic facilities among practicing EP and implant centres** **30%**

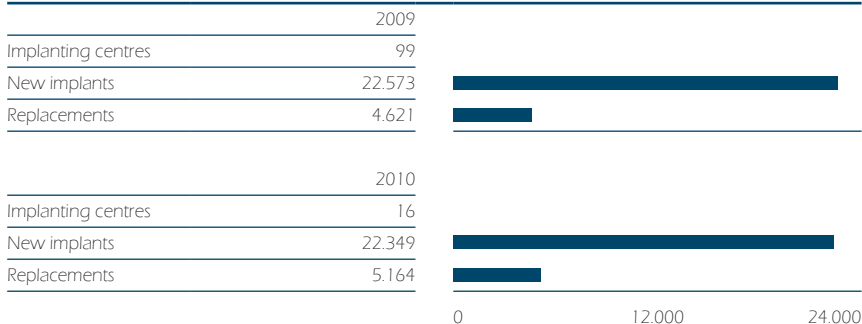


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

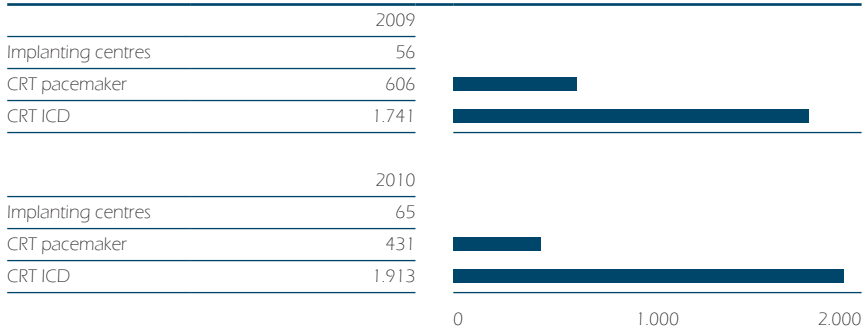


Specialty performing implants

Cardiologists	99%
Surgeons	<1%
Other	<1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



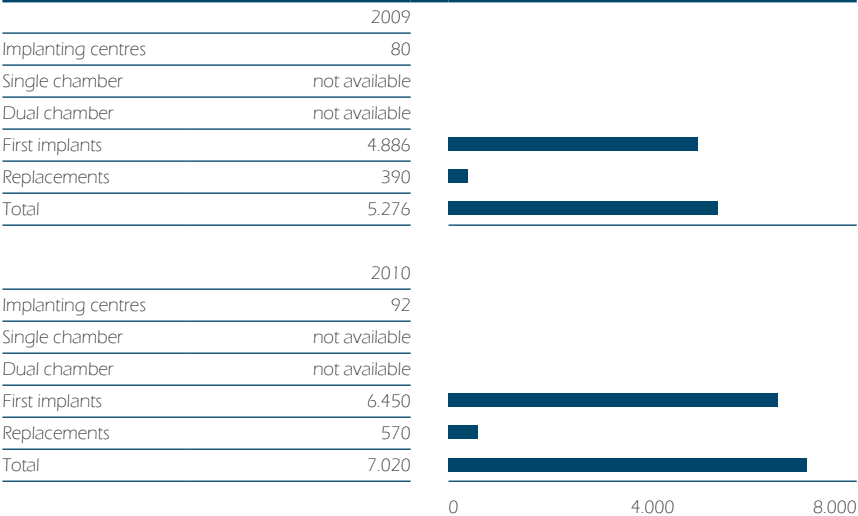
Specialty performing implants

Cardiologists	97%
Surgeons	<3%

Only for LV epicardial lead implantation during CABG or if standard transvenous LV lead implantation failed.

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	99%
Surgeons	<1%
Pediatrics, pediatrics cardiac surgeons	

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2009	
Implanting centres	5	
Loop recorders	not available	
	2010	
Implanting centres	3	
Loop recorders	not available	

Specialty performing implants

Cardiologists	100%
Surgeons	0%



9. Device specific

Availability of remote monitoring of devices

Yes

Remote monitoring is available but, electronic follow up is not reimbursed by the National Health Fund.

National registry for

ICD*	☒
Pacing**	☒
Electrophysiology**	☒
None	☐

* Polish ICD Register

** Elektroterapia (temporary closed)

*** Polish Multicenter AF Ablation Register (temporary closed)

Availability of a national quality insurance system or complication registry

No

Official complication registry is waiting for the Health Ministry support.

Availability of a national institution coordinating and guiding device recalls

Yes

Urząd Rejestracji Produktów Medycznych – Warsaw; National Consultant for Cardiology in Cooperation with Heart Rhythm Division of Polish Cardiac Society

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	42	47
Number of ablations performed	6.390	7.669
Number of ablations per centre	152	163
Number of AF ablations	734	1.176

Availability of a national registry for interventional electrophysiology

No

Only AF ablation national register

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	☐	☒	☐	☐	☐
Lack of referral	☐	☐	☐	☒	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☐	☐	☒	☐
Lack of operators	☐	☐	☐	☒	☐

1 = no obstacle

5 = great obstacle

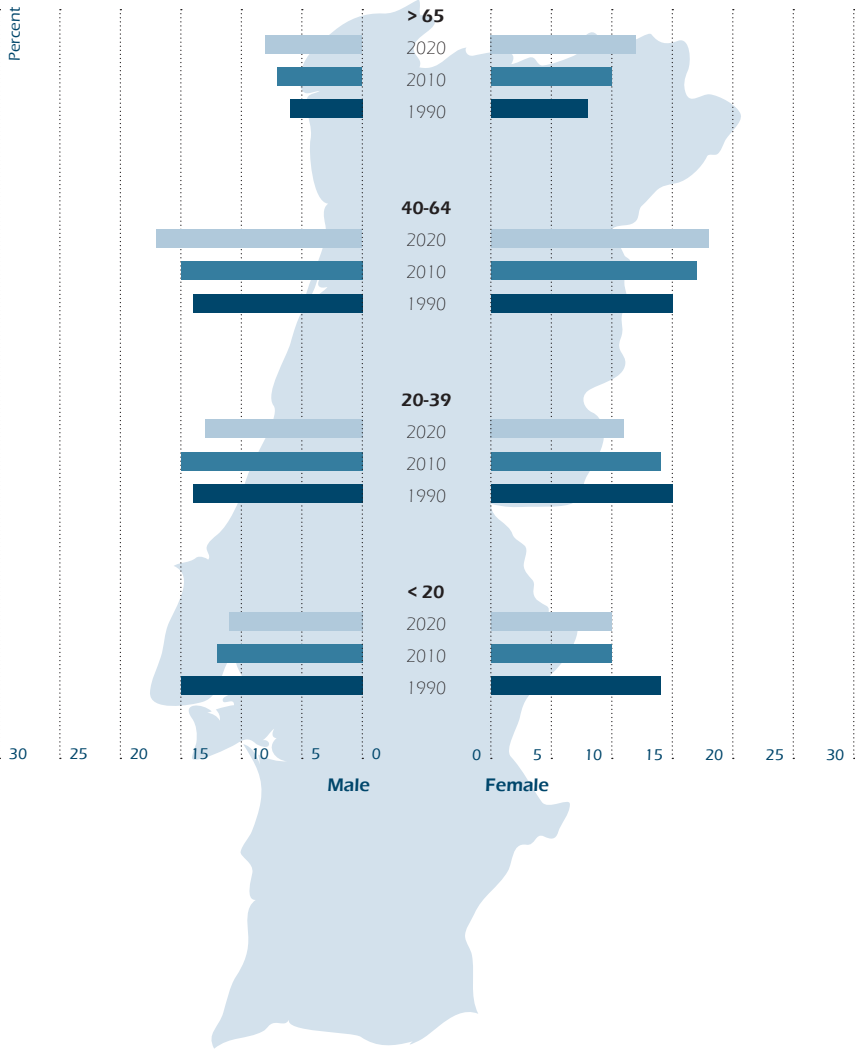
Sources: Heart Rhythm Division of Polish Cardiac Society - Head of the division: Andrzej Kutarski and Grzegorz Opolski

PORTUGAL



1. Statistics

Age pyramid for Portugal





Healthcare data

Hospitals (per 100.000 population)	1,78	2008
Beds (per 100.000 population)	336,67	2008
Density of physicians (per 1.000 population)	3,43	2005
Density of nurses (per 1.000 population)	4,81	2006

Demographic information

Population	10.735.765	2010
Population annual growth rate (%)	0,2	2010
Life expectancy at birth	78,0	2010
Death rate (per 1.000 population)	9,87	2009
Live births (per 1.000 population)	9,36	2009

Economic information

Gross domestic product (U.S dollar-billions)	223,70*	2010
Gross domestic product per capita (U.S dollar-units)	21.030,61*	2010
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

2009	not available
2010	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 paid privately or through the insurance. (Highlights on health, WHO, 2004)

Basic insurance availability

No

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	15,2%	15,2%
Uninsured citizens	not available	not available

Distribution of insurance modality

	2009	2010
Public insurance company	85%	85%
Private insurance company	15%	15%
Private co-payment	30%	30%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☒
Pacemakers	☒
Ablation	☒
Not necessary	☐

The amount differs between public and private. In public it depends on the annual salary.



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology*	☒
None	☐

* College of cardiology, subspecialty in Cardiac Electrophysiology

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation**Yes**

Cardiologist with the subspecialty in Cardiac Electrophysiology

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

Cardiologist with the subspecialty in Cardiac Electrophysiology

Official national competency guidelines for electrophysiological studies or catheter ablation**No****Required period of training to perform implantations****2 years****Training centres availability**

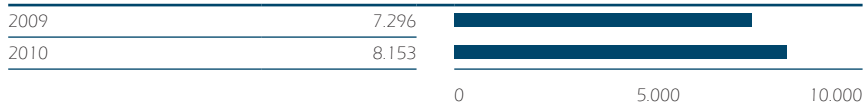
Pacemaker	12
ICD implantation	5
Electrophysiological studies and catheter ablation	5
CRT implantation	5
Atrial fibrillation ablation	3

Number of medical faculties**9****Percentage of academic facilities among practicing EP and implant centres****33,3%**

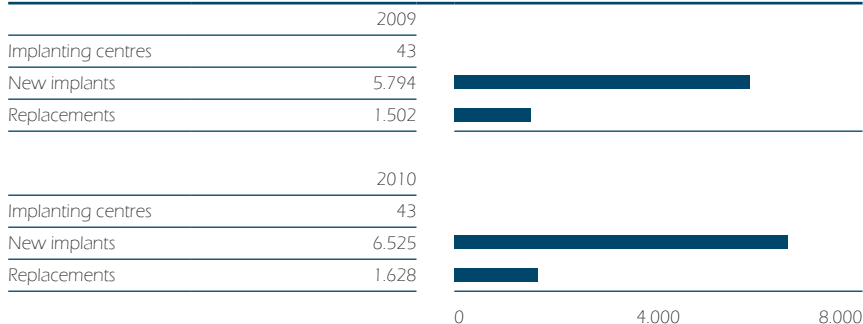


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

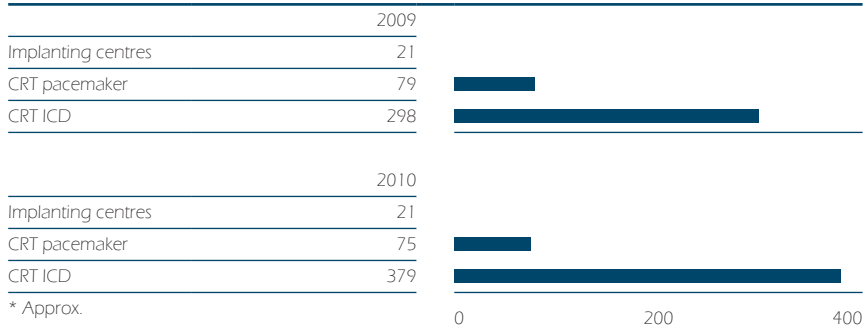


Specialty performing implants

Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

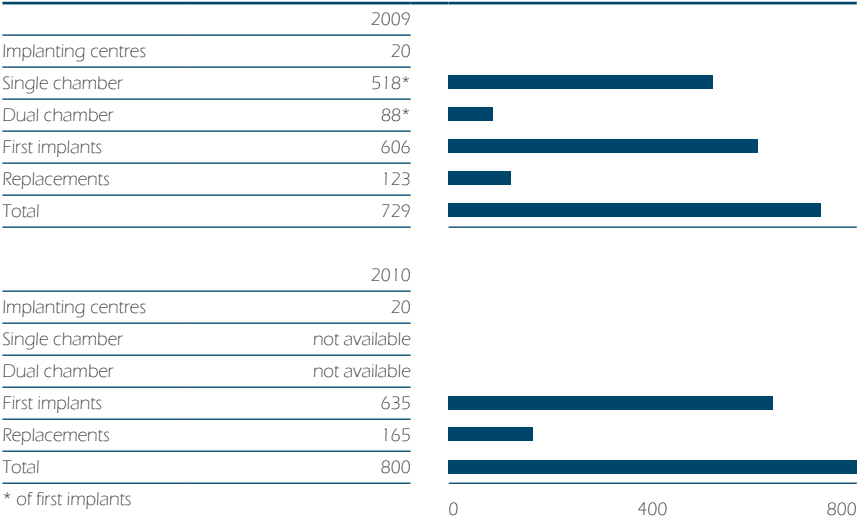


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	98%
Surgeons	2%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2009
Implanting centres	not available
Loop recorders	not available

	2010
Implanting centres	not available
Loop recorders	not available

Specialty performing implants

Cardiologists	100%
Surgeons	0%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology*	☒
None	☐

* APAPE National Registry

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

Yes

INFARMED

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	16	15
Number of ablations performed	1.668	1.811
Number of ablations per centre	104	121
Number of AF ablations	318	350

Availability of a national registry for interventional electrophysiology

Yes

APAPE Registry

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	☐	☐	☐	☒	☐
Lack of referral	☐	☐	☐	☐	☒
Lack of trained personnel	☒	☐	☐	☐	☐
Low awareness of guidelines	☐	☐	☐	☒	☐
Lack of operators	☒	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

Sources:

- Portuguese Association of Arrhythmology, Pacing and Electrophysiology (APAPE) –
João Primo, Miguel Ventura, Adília Rebelo
- APAPE registry
- Ministry of Health



REPUBLIC OF MOLDOVA

Pending data submission.

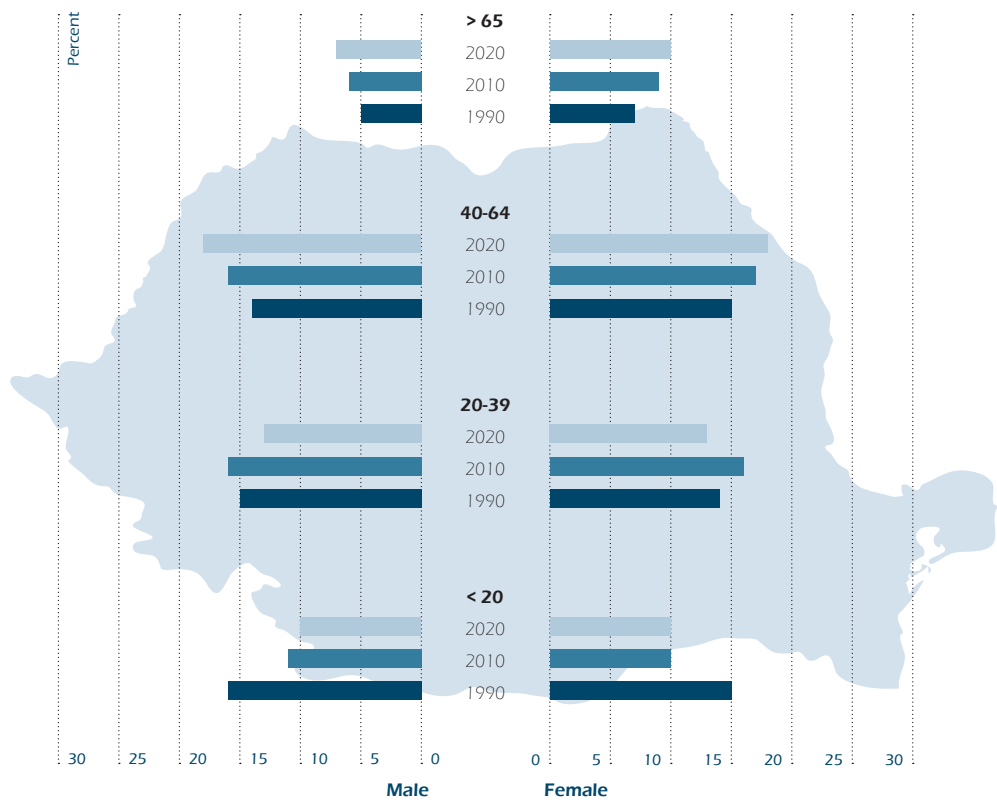


ROMANIA



1. Statistics

Age pyramid for Romania





Healthcare data

Hospitals (per 100.000 population)	2,21	2008
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	21.959.278	2010
Population annual growth rate (%)	-0,2	2010
Life expectancy at birth	74,0	2010
Death rate (per 1.000 population)	11,98	2009
Live births (per 1.000 population)	10,36	2009

Economic information

Gross domestic product (U.S dollar-billions)	158,39*	2010
Gross domestic product per capita (U.S dollar-units)	7.390,71*	2010
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

2009	not available
2010	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.

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	98%	98%
Uninsured citizens	2%	2%

Distribution of insurance modality

	2009	2010
Public insurance company	57%	57%
Private insurance company	14%	14%
Private co-payment	29%	29%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist

Specialty required for ICD or pacemaker implants Yes

Cardiologist

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

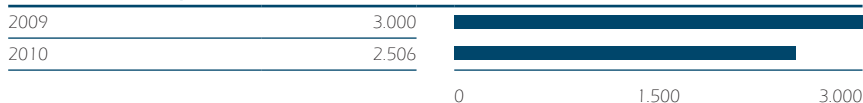
Pacemaker	12
ICD implantation	7
Electrophysiological studies and catheter ablation	7
CRT implantation	5
Atrial fibrillation ablation	2

Number of medical faculties 11**Percentage of academic facilities among practicing EP and implant centres** 90%



5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

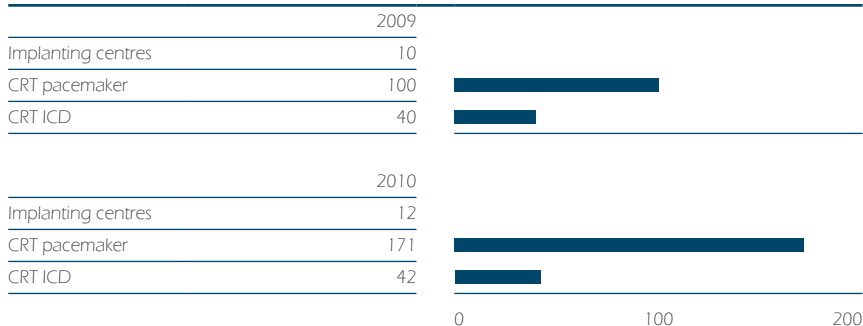
2009	
Implanting centres	18
New implants	not available
Replacements	not available
2010	
Implanting centres	20
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

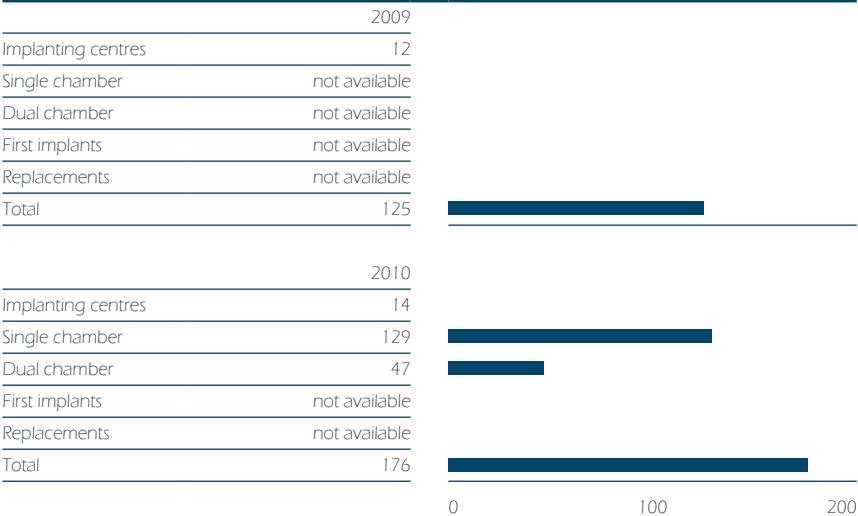


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

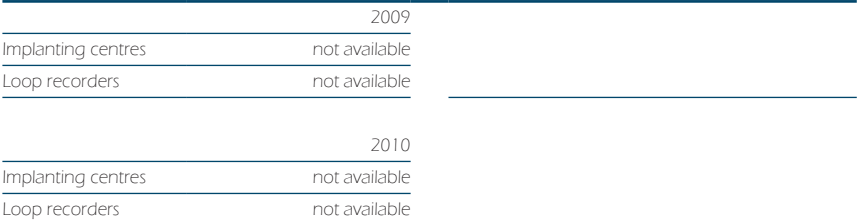


Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	100%
Surgeons	0%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology**	☒
None	☐

* The National Registry of Implantable Devices

** National Registry on Cardiac 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

	2009	2010*
Number of ablation centres	11	12
Number of ablations performed	904	1.000
Number of ablations per centre	82	83
Number of AF ablations	4	15

* Estimated

Availability of a national registry for interventional electrophysiology

Yes

National Registry on Cardiac Electrophysiology

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	☐	☐	☐	☐	☒
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☐	☐	☒	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☐	☐	☐	☒	☐

1 = no obstacle

5 = great obstacle

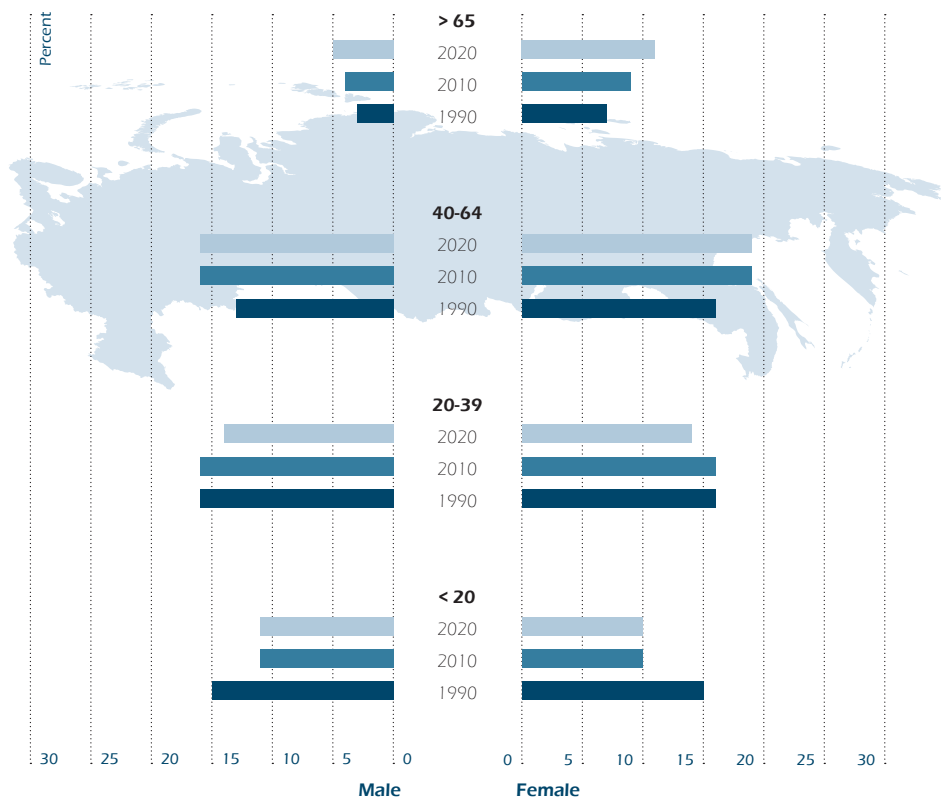
Sources: Working Group of Arrhythmia, National Society of Cardiology – President: Assoc. Prof. Dan Dobreanu

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	139.390.205	2010
Population annual growth rate (%)	-0,5	2010
Life expectancy at birth	66,0	2010
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)	1.476,91*	2010
Gross domestic product per capita (U.S dollar-units)	10.521,79*	2010
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

2009	56%
2010	not available

3. Healthcare System

The Healthcare system in Russia is formed by a National and Private healthcare systems.

Basic insurance availability

No

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	5%	not available
Uninsured citizens	95%	not available

Distribution of insurance modality

	2009	2010
Public insurance company	94%	94%
Private insurance company	5%	5%
Private co-payment	1%	1%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☒
Ablation	☐
Not necessary	☐



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☒
Invasive electrophysiology	☐
None	☐

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist, surgeon

Specialty required for ICD or pacemaker implants No**Official national competency guidelines for electrophysiological studies or catheter ablation** Yes

Russian Society of Arrhythmology (RSCA)

Required period of training to perform implantations 3 years**Training centres availability**

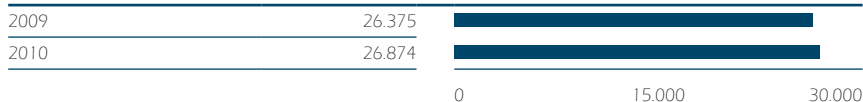
Pacemaker	7
ICD implantation	7
Electrophysiological studies and catheter ablation	7
CRT implantation	5
Atrial fibrillation ablation	5

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

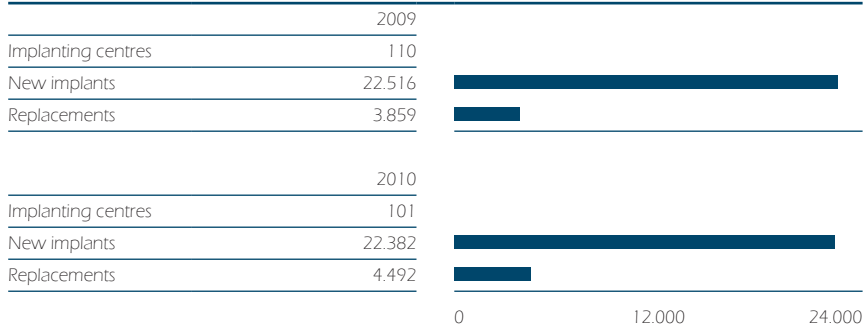


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

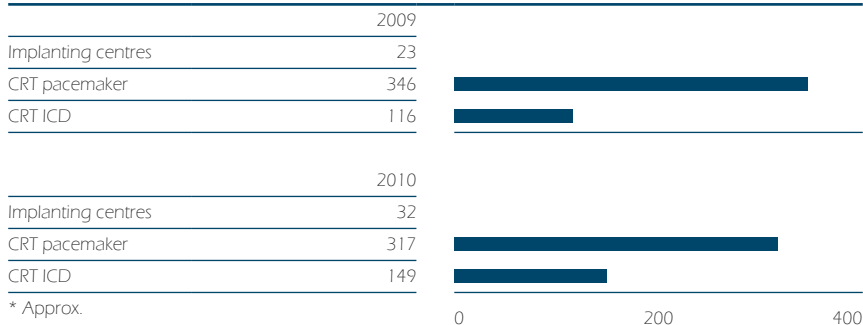


Specialty performing implants

Cardiologists	70%
Surgeons	30%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

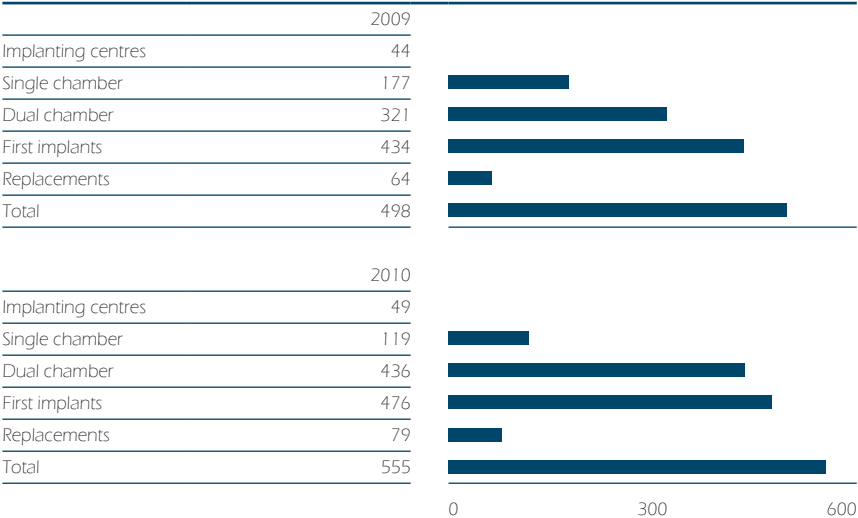


Specialty performing implants

Cardiologists	50%
Surgeons	50%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	70%
Surgeons	30%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2009	
Implanting centres	not available	
Loop recorders	not available	

	2010	
Implanting centres	not available	
Loop recorders	not available	

Specialty performing implants

Cardiologists	not available
Surgeons	not available



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology*	☒
None	☐

* Russian Centre of Arrhythmology

Availability of a national quality insurance system or complication registry

Yes

Russian Customer Control

Availability of a national institution coordinating and guiding device recalls

Yes

Bakoulev Scientific Centre for Cardio-Vascular Surgery

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	57	70
Number of ablations performed	13.384	14.048
Number of ablations per centre	194	200
Number of AF ablations	2.514	3.002

Availability of a national registry for interventional electrophysiology

Yes

BeHRA registry

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	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☒	☐	☐	☐
Lack of operators	☐	☐	☒	☐	☐

1 = no obstacle

5 = great obstacle

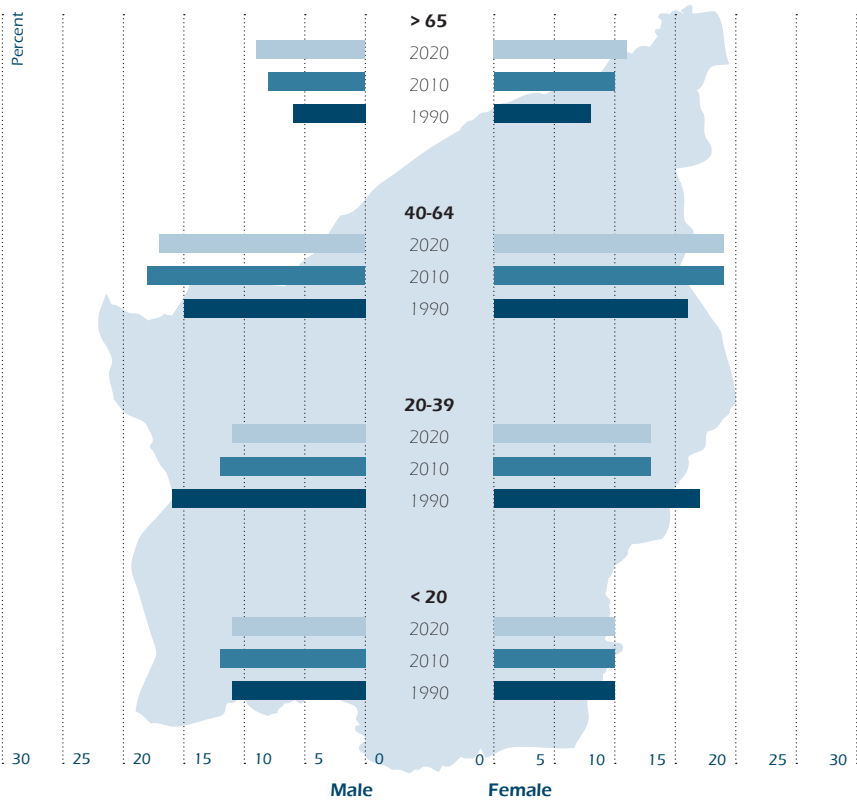
Sources: Russian Society of Arrhythmology (RSCA) – Chairman: Prof. Amiran Revishvili MD

SAN MARINO



1. Statistics

Age pyramid for San Marino





Healthcare data

Hospitals (per 100.000 population)	1
Beds (per 100.000 population)	not available
Density of physicians (per 1.000 population)	not available
Density of nurses (per 1.000 population)	not available

Demographic information

Population	31.477	2010
Population annual growth rate (%)	1,1	2010
Life expectancy at birth	83,0	2010
Death rate (per 1.000 population)	7,34	2005
Live births (per 1.000 population)	9,11	2007

Economic information

Gross domestic product (U.S dollar-billions)	1.137	2010
Gross domestic product per capita (U.S dollar-units)	36.200	2010
Total expenditure on health as % of GDP	7,1	2006
General government expenditure on health as % of total expenditure on health	83,9	2006
Private expenditure on health as % of total expenditure on health	16,1	2006

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2009	not available
2010	not available

3. Healthcare System

The National Health System in the Republic of San Marino: every citizen in the Republic of San Marino is provided with health care system which covers all expenses related to medical care. The system does not provide support for dental care for citizens from 18 to 65 years old.

Basic insurance availability

No

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	not available	not available
Uninsured citizens	not available	not available

Distribution of insurance modality

	2009	2010
Public insurance company	100%*	100%*
Private insurance company	not available	not available
Private co-payment	not available	not available

* National HS

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒

Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation**Yes**

Cardiologist

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

Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation**No****Required period of training to perform implantations****5 years****Training centres availability**

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

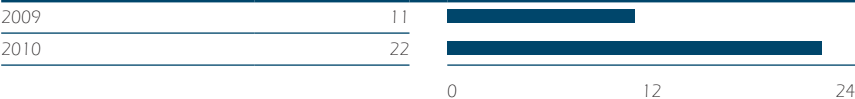
* There are not Universities centres neither training centres in San Marino.

Number of medical faculties**0****Percentage of academic facilities among practicing EP and implant centres****0%**

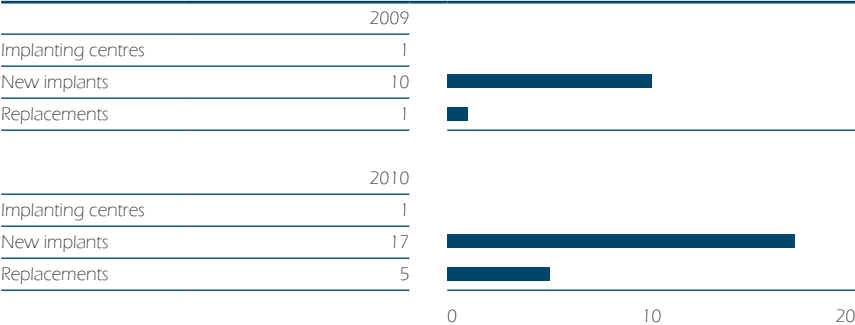


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

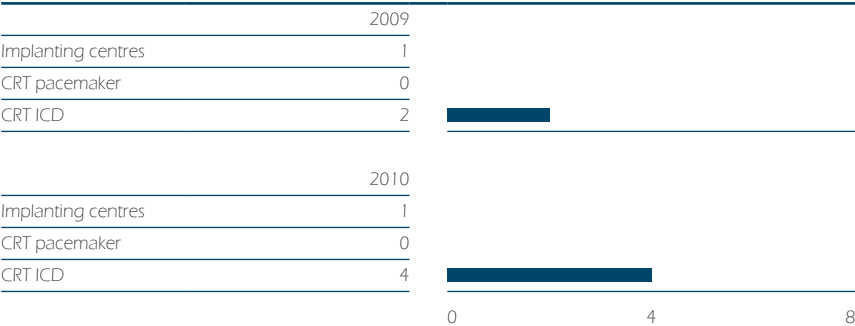


Specialty performing implants

Cardiologists	100%
Surgeons	0%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

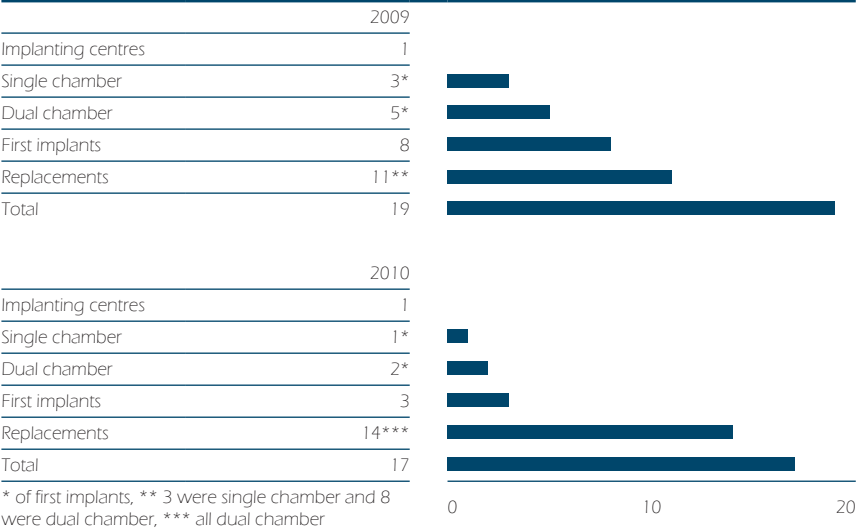


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

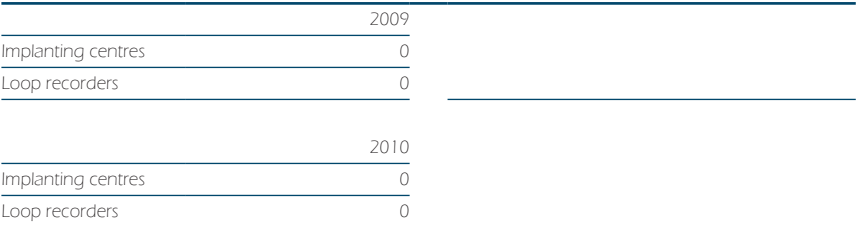


Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	0%
Surgeons	0%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* ICD Data Base

** PM Data Base

*** SEF Data Base

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

Yes

State Hospital UOC Cardiology

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	0	0
Number of ablations performed	0	0
Number of ablations per centre	0	0
Number of AF ablations	0	0

Availability of a national registry for interventional electrophysiology

No

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	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐
Lack of referral	☒	☐	☐	☐	☐
Lack of trained personnel	☒	☐	☐	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☒	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

Sources:

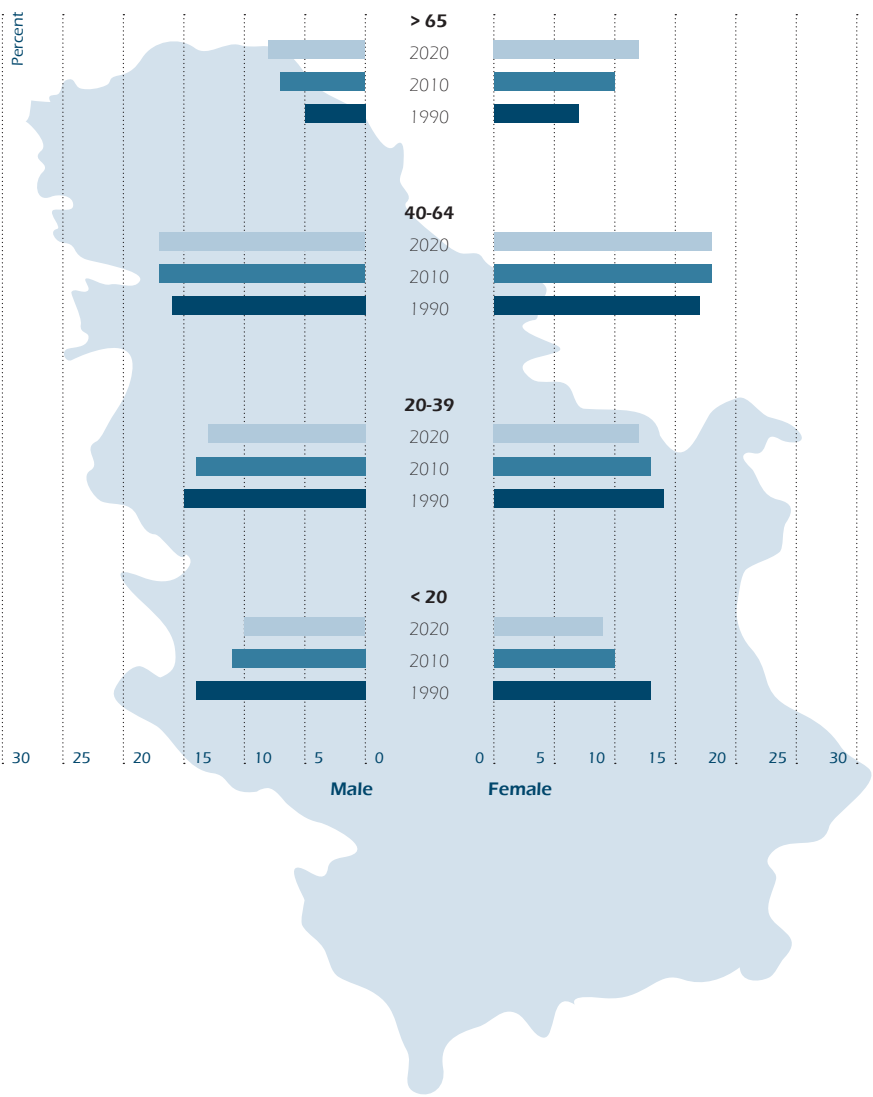
- San Marino Society of Cardiology - Liano Marinelli, MD
- National Register Hospital
- San Marino PM Data Base
- San Marino ICD Data Base

SERBIA



1. Statistics

Age pyramid for Serbia



Healthcare data

Hospitals (per 100.000 population)	1,05	2009
Beds (per 100.000 population)	401,75	2009
Density of physicians (per 1.000 population)	2,71	2007
Density of nurses (per 1.000 population)	5,57	2007

Demographic information

Population	7.344.847	2010
Population annual growth rate (%)	-0,5	2010
Life expectancy at birth	74,0	2010
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)	38,92*	2010
Gross domestic product per capita (U.S dollar-units)	5.262,19*	2010
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

2009	not available
2010	56%

3. Healthcare System

The National healthcare system in Serbia is provided through an established network 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

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	95%	100%
Uninsured citizens	5%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	100%	100%
Private insurance company	not available	2%
Private co-payment	not available	0%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary*	☒

* It is mandatory the payment of 5% of the implant cost however, to a maximum amount of 200 Euros.

Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None*	☒

* The Working Group on cardiac pacing provides the Statement for Pacing and Device therapy for participants who passed on the 6 months training in the referral center.

National accreditation for physicians

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

National accreditation for centres

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

For Device therapy, there is the National accreditation of referral pacemaker center in the Clinical center of Serbia.

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation**Yes**

Cardiologist

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

Cardiologist, surgeon required only for Paediatric pacemaker implants, but Cardiologist specialty required for Paediatric ICD and CRT implants.

Official national competency guidelines for electrophysiological studies or catheter ablation**No****Required period of training to perform implantations****6 months****Training centres availability**

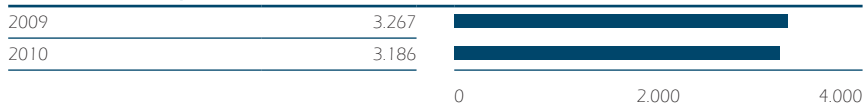
Pacemaker	4
ICD implantation	4
Electrophysiological studies and catheter ablation	2
CRT implantation	3
Atrial fibrillation ablation	2

Number of medical faculties**4****Percentage of academic facilities among practicing EP and implant centres****50%**



5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

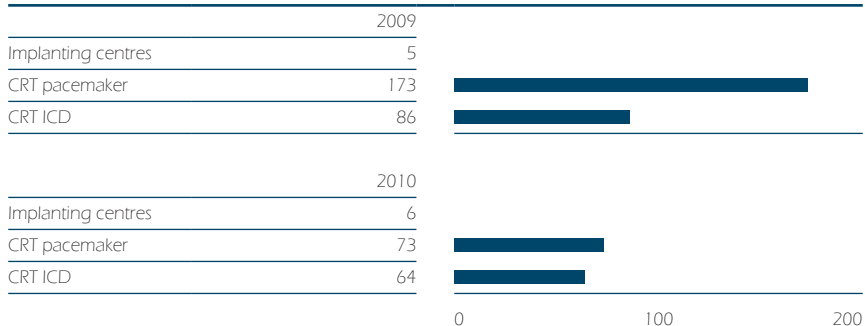
2009	
Implanting centres	15
New implants	not available
Replacements	not available
2010	
Implanting centres	18
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

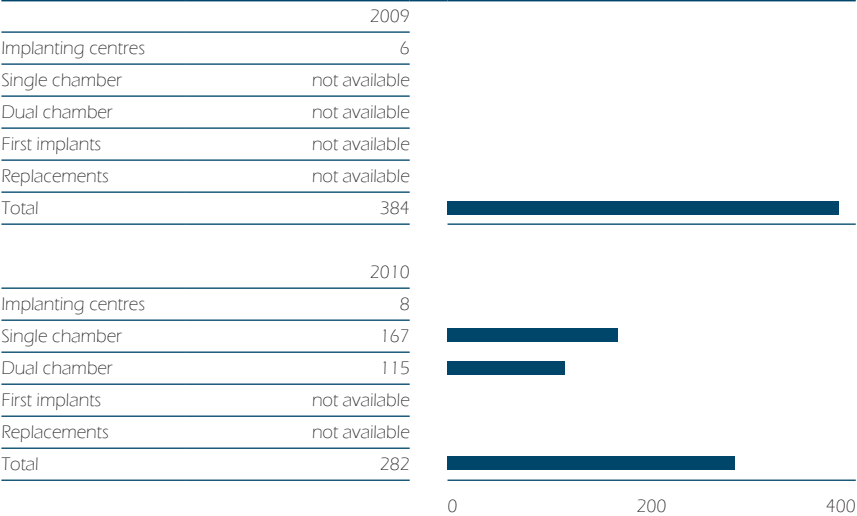


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

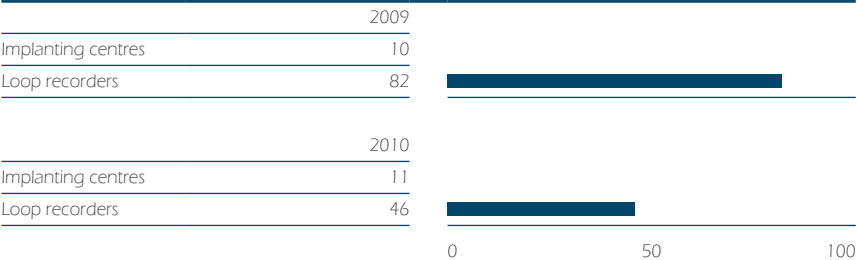


Specialty performing implants

Cardiologists	100%
Surgeons	0%

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

Yes

There are only 50 devices for pilot project

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology*	☒
None	☐

* Referral Pacemaker center, Clinical center of Serbia

Availability of a national quality insurance system or complication registry

Yes

Ministry of Health of Serbia

Availability of a national institution coordinating and guiding device recalls

Yes

Ministry of Health of Serbia

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	3	3
Number of ablations performed	840	820
Number of ablations per centre	280	270
Number of AF ablations	75	52

Availability of a national registry for interventional electrophysiology

No

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	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☒	☐	☐
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☒	☐	☐	☐
Low awareness of guidelines	☐	☒	☐	☐	☐
Lack of operators	☐	☒	☐	☐	☐
Other: Centralized state supply	☐	☐	☐	☐	☒

1 = no obstacle

5 = great obstacle

Sources: Working Group on Cardiac Pacing and Arrhythmia Serbian Cardiology Society –

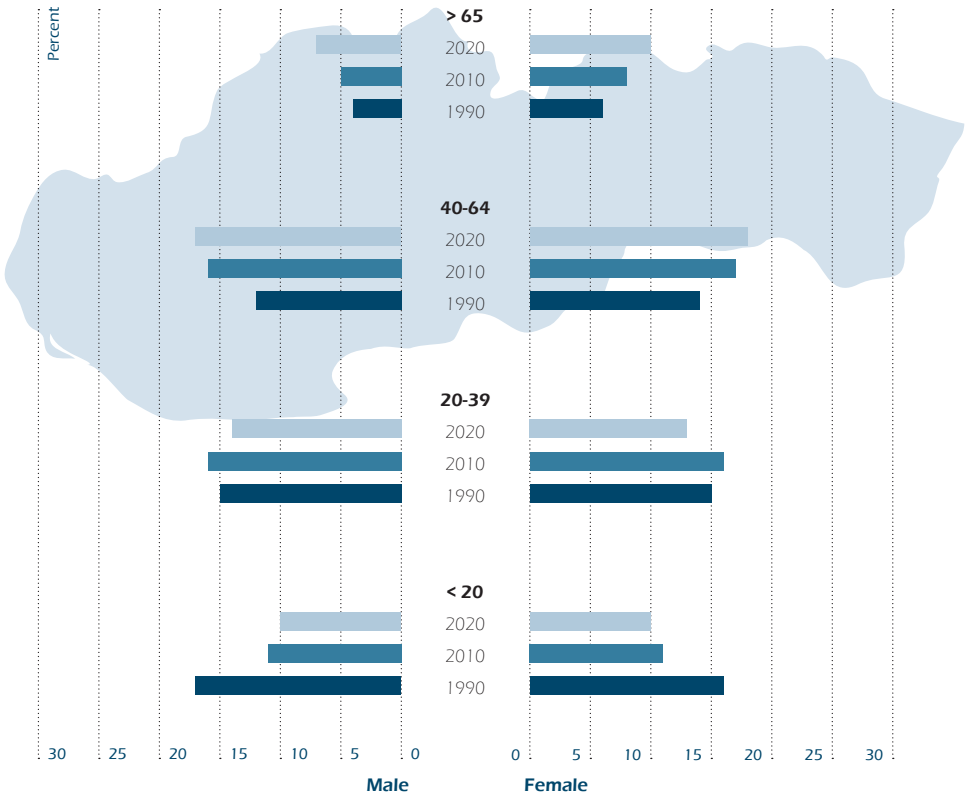
Chairman: Prof. Goran Milasinovic, National Institute for Statistics

SLOVAKIA



1. Statistics

Age pyramid for Slovakia





Healthcare data

Hospitals (per 100.000 population)	2,55	2008
Beds (per 100.000 population)	655,67	2008
Density of physicians (per 1.000 population)	3,13	2004
Density of nurses (per 1.000 population)	6,32	2005

Demographic information

Population	5.470.306	2010
Population annual growth rate (%)	0,1	2010
Life expectancy at birth	76,0	2010
Death rate (per 1.000 population)	9,86	2008
Live births (per 1.000 population)	10,1	2005

Economic information

Gross domestic product (U.S dollar-billions)	86,26*	2010
Gross domestic product per capita (U.S dollar-units)	15.906,38*	2010
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

2009	53,4%
2010	52,9%

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

	2009	2010
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	75%	67%
Private insurance company	25%	33%
Private co-payment	0%	0%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

* Restricted budget plus strict adherence to guidelines of the Slovak Heart Rhythm Association/Slovak Society of Cardiology from 2007: Hatala, R., Kaliská, G., Margitfalvi, P., Stančák, B.: ODPORÚČANIA PRE IMPLANTÁCIE ICD (IMPLANTOVATEĽNÝCH KARDIOVERTEROV – DEFIBRILÁTOROV) V PODMIENKACH KLINICKEJ PRAXE V SLOVENSKEJ REPUBLIKE. Kardiol.prax 2007, vol. 5, 3, S1:1-7

4. Education

National accreditation availability

Device therapy*	☒
Invasive electrophysiology**	☒
None	☐

* Certified medical activity: Implantation of impulse generators

** Certified medical activity: catheter diagnostics and therapy of cardiac arrhythmias

Corresponding to legislative norm published by the Ministry of Health of the Slovak Republic in 2010, applicable starting September 2011

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist

Specialty required for ICD or pacemaker implants Yes

Cardiologist, surgeon

Official national competency guidelines for electrophysiological studies or catheter ablation Yes

Ministry of Health of the Slovak Republic

Required period of training to perform implantations 2 years**Training centres availability**

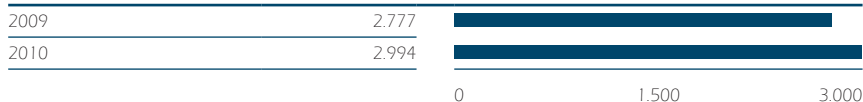
Pacemaker	3
ICD implantation	3
Electrophysiological studies and catheter ablation	3
CRT implantation	3
Atrial fibrillation ablation	2

Number of medical faculties 4**Percentage of academic facilities among practicing EP and implant centres** 85%

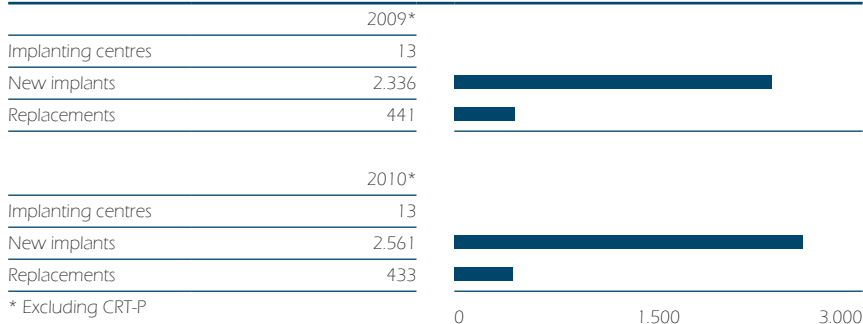


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

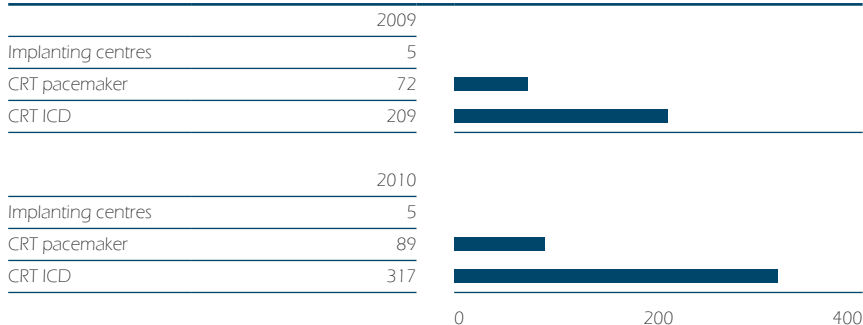


Specialty performing implants

Cardiologists	80%
Surgeons	20%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres



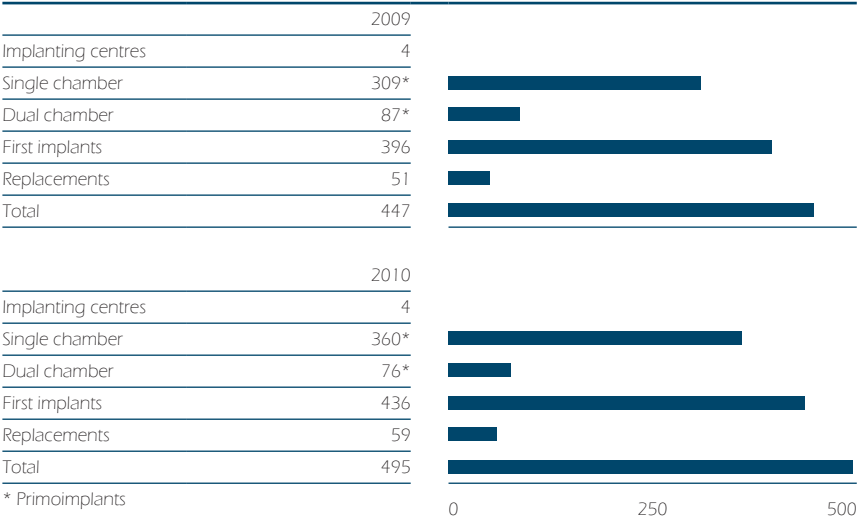
Specialty performing implants

Cardiologists	100%*
Surgeons	0%

*406 cardiologists

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	86%
Surgeons	14%

8. Loop recorders

Loop recorders implanted and number of implanting centres

2009	
Implanting centres	3
Loop recorders	not available
2010	
Implanting centres	3
Loop recorders	not available

Specialty performing implants

Cardiologists	100%
Surgeons	0%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology	☐
None	☐

* Slovimpulz

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

Yes

State Institute for Drug Control

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	4	4
Number of ablations performed	889	959
Number of ablations per centre	222	240
Number of AF ablations	129	130

Availability of a national registry for interventional electrophysiology

No

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	☐	☐	☐	☒	☐
Lack of referral	☐	☐	☐	☒	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☐	☐	☒	☐
Lack of operators	☐	☐	☐	☒	☐

1 = no obstacle

5 = great obstacle

Sources:

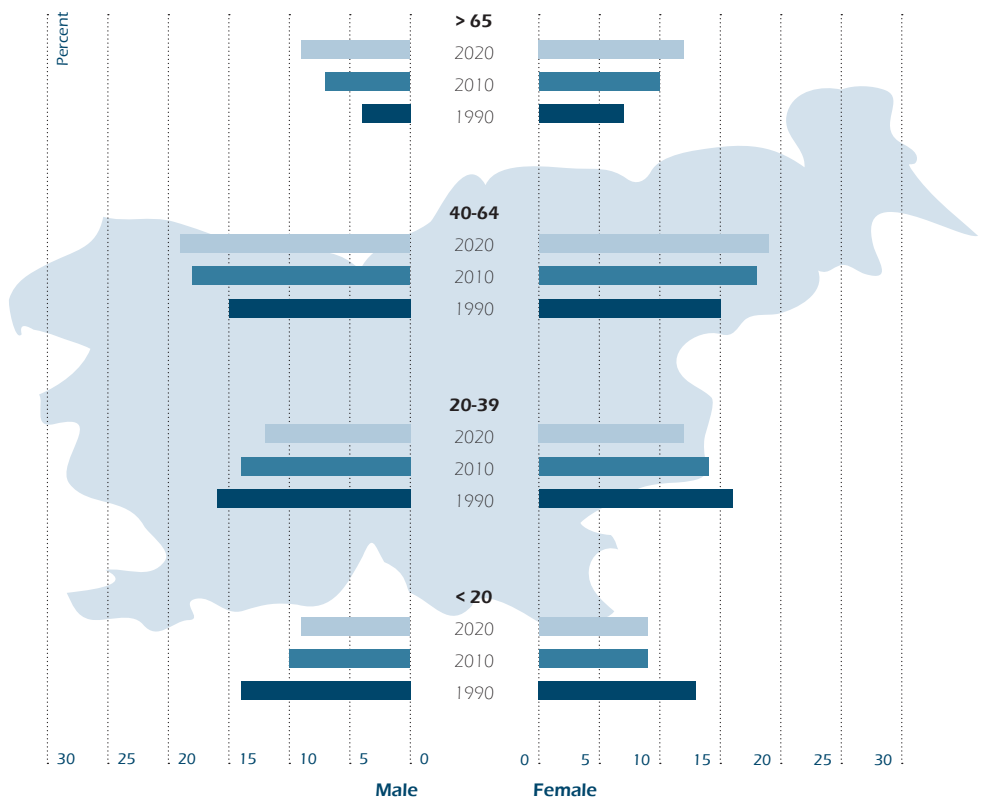
- Slovak Heart Rhythm Association (SHRA) – Chairman: Prof. Dr. Robert Hatala, PhD
- Slovimpulz Registry (Dr. G.Kaliská, Cardiovascular Institute – SUSCCH, Banská Bystrica)
- National Health Information Center of the Slovak Republic

SLOVENIA



1. Statistics

Age pyramid for Slovenia





Healthcare data

Hospitals (per 100.000 population)	1,42	2008
Beds (per 100.000 population)	470,04	2008
Density of physicians (per 1.000 population)	2,37	2006
Density of nurses (per 1.000 population)	7,65	2006

Demographic information

Population	2.003.136	2010
Population annual growth rate (%)	-0,1	2010
Life expectancy at birth	77,0	2010
Death rate (per 1.000 population)	8,98	2008
Live births (per 1.000 population)	9,72	2007

Economic information

Gross domestic product (U.S dollar-billions)	46,44*	2010
Gross domestic product per capita (U.S dollar-units)	23.008,59*	2010
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

2009	not available
2010	not available

3. Healthcare System

The healthcare system in Slovenia is based on the public system.

The National health insurance institute is an autonomous fund.

Basic insurance availability

No

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	99%	not available
Uninsured citizens	1%	not available

Distribution of insurance modality

	2009	2010
Public insurance company	85%	85%
Private insurance company	13%	13%
Private co-payment	2%	2%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation**Yes**

Internist

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

Surgeon or internist

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

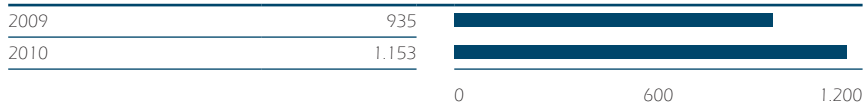
Pacemaker	2
ICD implantation	2
Electrophysiological studies and catheter ablation	2
CRT implantation	2
Atrial fibrillation ablation	2

Number of medical faculties**2****Percentage of academic facilities among practicing EP and implant centres****40%**

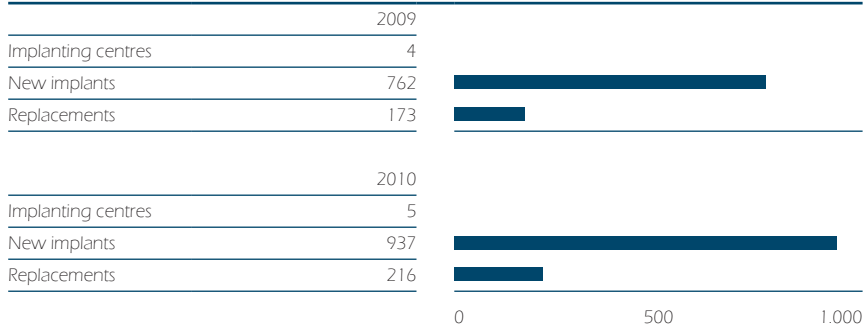


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

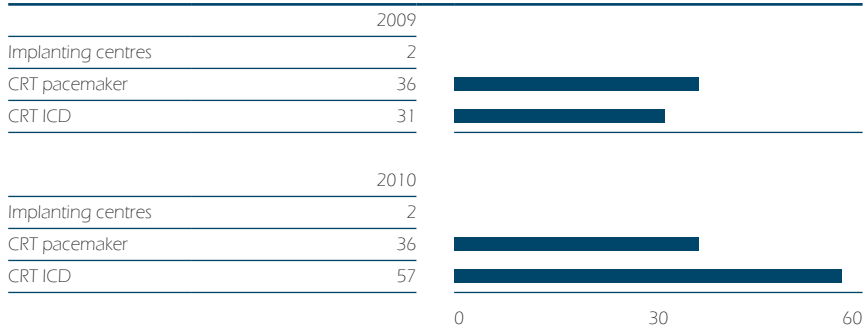


Specialty performing implants

Cardiologists	1%
Surgeons	98%
Internists in the intensive care unit	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

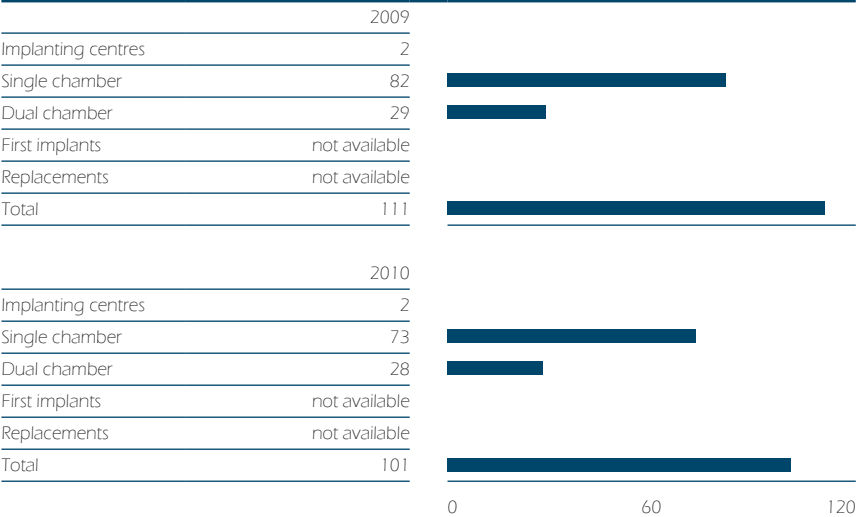


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

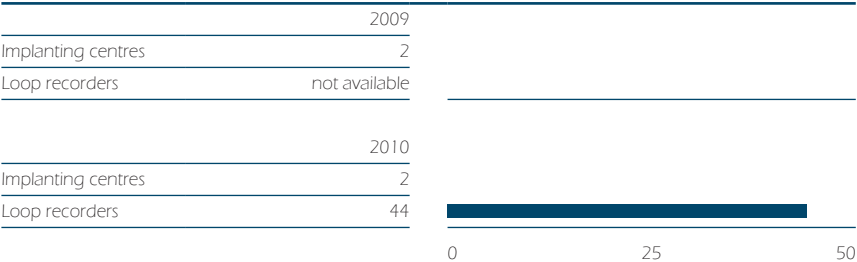


Specialty performing implants

Cardiologists	20%
Surgeons	80%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	10%
Surgeons	90%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology*	☒
None	☐

* Working Group on EP and Electrostimulation

Availability of a national quality insurance system or complication registry

Yes

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

Availability of a national institution coordinating and guiding device recalls

Yes

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

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	2	2
Number of ablations performed	246	262
Number of ablations per centre	123	131
Number of AF ablations	94	90

Availability of a national registry for interventional electrophysiology

Yes

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	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☐	☒	☐
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☐	☐	☒	☐
Lack of operators	☐	☐	☐	☒	☐

1 = no obstacle

5 = great obstacle

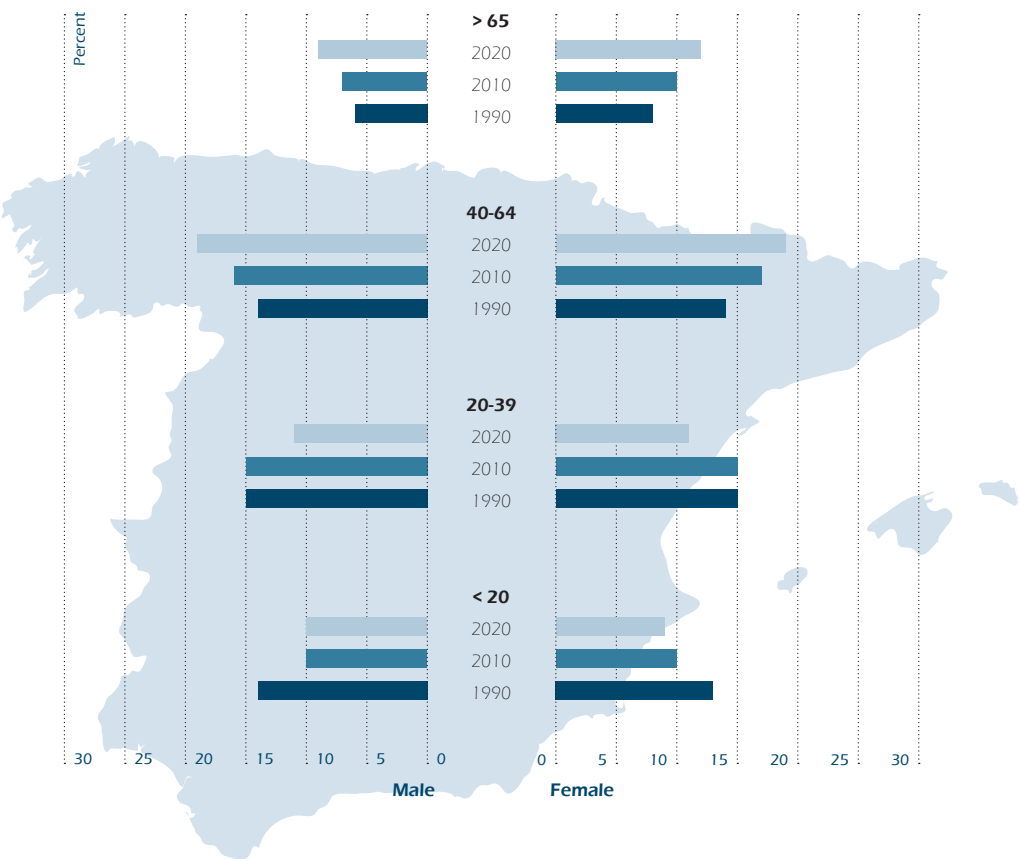
Sources: Working Group on EP and Electrostimulation, Slovenian Society of Cardiology –
Chairman: Prof. Peter Rakovec, MD, PhD

SPAIN



1. Statistics

Age pyramid for Spain





Healthcare data

Hospitals (per 100.000 population)	1,68	2008
Beds (per 100.000 population)	322,27	2008
Density of physicians (per 1.000 population)	3,76	2007
Density of nurses (per 1.000 population)	7,44	2006

Demographic information

Population	46.505.963	2010
Population annual growth rate (%)	0,5	2010
Life expectancy at birth	81,0	2010
Death rate (per 1.000 population)	8,47	2008
Live births (per 1.000 population)	11,4	2008

Economic information

Gross domestic product (U.S dollar-billions)	1,374,78*	2010
Gross domestic product per capita (U.S dollar-units)	29,875,09*	2010
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

2009	31%
2010	31,7%

3. Healthcare System

Spain's healthcare system is based on a national health system with autonomous community management of health related resources. Private insurance companies offer complementary healthcare coverage. The autonomous community decide how to organise and deliver health services and implement the national legislation. (Highlights on health. WHO 2004)

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	100%	100%
Private insurance company	20%	20%
Private co-payment	0%	0%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy*	☒
Invasive electrophysiology**	☒
None	☐

* Cardiac Stimulation Accreditation (Acreditación en estimulación cardiaca)

** Acreditación de formación específica y excelencia para la práctica de Electrofisiología Cardíaca Intervencionista

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist

Specialty required for ICD or pacemaker implants Yes

Cardiologist, cardiac surgeon, intensive care physician

Official national competency guidelines for electrophysiological studies or catheter ablation Yes

Spanish Society of Cardiology

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

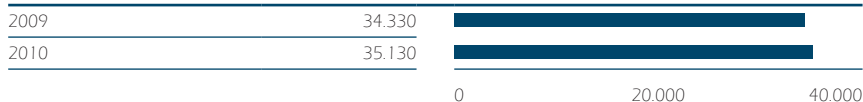
Pacemaker	43
ICD implantation	36
Electrophysiological studies and catheter ablation	37
CRT implantation	31
Atrial fibrillation ablation	14

Number of medical faculties 26**Percentage of academic facilities among practicing EP and implant centres** 40%



5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

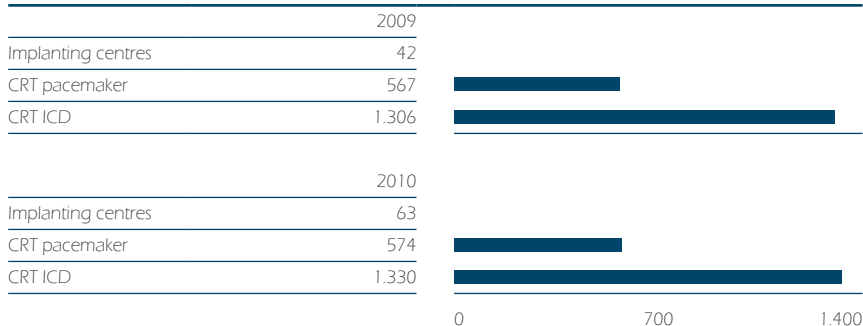
2009	
Implanting centres	120
New implants	not available
Replacements	not available
2010	
Implanting centres	123
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	60%
Surgeons	30%
Other	10%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

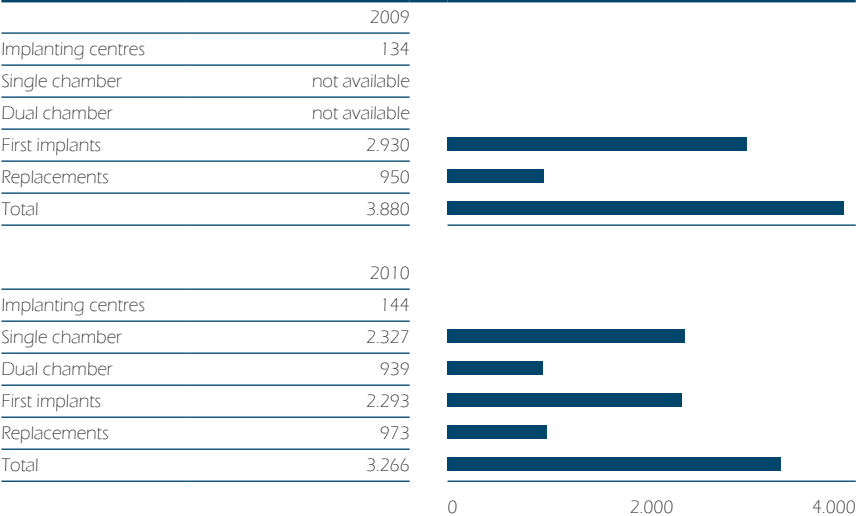


Specialty performing implants

Cardiologists	77,2%
Surgeons	16,4%
Other	5,5%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

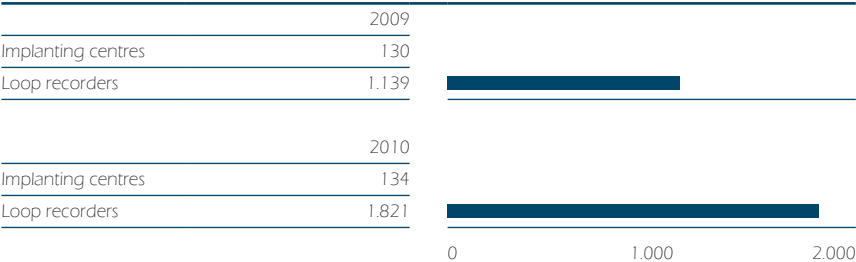


Specialty performing implants

Cardiologists	76,1%
Surgeons	17,7%
Other	5,1%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	95%
Surgeons	2%
Other	3%

9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing**	☒
Electrophysiology***	☒
None	☐

* Spanish ICD Registry (Registro Español de Desfibrilador Automático implantable)

** Spanish Pacemaker Registry (Registro Español de marcapasos)

*** Spanish Catheter Ablation Registry (Registro Español de ablación con catéter)

Availability of a national quality insurance system or complication registry

Yes

Spanish Catheter Ablation Registry (Registro Español de ablación con catéter)

Availability of a national institution coordinating and guiding device recalls

Yes

Section of Electrophysiology and Arrhythmias (Sección de Electrofisiología y Arritmias – SEA)

Management of recommendations documents

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	54	58
Number of ablations performed	7.798	7.327
Number of ablations per centre	144	149
Number of AF ablations	1.025	931

Availability of a national registry for interventional electrophysiology

Yes

Spanish Catheter Ablation Registry (Registro Español de ablación con catéter)

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	☐	☒	☐	☐	☐
Lack of reimbursement, limited financial resources	☐	☒	☐	☐	☐
Lack of referral	☐	☒	☐	☐	☐
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☒	☐	☐	☐
Lack of operators	☐	☒	☐	☐	☐

1 = no obstacle

5 = great obstacle

Sources: Section of Electrophysiology and Arrhythmias (SEA) of the Spanish Society of Cardiology –

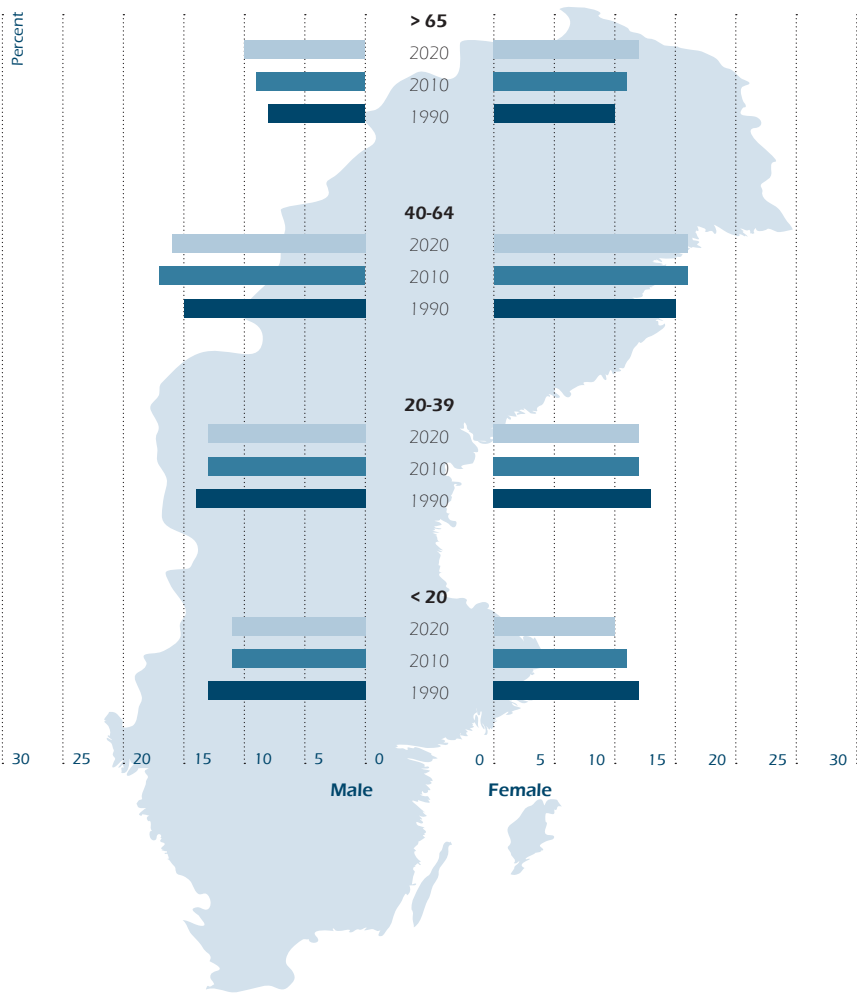
Chairman: Dr. Ignacio Fernandez Lozano

SWEDEN



1. Statistics

Age pyramid for Sweden





Healthcare data

Hospitals (per 100.000 population)	0,9	2003
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	9.074.055	2010
Population annual growth rate (%)	0,2	2010
Life expectancy at birth	81,0	2010
Death rate (per 1.000 population)	9,93	2008
Live births (per 1.000 population)	11,86	2008

Economic information

Gross domestic product (U.S dollar-billions)	444,59*	2010
Gross domestic product per capita (U.S dollar-units)	47.667,02*	2010
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

2009	38%
2010	not available

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

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	100%	100%
Private insurance company	3%	4,5%
Private co-payment	<1%	<1%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation **No**

Not formally, but all catheter ablation operators are cardiologists.

Specialty required for ICD or pacemaker implants **No****Official national competency guidelines for electrophysiological studies or catheter ablation** **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

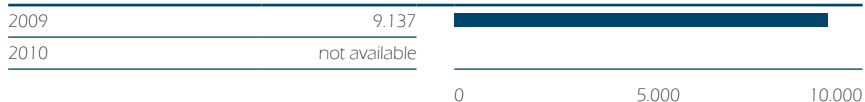
Number of medical faculties **7****Percentage of academic facilities among practicing EP and implant centres** **70%/16%***

* 70% for EP and 16% for implants

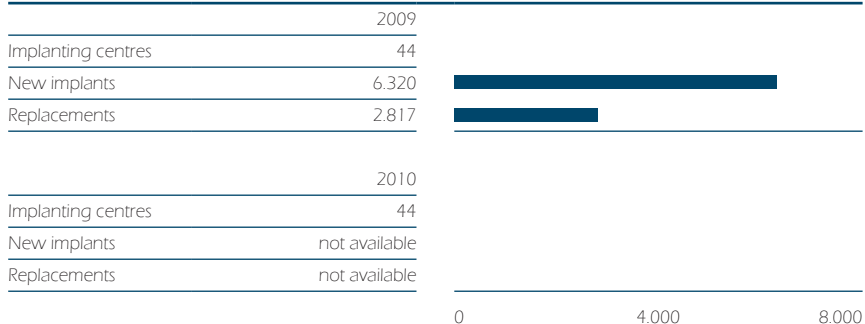


5. Pacemakers*

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres



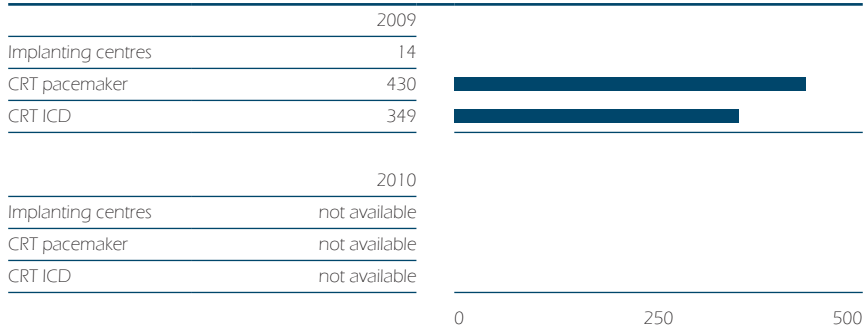
Specialty performing implants

Cardiologists	95%
Surgeons	4%
Anaesthesiologists	1%

* 2010 data from the Swedish ICD and Pacemaker Registry were not yet available for publication on April 2011.

6. Cardiac resynchronization therapy devices*

CRT units implanted and number of implanting centres



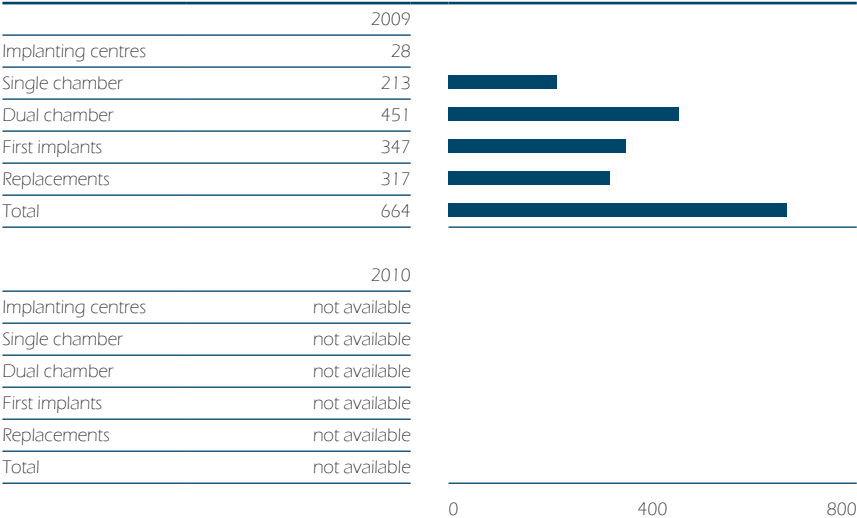
Specialty performing implants

Cardiologists	90%
Surgeons	10%

* 2010 data from the Swedish ICD and Pacemaker Registry were not yet available for publication on April 2011.

7. Implantable Cardiac Defibrillator*

ICD units implanted and number of implanting centres



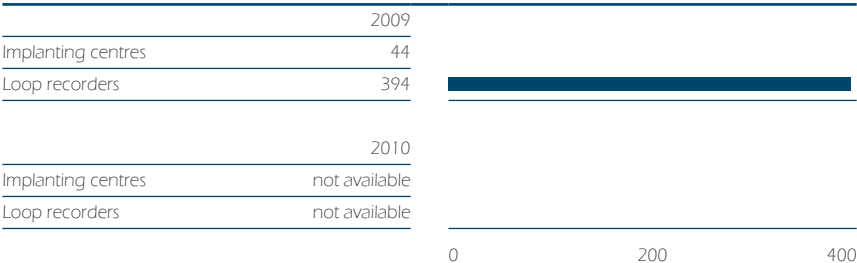
Specialty performing implants

Cardiologists	95%
Surgeons	4%
Anaesthesiologists	1%

* 2010 data from the Swedish ICD and Pacemaker Registry were not yet available for publication on April 2011.
Total number of ICDs excludes CRT-Ds.

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	95%
Surgeons	5%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology**	☒
None	☐

* Swedish ICD and Pacemaker register

** Swedish Catheter Ablation Registry (Svenska Kateterablationsregistret)

Availability of a national quality insurance system or complication registry

Yes

The Swedish ICD and Pacemaker registries track complication rates.

Availability of a national institution coordinating and guiding device recalls

Yes

Läkemedelsverket (equivalent to FDA)

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	9	10
Number of ablations performed	2.912	3.541
Number of ablations per centre	324	354
Number of AF ablations	903	1.142

Availability of a national registry for interventional electrophysiology

Yes

Swedish Catheter Ablation Registry (Svenska Kateterablationsregistret)

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☒
U.S.	☐
European	☒

Necessity of guideline translation to national language	No
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

Sources:

- Working Group on Arrhythmias, Swedish Society of Cardiology – Chairman: Johan Brandt, M.D., Ph.D.
- Swedish National Board of Health and Welfare
- Swedish Insurance Federation
- Swedish Catheter Ablation Registry
- Swedish ICD and Pacemaker Registry

SWITZERLAND



1. Statistics

Age pyramid for Switzerland





Healthcare data

Hospitals (per 100.000 population)	4,23	2008
Beds (per 100.000 population)	530,54	2008
Density of physicians (per 1.000 population)	3,85	2006
Density of nurses (per 1.000 population)	10,75	2002

Demographic information

Population	7.623.438	2010
Population annual growth rate (%)	0,2	2010
Life expectancy at birth	81,0	2010
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)	522,44*	2010
Gross domestic product per capita (U.S dollar-units)	67.074,31*	2010
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

2009	not available
2010	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.

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	100%	100%
Uninsured citizens	0%	0%

Distribution of insurance modality

	2009	2010
Public insurance company	not available	not available
Private insurance company	not available	not available
Private co-payment	not available	not available

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None	☒

National accreditation for physicians

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

National accreditation for centres

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

National Society supporting EHRA accreditation system

Society demands EHRA certification for practice	☐
Society advises EHRA certification and homologates to national certification	☐
Society advises EHRA certification, but it's not homologated to national certification	☐
No	☒
The Guidelines 2011 of the Swiss Working Group for Pacing and Electrophysiology accepted by the Swiss Society of Cardiology advise EHRA certification	

Specialty required for catheter ablation**Yes**

Cardiologist
Guidelines edited by the Working Group for Pacing and Electrophysiology of the Swiss Society of Cardiology

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

Cardiologist, surgeon
Guidelines edited by the Working Group for Pacing and Electrophysiology of the Swiss Society of Cardiology

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

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

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

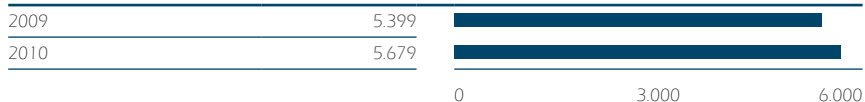
Pacemaker	5
ICD implantation	5
Electrophysiological studies and catheter ablation	5
CRT implantation	5
Atrial fibrillation ablation	5

Number of medical faculties**5****Percentage of academic facilities among practicing EP and implant centres****7-30%**

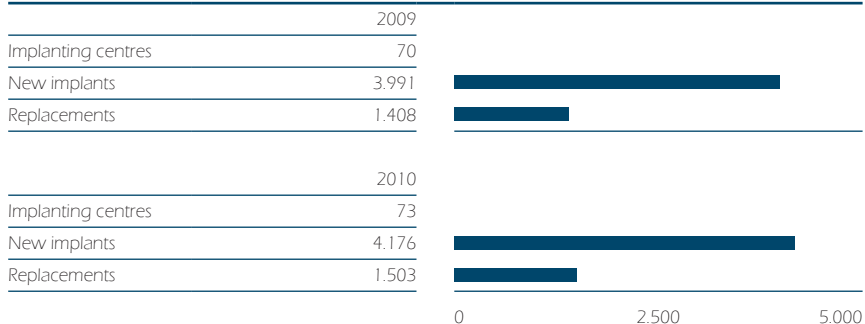


5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

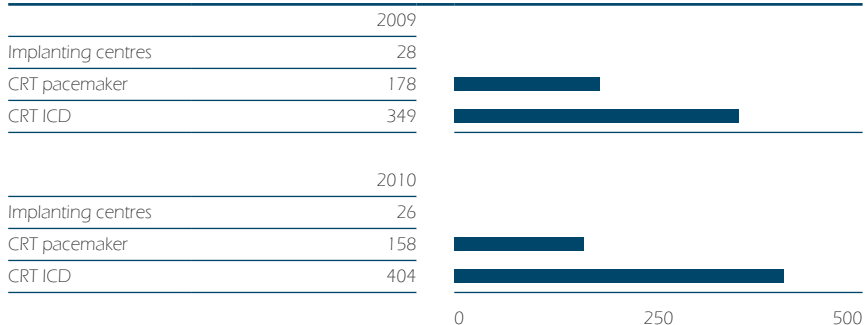


Specialty performing implants

Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

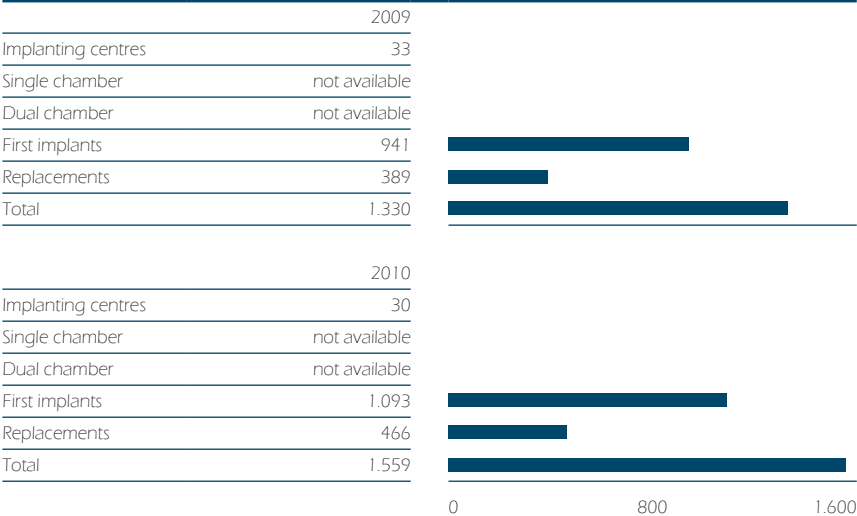


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

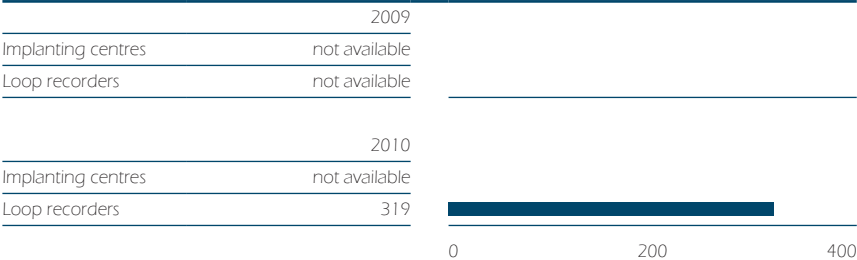


Specialty performing implants

Cardiologists	97%
Surgeons	3%

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

Yes

National registry for

ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

Yes

Swissmedic (National Institution)

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	19	20
Number of ablations performed	3.830	3.920
Number of ablations per centre	201	196
Number of AF ablations	1.178	1.263

Availability of a national registry for interventional electrophysiology

No

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	☒	☐	☐	☐	☐
Lack of reimbursement, limited financial resources	☒	☐	☐	☐	☐
Lack of referral	☒	☐	☐	☐	☐
Lack of trained personnel	☒	☐	☐	☐	☐
Low awareness of guidelines	☒	☐	☐	☐	☐
Lack of operators	☒	☐	☐	☐	☐

1 = no obstacle

5 = great obstacle

Sources: Swiss Working Group for Pacemaker and Electrophysiology – Chairman: J. Schläpfer, MD



SYRIA

Pending data submission.

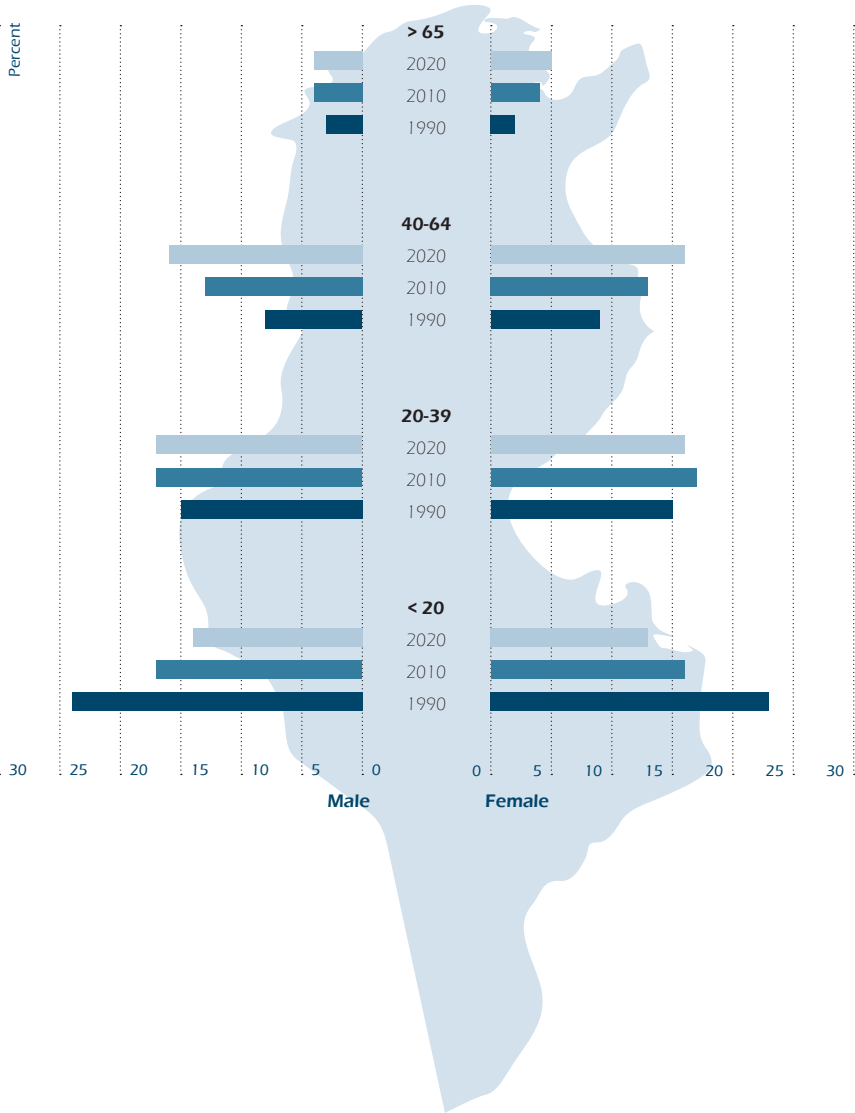


TUNISIA



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	10.525.041	2010
Population annual growth rate (%)	1,0	2010
Life expectancy at birth	75,0	2010
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)	43,86*	2010
Gross domestic product per capita (U.S dollar-units)	4.159,92*	2010
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

2009	30%
2010	not available

3. Healthcare System

Both basic preventive and curative services are available to almost the entire population, regardless of their socioeconomic status. Almost 90 percent of the population has access to health care through either a health insurance scheme or a medical assistance program. The coverage of the illness risk is ensured through many mechanisms and funding sources. These mechanisms include: a social protection scheme managed by a National Fund for Illness Insurance (Caisse Nationale d'Assurance Maladie), a free medical access and reduced tariffs for poor and mutual and private health insurance schemes. Preventive care and public health programs are freely provided for the whole population. Despite the wide coverage of the Tunisian population by social security and the implementation of mechanisms insuring the coverage of illness risk for the poor, the Tunisian health system is still mainly funded through direct households' contribution which is dramatically increasing and it is estimated at 43 % during the last five years.

Basic insurance availability

No

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	90%	not available
Uninsured citizens	10%	not available

Distribution of insurance modality

	2009	2010
Public insurance company	80%	not available
Private insurance company	15%	not available
Private co-payment	5%	not available

Possibility of subscribing to private health insurance plans

No

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy*	☒
Invasive electrophysiology*	☒
None	☐

* CEC de Rythmologie

National accreditation for physicians

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

National accreditation for centres

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

* ICDs are implanted only in Public Hospitals

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist

Specialty required for ICD or pacemaker implants Yes

Cardiologist and cardiovascular surgeon

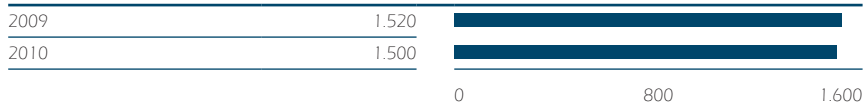
Official national competency guidelines for electrophysiological studies or catheter ablation No**Required period of training to perform implantations** 2 years**Training centres availability**

Pacemaker	19
ICD implantation	10
Electrophysiological studies and catheter ablation	10
CRT implantation	10
Atrial fibrillation ablation	2

Number of medical faculties 4**Percentage of academic facilities among practicing EP and implant centres** not available

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

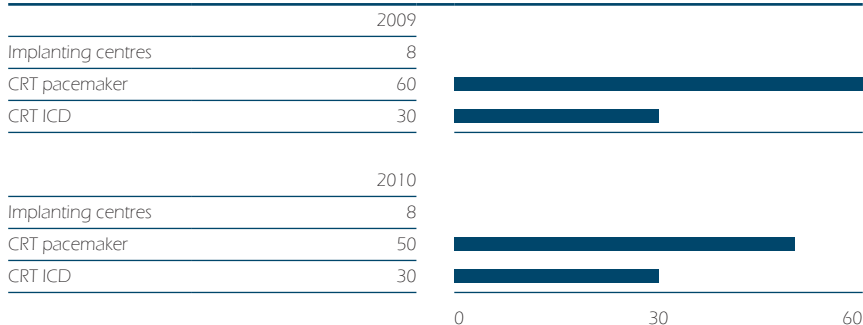
2009	
Implanting centres	10
New implants	not available
Replacements	not available
2010	
Implanting centres	19
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	95%
Surgeons	5%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

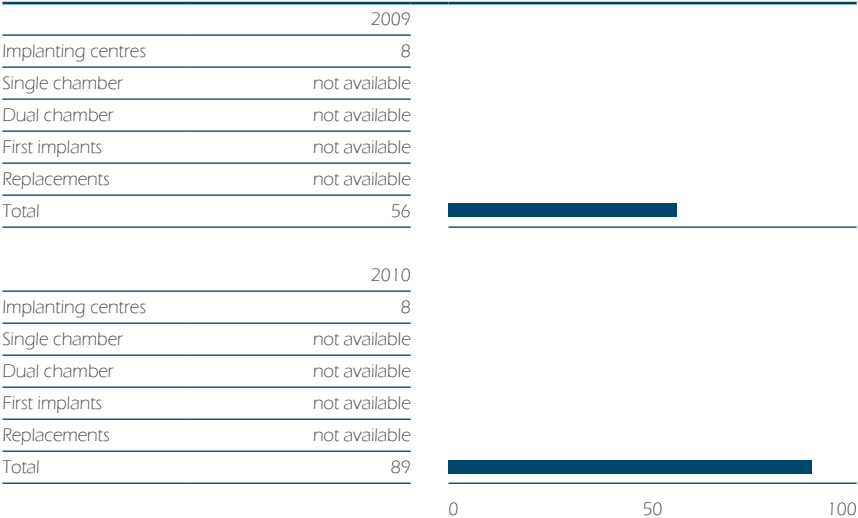


Specialty performing implants

Cardiologists	100%
Surgeons	0%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

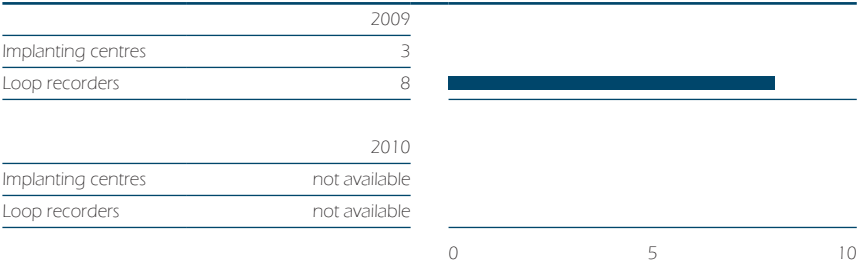


Specialty performing implants

Cardiologists	100%
Surgeons	0%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	not available
Surgeons	not available

9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

	2009*	2010*
Number of ablation centres	9	10
Number of ablations performed	510	500
Number of ablations per centre	60	50
Number of AF ablations	20	20

* Estimated

Availability of a national registry for interventional electrophysiology

No

11. Guidelines

Guidelines adhered to ICD implants and pacemaker implants

National	☐
U.S.	☐
European	☒

Necessity of guideline translation to national language	Yes
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Obstacles to guideline implementation

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

1 = no obstacle

5 = great obstacle

Sources: Tunisian Society of Cardiology and Cardiovascular Surgery – President: Dr. Habib Haouala

TURKEY

Pending data submission.

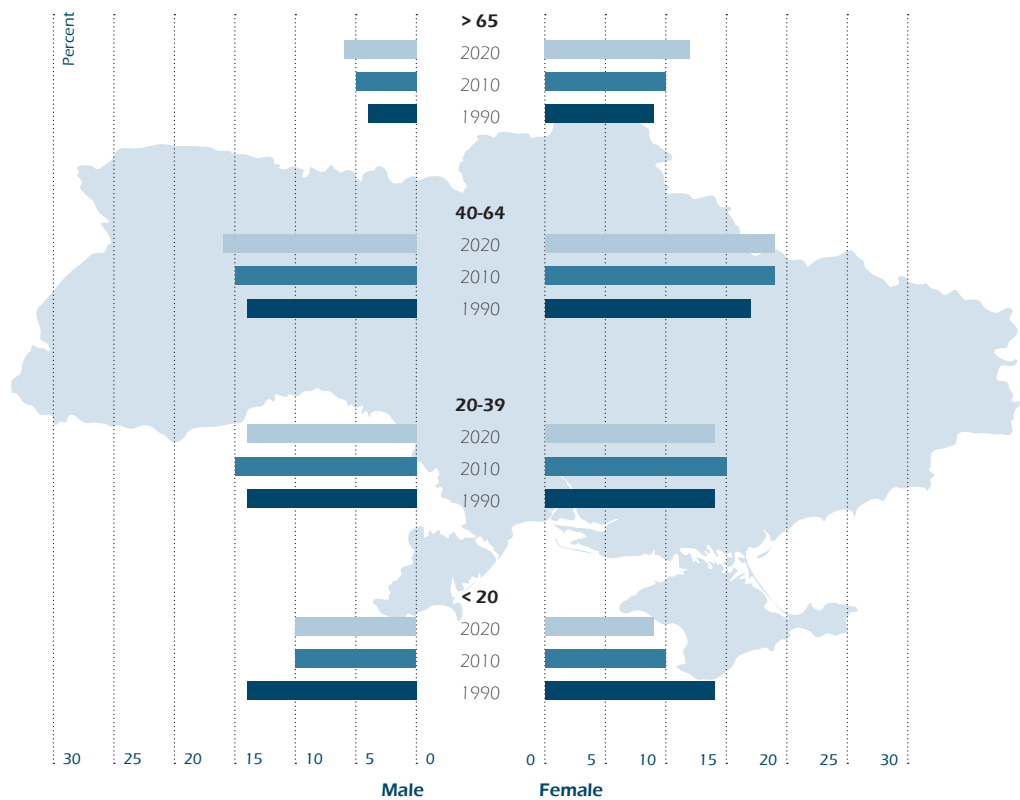


UKRAINE



1. Statistics

Age pyramid for Ukraine





Healthcare data

Hospitals (per 100.000 population)	5,41	2009
Beds (per 100.000 population)	864,09	2009
Density of physicians (per 1.000 population)	3,08	2006
Density of nurses (per 1.000 population)	7,83	2006

Demographic information

Population	45,415,596	2010
Population annual growth rate (%)	-0,6	2010
Life expectancy at birth	68,0	2010
Death rate (per 1.000 population)	16,27	2006
Live births (per 1.000 population)	11,08	2008

Economic information

Gross domestic product (U.S dollar-billions)	136,56*	2010
Gross domestic product per capita (U.S dollar-units)	3.002,80*	2010
Total expenditure on health as % of GDP	7	2006
General government expenditure on health as % of total expenditure on health	55	2006
Private expenditure on health as % of total expenditure on health	45	2006

* IMF estimative

2. Country

Proportion of deaths resulting from cardiovascular disease

2009	65,2%
2010	not available

3. Healthcare System

The National health system provides all citizens of Ukraine with the free medical and preventive help in accordance to acting legislation by: outpatient (ambulatory-policlinic and emergency) help, stationary (general profile and specialized) help. Unfortunately, NHS funds cover only approximately 40% from necessary funds for heart rhythm disorders management: including pacemaker implants, ablations for arrhythmias.

Basic insurance availability

No

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	0,14%*	0,16%*
Uninsured citizens	99,86%*	99,84%*

* According to patients hospitalized in the M.D. Strazhesko Institute of Cardiology* of AMS of Ukraine in 2009 and 2010 years

Distribution of insurance modality

	2009	2010
Public insurance company	not available	not available
Private insurance company	not available	not available
Private co-payment	not available	not available

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary*	☒

* It would be necessary only when NHS funds are available in a hospital. In any other case, the patient must cover all funds from its own budget.

Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy	☐
Invasive electrophysiology	☐
None*	☒

* There is no specialization for invasive electrophysiology or device therapy. These procedures are mainly performed by cardiovascular surgeon or cardiologists who passed on post graduate training in the main centres of invasive arrhythmology.

National accreditation for physicians

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

Rate of accreditation for physicians: once every 5 years.

National accreditation for centres

Required for practice	☒
Not required for practice	☐
Accreditation not available	☐
Rate of national accreditation for centres: once every 3 years.	

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiovascular surgeon or cardiologist

Specialty required for ICD or pacemaker implants Yes

Cardiovascular surgeon or cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation Yes

Recommendation of Association of Cardiologists of Ukraine

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

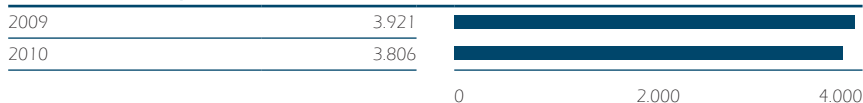
Pacemaker	5
ICD implantation	2
Electrophysiological studies and catheter ablation	5
CRT implantation	1
Atrial fibrillation ablation	2

Number of medical faculties 19**Percentage of academic facilities among practicing EP and implant centres** 10,8%



5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

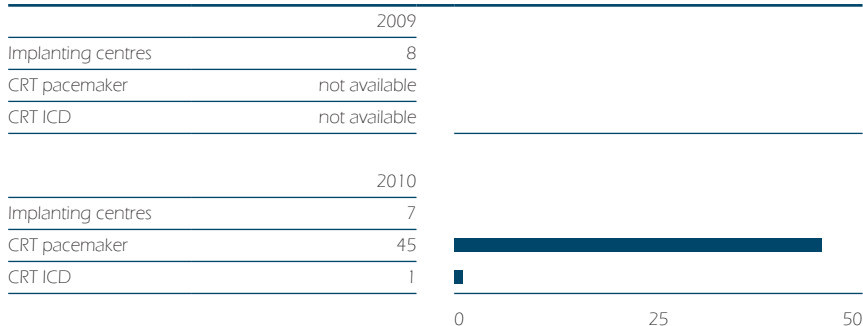
2009	
Implanting centres	37
New implants	not available
Replacements	not available
2010	
Implanting centres	37
New implants	not available
Replacements	not available

Specialty performing implants

Cardiologists	4,76%
Surgeons	95,24 %

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

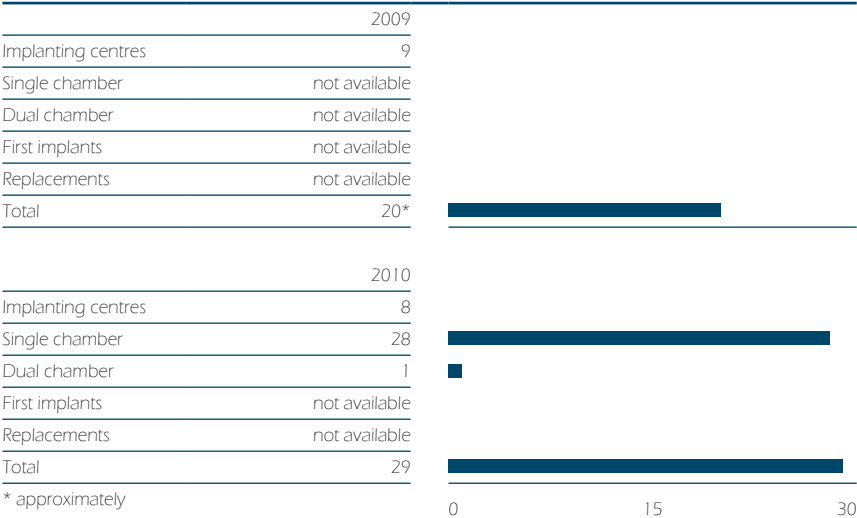


Specialty performing implants

Cardiologists	0%
Surgeons	100%

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres



Specialty performing implants

Cardiologists	12,8%
Surgeons	87,2%

8. Loop recorders

Loop recorders implanted and number of implanting centres

	2009	
Implanting centres	not available	
Loop recorders	not available	

	2010	
Implanting centres	not available	
Loop recorders	not available	

Specialty performing implants

Cardiologists	not available
Surgeons	not available



9. Device specific

Availability of remote monitoring of devices

No

It is available only in a few private centres due to restricted budget.

National registry for

ICD	☐
Pacing	☐
Electrophysiology	☐
None	☒

Availability of a national quality insurance system or complication registry

No

Availability of a national institution coordinating and guiding device recalls

No

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	10	10
Number of ablations performed	not available	1.854
Number of ablations per centre	not available	185,4
Number of AF ablations	not available	412

Availability of a national registry for interventional electrophysiology

No

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	☐	☐	☐	☐	☒
Lack of referral	☐	☐	☒	☐	☐
Lack of trained personnel	☐	☐	☐	☒	☐
Low awareness of guidelines	☐	☐	☐	☒	☐
Lack of operators	☐	☐	☒	☐	☐
Other*	☐	☐	☒	☐	☐

* Absence of specialization on invasive arrhythmology

1 = no obstacle

5 = great obstacle

Sources:

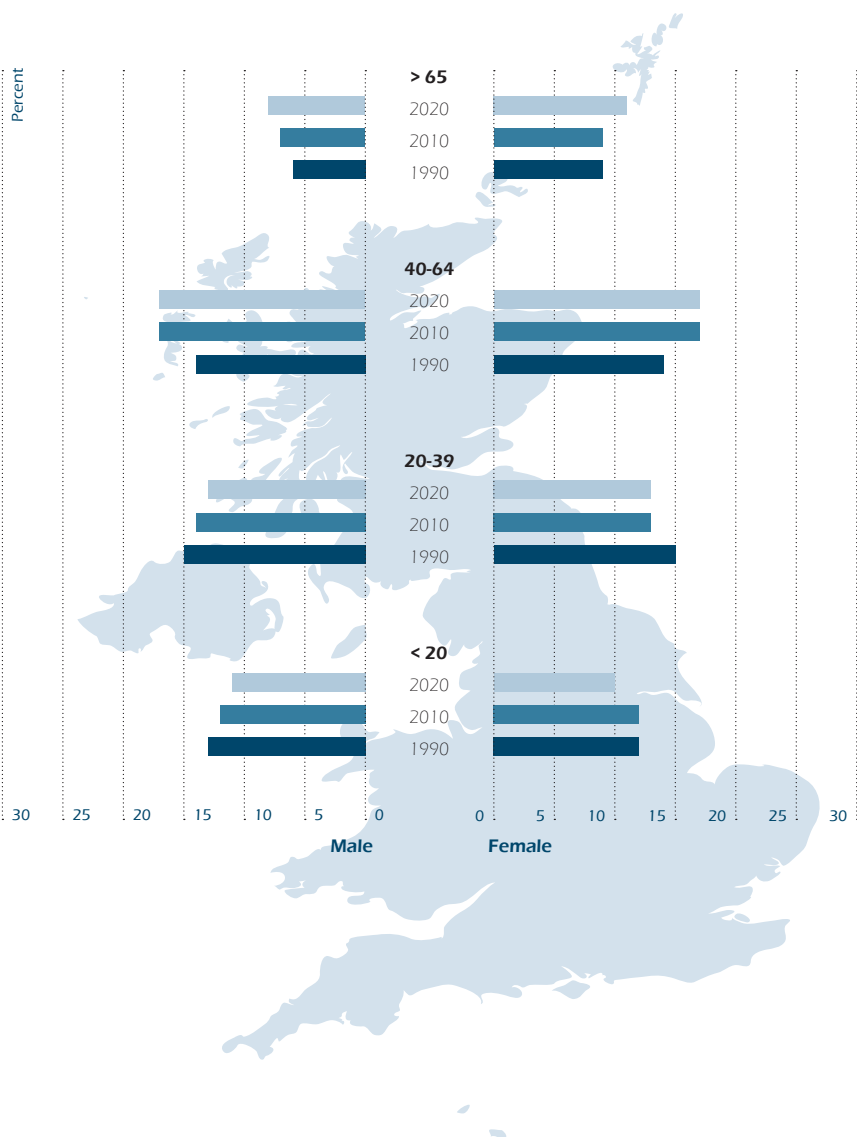
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- Ministry of Public Health of Ukraine website: www.moz.gov.ua/ua/portal/mtbr_eduinstitutions/
- Volkov D.E., Gritsai A., Bugaev S.V., Ermuraki S.P., Report from the Association of arrhythmologists of Ukraine, 2011

UNITED KINGDOM



1. Statistics

Age pyramid for United Kingdom





Healthcare data

Hospitals (per 100.000 population)	3,93	1989
Beds (per 100.000 population)	335,56	2008
Density of physicians (per 1.000 population)	2,13	2002
Density of nurses (per 1.000 population)	9,3	2004

Demographic information

Population	62.348.447	2010
Population annual growth rate (%)	0,6	2010
Life expectancy at birth	80,0	2010
Death rate (per 1.000 population)	9,06	2009
Live births (per 1.000 population)	12,79	2009

Economic information

Gross domestic product (U.S dollar-billions)	2.258,57*	2010
Gross domestic product per capita (U.S dollar-units)	36.298,39*	2010
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

2009	not available
2010	not available

3. Healthcare System

In United Kingdom, a National Health System (NHS) covers 100% of the population. It is mainly funded through national taxation. All legal residents of the United Kingdom, residents of the European economic area and citizens of other countries with which the UK has reciprocal agreements are covered under the United Kingdom NHS. Therefore, the subscription to private health insurance is very low. (WHO 2004)

Basic insurance availability

Yes

Percentage of insured and uninsured citizens

	2009	2010
Insured citizens	10%	10%
Uninsured citizens	90%	90%

Distribution of insurance modality

	2009	2010
Public insurance company	90%	90%
Private insurance company	10%	10%
Private co-payment	0%	0%

Possibility of subscribing to private health insurance plans

Yes

Co-payment necessary for the following therapy

ICD devices	☐
Pacemakers	☐
Ablation	☐
Not necessary	☒



Reimbursement availability

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

Treatment availability

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

4. Education

National accreditation availability

Device therapy*	☒
Invasive electrophysiology*	☒
None	☐

* Heart Rhythm UK

National accreditation for physicians

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

* General Medical Council

National accreditation for centres

Required for practice*	☒
Not required for practice	☐
Accreditation not available	☐
* Care Quality Commission	

National Society supporting EHRA accreditation system

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

Specialty required for catheter ablation Yes

Cardiologist

Specialty required for ICD or pacemaker implants Yes

Cardiologist

Official national competency guidelines for electrophysiological studies or catheter ablation Yes

Heart Rhythm UK

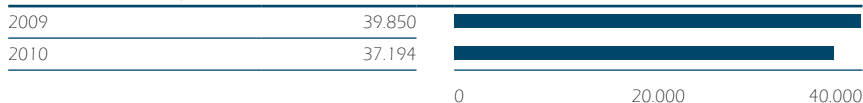
Required period of training to perform implantations 2 years**Training centres availability**

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

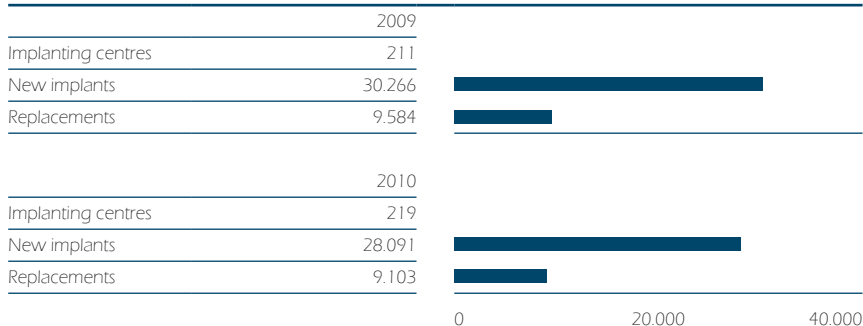
Number of medical faculties 35**Percentage of academic facilities among practicing EP and implant centres** not available

5. Pacemakers

Pacemaker units implanted



Pacemaker units implanted and number of implanting centres

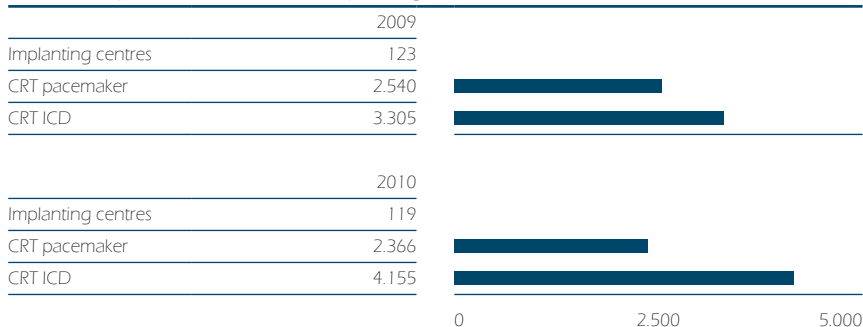


Specialty performing implants

Cardiologists	99%
Surgeons	1%

6. Cardiac resynchronization therapy devices

CRT units implanted and number of implanting centres

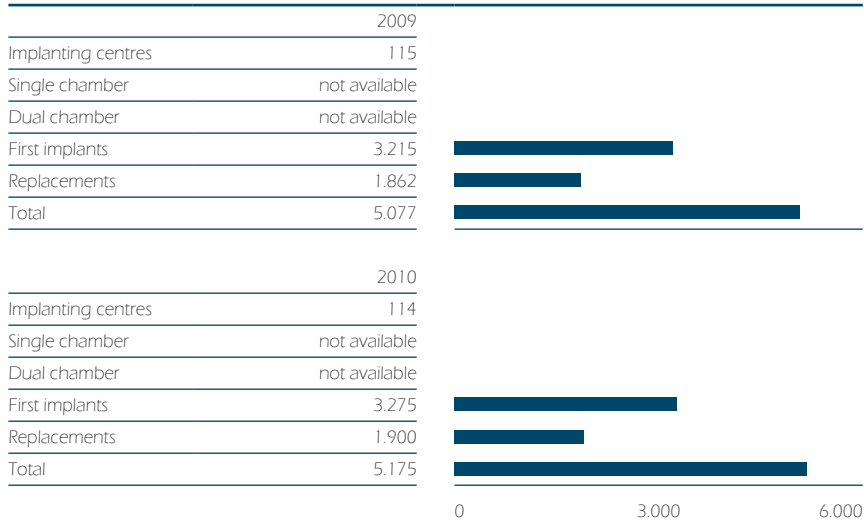


Specialty performing implants

Cardiologists	not available
Surgeons	not available

7. Implantable Cardiac Defibrillator

ICD units implanted and number of implanting centres

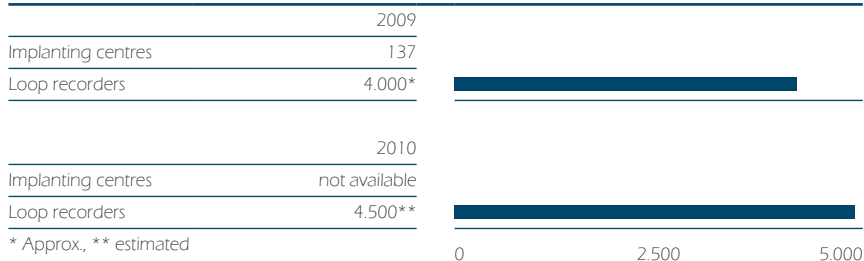


Specialty performing implants

Cardiologists	99%
Surgeons	1%

8. Loop recorders

Loop recorders implanted and number of implanting centres



Specialty performing implants

Cardiologists	99%
Surgeons	1%



9. Device specific

Availability of remote monitoring of devices

Yes

National registry for

ICD*	☒
Pacing*	☒
Electrophysiology*	☒
None	☐

* CRM Central Cardiac Audit Database

Availability of a national quality insurance system or complication registry

Yes

Central Cardiac Audit Database

There is a new project commencing in 2010

Availability of a national institution coordinating and guiding device recalls

Yes

Medical Healthcare Regulatory Agency (MHRA)

10. Interventional electrophysiology

	2009	2010
Number of ablation centres	49	53
Number of ablations performed	14.005	14.222
Number of ablations per centre	285	268
Number of AF ablations	3.825	3.715

Availability of a national registry for interventional electrophysiology

Yes

CRM Central Cardiac Audit Database

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	☐	☐	☒	☐	☐
Lack of reimbursement, limited financial resources	☐	☐	☐	☒	☐
Lack of referral	☐	☐	☐	☐	☒
Lack of trained personnel	☐	☐	☒	☐	☐
Low awareness of guidelines	☐	☐	☒	☐	☐
Lack of operators	☐	☒	☐	☐	☐

1 = no obstacle

5 = great obstacle

Sources: Heart Rhythm UK – Dr. David Cunningham and Dr. Stephen Furniss.
CRM Central Cardiac Audit Database

4. SOURCES



4. Sources

Main Sources

All data in the EHRA White Book 2011 has been collected and authorised for publication by the National Societies and National Working Groups.

The National Societies and National Working Groups that participated in this 2011 edition are:

- Armenian Working Group on Cardiac Pacing and Electrophysiology
- Austrian Working Group on Arrhythmias
- Belarus National Working Group on Arrhythmias
- Belgian Heart Rhythm Association (BeHRA)
- Association of Cardiologists and Angiologists of Bosnia and Herzegovina
- Bosnia and Herzegovina Working Group for Pacemakers
- Bulgarian Cardiology Society
- Working Group on Arrhythmias, Cardiac Pacing and Electrophysiology of the Croatian Cardiac Society
- Cyprus Working Group in Arrhythmia and Cyprus Society of Cardiology
- Working Group on Arrhythmias and Cardiac Pacing, Czech Society of Cardiology
- Danish Society of Cardiology
- Danish Working Group on Pacemakers/ICDs and Arrhythmias
- Danish Pacemaker and ICD registry
- Egyptian Cardiac Rhythm Association
- Egyptian Society of Cardiology
- Working Group of Arrhythmias of Estonian Society of Cardiology
- Finnish Cardiac Society, Working Group of Arrhythmia and Pacing
- Groupe de Rythmologie et Stimulation Cardiaque de la Société Française de Cardiologie
- Georgian Working Group on Arrhythmias
- German Working Group on Cardiac Pacing and Arrhythmia
- Hellenic Working Group of Electrophysiology and Pacing
- Working Group on Cardiac Arrhythmias and Pacing, Hungarian Society of Cardiology
- The Icelandic Cardiac Society

Main Sources

- The National University Hospital of Iceland Division of Cardiology, Section of Electrophysiology
- Electrophysiology Subgroup of Irish Cardiac Society
- Israel Working Group of Pacing and Electrophysiology, Israel Heart Society
- Italian Association of Arrhythmias and Cardiac Pacing (AIAC)
- Latvian National Society of Cardiology
- Latvian National Working Group on Arrhythmology
- Lithuanian Working Group on Cardiac Pacing and Electrophysiology
- Luxembourg Society of Cardiology
- Former Yugoslav Republic of Macedonia Group on Electrophysiology and Cardiac Pacing
- Maltese Cardiac Society
- National Society of Cardiology of Montenegro
- Netherlands Heart Rhythm Association (NHRA)
- Norwegian Working Group of Arrhythmias
- Heart Rhythm Division of Polish Cardiac Society
- Portuguese Association of Arrhythmology, Pacing and Electrophysiology (APAPE)
- Romanian Working Group of Arrhythmia
- Romanian Society of Cardiology
- San Marino Society of Cardiology
- Working Group on Cardiac Pacing and Arrhythmia Serbian Cardiology Society
- Slovak Heart Rhythm Association (SHRA)
- Working Group on EP and Electrostimulation, Slovenian Society of Cardiology
- Section of Electrophysiology and Arrhythmias (SEA) of the Spanish Society of Cardiology
- Working Group on Arrhythmias, Swedish Society of Cardiology
- Swiss Working Group for Pacemaker and Electrophysiology
- Tunisian Society of Cardiology and Cardiovascular Surgery
- Association of Arrhythmologists of Ukraine
- Heart Rhythm United Kingdom

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- Conseil d'accord INAMI (Belgium national health system)
- Economie Statistics Belgium. <http://statbel.fgov.be>
- Croatian Registry on Cardiac Pacing, ICD and Electrophysiology
- Czech Republic Ablation Registry
- Czech Republic Pacemaker Registry
- Czech Republic ICD Registry
- Hungarian Central Statistical Office
- Hungarian Health Insurance Fund
- France National Registry
- The National University Hospital of Iceland Pacemaker Clinic
- Italian Association of Biomedical Industries - Assobiomedica
- Italian Institute of Statistics (Istituto nazionale di statistica – Istat)
- National Institute of Cardiac Surgery and Interventional Cardiology (INCCI) of Luxembourg
- Clinical Center Montenegro
- MONSTAT Montenegro
- Dutch ICD and Pacemaker Registration (DIPR)
- Norwegian Pacemaker Registry
- APAPE Registry

Additional Sources

- Portuguese Ministry of Health
- San Marino National Register Hospital
- San Marino PM Data Base
- San Marino ICD Data Base
- Serbian National Institute for Statistics
- Slovak registry of pacemakers, ICD and ablations (SLOVIMPULZ)
- National Health Information Center of the Slovak Republic
- Swedish National Board of Health and Welfare
- Swedish Insurance Federation
- Swedish Catheter Ablation Registry
- Swedish ICD and Pacemaker Registry
- United Kingdom CRM Central Cardiac Audit Database
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- World Health Statistics. World Health Organization, Geneva, Switzerland. <http://www.who.org>
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5. APPENDIX



5. Appendix

EHRA Certification

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 certified, as well as that of the candidates who have passed the written part of the certification process.

«Join us in congratulating them!»

Invasive Cardiac Electrophysiology

EHRA EP Certified professionals

ARBELO LAINEZ	Elena	Spain	2009
ATTA	Salah Eldin Sayed	Saudi Arabia	2011
AVELLA	Andrea	Italy	2009
BARRERA CORDERO	Alberto	Spain	2006
BELOTTI	Giusepina	Italy	2008
BENCSEK	Gabor	Hungary	2009
BERRUEZO SANCHEZ	Antonio	Spain	2010
BRUGADA TERRADELLAS	Josep	Spain	2009
BUERKLE	Gerd	Austria	2011
BURRI	Haran	Switzerland	2008
DAVOODI	Gholamreza	Iran	2008
DURAY	Gábor Zoltán	Germany	2008
FERNANDEZ LOZANO	Ignacio	Spain	2006
GARCIA MORAN	Emilio	Spain	2007
GRECU	Mihaela	Romania	2007
GUGUCHEV	Pavel	USA	2010
FRANCK	Harald	Germany	2011
HERNANDEZ-MADRID	Antonio	Spain	2009
HERREROS GUILARTE	Benito	Spain	2006
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

EHRA Certification

EHRA EP Certified professionals

LAURENZI	Francesco	Italy	2009
LETSAS	Konstantinos	Greece	2009
LUBINSKI	Andrzej	Poland	2007
MADRID	Antonio	Spain	2009
MARINI	Massimiliano	Italy	2011
MARTINEK	Martin	Austria	2010
MARTINEZ ALDAY	Jesus	Spain	2006
MATIA FRANCES	Roberto	Spain	2011
MAZUR	Alexander	Italy	2006
MORENO PLANAS	Javier	Spain	2006
MOYA I. MITJANS	Angel	Spain	2006
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
SAMO AYOU	Romeo	Sweden	2011
SAUSE	Armin	Germany	2009
SEOW	Swee-Chong	Singapore	2007
SMIT	Jaap Jan Johannes	Netherlands	2009
STÜHLINGER	Markus	Austria	2010
TOQUERO RAMOS	Jorgue	Spain	2006
TZEIS	Stylios	Greece	2010
VATASESCU	Radu-Gabriel	Romania	2009
VOSS	Frederik	Germany	2009
VUKAJLOVIC	Dejan	Serbia	2009
ZOPPO	Franco	Italy	2008

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EHRA Certification

Invasive Cardiac Electrophysiology

EP Certification candidates successful to exam

ABEDIN	Zainul	United States	2007
AL BUNNI	Muhamad	Italy	2007
ALCALDE RODRIGUEZ	Oscar	Spain	2010
ALIYEV	Farid	Turkey	2010
ANDERSON	Mark H	United Kingdom	2010
ANGUERA CAMOS	Ignacio	Spain	2008
ANNE	Wim	Belgium	2010
ARCOCHA TORRES	Maria Fe	Spain	2009
ARIAS PALOMARES	Miguel Angel	Spain	2010
ATTA	Salah Eldin Sayed	Saudi Arabia	2010
AYALA PAREDES	Felix	Canada	2007
BALTA	Osman	Germany	2010
BERTOMEU-GONZALEZ	Vicente	Spain	2010
BOULLIN	Julian Paul	United Kingdom	2010
BUERKLE	Gerd	Austria	2008
CALVO CUERVO	David	Spain	2010
CAMPOS GARCIA	Bieito	Spain	2010
CANO PEREZ	Oscar	Spain	2009
CASTRO URDA	Victor	Spain	2009
CATANCHIN	Andrei	United Kingdom	2008
CHATTERJEE	Debjit	United Kingdom	2010
CLEMENTY	Nicolas	France	2010
DE GROOT	Joris R	Netherlands	2009
DEL CASTILLO ARROJO	Silvia	Spain	2006
DEUTSCH	Alexandru	Germany	2009
DUTHOIT	Guillaume	France	2010
DYRDA	Katia	Canada	2010
EISENBERGER	Martin	United Kingdom	2008
ELDER	Douglas	United Kingdom	2010
FONTENLA	Adolfo	Spain	2010
FORCLAZ	Andrei	Switzerland	2009
FRANCK	Harald	Germany	2010
GALLARDO LOBO	Rodrigo	Spain	2009
GAWRYCIAK	Marcin	Poland	2009

EHRA Certification

EP Certification candidates successful to exam

GLOWNIAK	Andrzej	Poland	2009
GONZALEZ VASSEROT	Maria del Mar	Spain	2007
GONZALEZ-ENRIQUEZ	Susana	Spain	2008
GUGUCHEV	Pavel	USA	2010
GUY-MOYAT	Benoit	France	2010
HERCZKU	Csaba	Hungary	2009
HLIVAK	Peter	Slovak Republic	2010
HOBBS	William	United Kingdom	2007
HOGLUND	Niklas	Sweden	2008
JANDA	Igor	Germany	2009
JAUREGUI ABULARACH	Miguel Eduardo	Spain	2010
JOHAR	Sofian	United Kingdom	2009
JONES	David Gareth	United Kingdom	2009
KACZMAREK	Krzysztof	Poland	2010
KARDOS	Attila	Hungary	2010
LERCHER	Peter	Austria	2010
MAKOWSKI	Karol	Poland	2010
MARINI	Massimiliano	Italy	2010
MARTINEK	Martin	Austria	2008
MARTINEZ SANDE	Jose Luis	Spain	2009
MASSIN	Francois	Belgium	2009
MATIA FRANCES	Roberto	Spain	2009
MATIELLO	Maria	Spain	2007
MCCREADY	James	United Kingdom	2010
MUELLER	Dirk	Germany	2008
NAGEH-ARMANIOS	Maged	USA	2010
PAISEY	John	United Kingdom	2008
PEREZ	Armando	Spain	2010
PEREZ DIEZ	Diego	Spain	2010
PISON	Laurent	Netherlands	2010
PUCHOL	Alberto	Spain	2009
RAMANNA	Hemanth	Netherlands	2008

Candidates successful to the exam need to have their logbook assessed by an EHRA grader to be fully certified.

EHRA Certification is valid for 10 years.

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EHRA Certification

Invasive Cardiac Electrophysiology

EP Certification candidates successful to exam

REBELLATO	Luca	Italy	2009
RIVAS	Nuria	Spain	2010
RODORF	Roberto	Italy	2009
ROUX	Antoine	France	2010
SAMO AYOU	Romeo	Sweden	2010
SANDILANDS	Alastair	United Kingdom	2010
SCHOONDERWOERD	Bas	Netherlands	2008
SEGRETI	Luca	Italy	2010
SEILER	Jens	Switzerland	2010
SIELSKI	Slawomir	Poland	2007
SKODA	Jan	Czech Republic	2008
SPADACINI	Gianmario	Italy	2006
STUEHLINGER	Markus	Austria	2010
SUMAN HORDUNA	Irina	Canada	2008
SZABO	Albin Arpad	Hungary	2010
TOMLINSON	David	United Kingdom	2008
TRAYKOV	Vassil B	Hungary	2010
TREGUER	Frederic	France	2009
TRINES SERGE	Alexander Ivo Petrus	Netherlands	2006
URBAN	Lubos	Slovak Republic	2009
VALVERDE ANDRE	Irene	Spain	2010
VAN CASTEREN	Lieve	Belgium	2010
VENABLES	Paul A	United Kingdom	2010
VILLUENDAS SABATE	Roger	Spain	2010
VITALE	Raffaele	Italy	2009
VOCKE	Wolfgang	Germany	2010
VUKAJLOVIC	Dejan	Serbia	2009
WINTER	Siegmund	Austria	2010
ZUCCHELLI	Giulio	Italy	2008

Candidates successful to the exam need to have their logbook assessed by an EHRA grader to be fully certified.

EHRA Certification is valid for 10 years.

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

EHRA CP Certified professionals

AL BUNNI	Muhamad	Italy	2007
APOSTOLOPOULOS	Theodoros	Greece	2007
AVELLA	Andrea	Italy	2006
BELOTTI	Giusepina	Italy	2006
BENCSIK	Gábor	Hungary	2009
BISSINGER	Andrzej	Poland	2007
BÓHM	Ádám	Hungary	2009
BOOS	Christopher John	United Kingdom	2009
BORGER VAN DER BURG	Alida Elisabeth	Netherlands	2009
BOUWELS	Leon HR	Netherlands	2009
BREULS	Peter N.W.M.	Netherlands	2010
BROERS	Bernard	Netherlands	2010
BURRI	Haran	Switzerland	2006
CALZOLARI	Vittorio	Italy	2007
CROSATO	Martino	Italy	2009
CURNIS	Antonio	Italy	2007
DAVOODI	Gholamreza	Iran	2006
DILAVERIS	Polychronis	Greece	2007
DURAY	Gábor Zoltán	Germany	2009
EIVNSDON	Gunvald	Norway	2009
EISENBERGER	Martin	Belgium	2011
FOLKERINGA	Johan Richard	Netherlands	2009
FRANCK	Harald	Germany	2011
GARCIA BOLAO	José Ignacio	Spain	2006
GARCIA MORAN	Emilio	Spain	2007
GJESTVANG	Finn Tore	Norway	2009
GRADAUS	Rainer	Germany	2007
GRECU	Mihaela	Romania	2009
GUGUCHEV	Pavel	USA	2011
HEIB	Klaus Dieter	Germany	2010
HERREROS GUILARTE	Benito	Spain	2006
HJORTSHØJ	Søren	Denmark	2010
HORNSTEN	Jonas	Sweden	2007

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

EHRA CP Certified professionals

HUYBRECHTS	Wim	Belgium	2010
IOANNIDIS	Panagiotis	Greece	2007
JASTREZBSKI	Marek	Poland	2007
KARABINOS	Ilias K	Greece	2009
KEMME	Michiel	Netherlands	2009
KETELS	Stefan	Belgium	2009
KLEIN	Gunnar	Germany	2008
KOEPFLI	Pascal	Switzerland	2010
KÖPP	Ulf	Norway	2009
KRUPA	Wojciech	Poland	2010
KORANTZOPOULOS	Panagiotis	Greece	2011
KOULOURIS	Spyridon	Greece	2010
LIPCHENCA	Igor Ariel	Israel	2009
LÜDORFF	Guido	Germany	2009
MAC GILLAVRY	Melvin	Netherlands	2011
MACIAG	Aleksander	Poland	2009
MARINI	Massimiliano	Italy	2008
MARTINEK	Martin	Austria	2009
MASCIOLI	Giosue	Italy	2007
MEINE	Mathias	Netherlands	2010
MERKELY	Bela	Hungary	2007
MICHAELSEN	Jochen	Germany	2011
MITROWSKI	Przemyslaw	Poland	2006
MORENO PLANAS	Javier	Spain	2006
NEVEN	Kars	Germany	2008
OSMAN	Faizel	United Kingdom	2007
PAULUSSEN	Guido	Netherlands	2007
PEREZ CASTELLANO	Nicasio	Spain	2006
PINDADO RODRIGUEZ	Javier	Spain	2010
PORRO	Rosa	Spain	2010
POZZETTI	Daniela	Italy	2007
PRZYBYLSKI	Andrzej	Poland	2008
PUGH	Peter J	United Kingdom	2009

EHRA Certification

EHRA CP Certified professionals

RAO	Archana	United Kingdom	2009
ROTEN	Laurent	Switzerland	2009
SEOW	Swee-Chong	Singapore	2008
SGARITO	Guiseppe	Italy	2007
SIMEONIDOU	Eftihia	Greece	2007
SJÖBLOM	Johanna	Sweden	2009
SPIERENBURG	Han A.M.	Netherlands	2009
STERLINSKI	Maciej	Poland	2009
SZAMLEWSKI	Piotr	Sweden	2011
TRAYKOV	Vassil	Bulgaria	2011
TUININGA	Ype	Netherlands	2011
VACCARI	Diego	Italy	2007
VALK	Susane	Netherlands	2011
VALZANIA	Cinzia	Italy	2011
VAN DEN BOS	Ewout-Jan	Netherlands	2011
VAN KRAAIJ	Dave J.W.	Netherlands	2010
VAN OPSTAL	Jurren	Netherlands	2009
VASILOPOULOS	Charambalos	Greece	2007
VATASESCU	Radu Gabriel	Romania	2007
VERGARA	Pasquale	Italy	2010
VOSS	Frederik	Germany	2009
WESTENDORP	Iris C.D.	Netherlands	2009
ZAKY	Hosam	United Arab Emirates	2007
ZERVOPOULOS	George	Greece	2007
ZOPPO	Franco	Italy	2007

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

CP Certification candidates successful to exam

AARDEMA	Margriet W.	Netherlands	2006
ACENA RAMOS	Marta	Spain	2010
AERTS	Arnaud	Netherlands	2009
ALBERTSEN	Andi Eie	Denmark	2010
ALCALDE RODRIGUEZ	Oscar	Spain	2010
ALDERGARD	Niklas	Sweden	2007
ALGALARRONDO	Vincent	France	2009
ALIYEV	Farid	Turkey	2010
ARIAS PALOMARES	Miguel Angel	Spain	2010
AYALA PAREDES	Felix Alejandro	Canada	2006
BACCHIONI	Giuseppe	Italy	2008
BAHGAT	Amr Kamal	Egypt	2009
BALTA	Osman	Germany	2010
BARTHEZ	Olivier	France	2009
BERTOMEU-GONZALEZ	Vicente	Spain	2010
BIJSTERVELD	Nick	Netherlands	2009
BLAAUW	Youri	Netherlands	2009
BOGDAN	Stefan Nicolea	Romania	2009
BORRELLI	Alessio	Italy	2009
BRAAM	Richard	Netherlands	2010
BREULS	Nico	Netherlands	2009
BUERKLE	Gerd	Austria	2008
BULUT	Suat	Netherlands	2010
CALVO CUERVO	David	Spain	2010
CAMPOS GARCIA	Bieito	Spain	2010
CANADAS	Victoria	Spain	2010
CANDEIAS	Rui	Portugal	2008
CARAVATI	Fabrizio	Italy	2010
CHATTERJEE	Debjit	United Kingdom	2010
CSONTOS	Pal	Hungary	2009
DE DOELDER	Marieke	Netherlands	2010
DE GROOT	Joris R	Netherlands	2009
DE JONG	Richard M	Netherlands	2007

CP Certification candidates successful to exam

DE JONG	Jonas	Netherlands	2009
DE JONG	Jeroen	Netherlands	2006
DE LA FUENTE	Sam	Netherlands	2009
DE LEEUW	Martin	Netherlands	2008
DE MEYER	Grim	Belgium	2010
DE POTTER	Tom	Belgium	2008
DE WAARD	Daan	Netherlands	2007
DE WEERD	Gerjan	Netherlands	2009
DIAB	Ihab Gomaa	United Kingdom	2009
DICHTL	Wolfgang	Austria	2010
DIDENKO	Maxim	Russia	2010
DULBECCO	Massimo	Italy	2010
DUTHOIT	Guillaume	France	2010
DYRDA	Katia	Canada	2010
EISENBERGER	Martin	United Kingdom	2008
ELDER	Douglas	United Kingdom	2010
ENGBERS	Jos G	Netherlands	2009
ERCKERT	Martin	Italy	2006
ESCHEN	Ole	Denmark	2009
FACCHIN	Domenico	Italy	2010
FLEVARI	Panayota	Greece	2008
FOLDESI	Csaba Laszlo	Hungary	2009
FOLEY	Paul	United Kingdom	2009
FONTENLA	Adolfo	Spain	2010
FRANCA PEREIRA	Roberto	United States	2007
FRANCK	Harald	Germany	2010
FRYKMAN	Viveka	Sweden	2007
FUNK	Sabine	Switzerland	2010
GALLARDO LOBO	Rodrigo	Hungary	2009
GANIERE	Vincent	Switzerland	2010
GEBETSBERGER	Franz	Austria	2008
GIANNOLA	Gabriele	Italy	2008
GIL	Ricardo	Portugal	2010

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

CP Certification candidates successful to exam

GONZALEZ-ENRIQUEZ	Susana	Spain	2008
GUGUCHEV	Pavel	USA	2010
HAMEL	JohnJohn	Switzerland	2010
HAMRAOUI	Karim	Netherlands	2010
HAUER	Herbert	Netherlands	2009
HAYES	Chris	United Kingdom	2009
HAZELEGER	Ronald	Netherlands	2010
HEMELS	Martin	Netherlands	2009
HERCZKU	Csaba	Hungary	2009
HOBBS	Julian	United Kingdom	2010
HOOFT VAN HUYSDUYNEN	Bart	Netherlands	2010
HURLIMANN	David	Switzerland	2009
HUYBRECHTS	Wim	Belgium	2008
IORGULESCU	Corneliu	Romania	2008
JACON	Peggy	France	2010
JAMALYAN	Smbat	Armenia	2010
JANSEN	Annemieke	Netherlands	2008
JANSEN	Ward	Netherlands	2010
JANSSSENS	Cornelis	Netherlands	2006
JAUREGUI ABULARACH	Miguel Eduardo	Spain	2010
JELANI	Anwar D	Canada	2010
JOHANSSON	Peter	Sweden	2008
JONES	David Gareth	United Kingdom	2009
JONSSON	Jon Erik	Sweden	2010
KACZMAREK	Krzysztof	Poland	2010
KJELLMAN	Bjorn	Sweden	2007
KNOPS	Reinoud	Netherlands	2008
KOEPFLI	Pascal	Switzerland	2007
KOLB	Christophe	Germany	2010
KOOMEN	Egbert M	Netherlands	2010
KORANTZOPOULOS	Panagiotis	Greece	2009
KORTZ	Mikael	Netherlands	2010
KOULOOURIS	Spyridon	Greece	2007

CP Certification candidates successful to exam

KOURGIANNIDIS	Georgios	Greece	2007
KRAVCHUK	Borys	Ukraine	2007
KRUPA	Wojciech	Poland	2006
LERCHER	Peter	Austria	2010
LERNER	Martin Robert	Sweden	2010
LIEUW-A-FA	Mariska	Netherlands	2009
LINDELL	Peter	Sweden	2007
LINDGREEN	Ulf	Sweden	2008
LIPOLDOVA	Jolana	Czech Republic	2009
LITTERFELDT	Ingrid	Sweden	2008
LUBBERTVERBERKMOES	Addy	Netherlands	2010
LUZI	Mario	Italy	2008
MAASS	Alexander	Netherlands	2007
MAC GILLAVRY	Melvin	Netherlands	2008
MAGNUSSON	Peter	Sweden	2007
MAHFOUD	Mohanad	France	2010
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
MICHAELSEN	Jochen	Germany	2010
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

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

CP Certification candidates successful to exam

ODLAND	Hans Henrik	Norway	2009
OIKARINEN	Lasse	Finland	2008
OMAR	Salama	Saudi Arabia	2010
OSTROWSKA	Bozena	Sweden	2007
PAISEY	John	United Kingdom	2008
PARAVOLIDAKIS	Konstantinos	Greece	2008
PASCALE	Patrizio	Switzerland	2009
PATWALA	Ashish	United Kingdom	2010
PAULUSSEN	Guido	Netherlands	2006
PENA HERNANDEZ	Jose Luis	Spain	2008
PEREZ ALVAREZ	Luisa	Spain	2010
PEREZ DIEZ	Diego	Spain	2009
PERIK	Patrick	Netherlands	2010
PETKAR	Sanjiv	United Kingdom	2008
PETRACCI	Barbara	Italy	2009
PETRU	Jan	Czech Republic	2009
PHILBERT	Berit Thornvig	Denmark	2010
PLUTA	Slawomir	Poland	2010
PORRO	Rosa	Spain	2009
PRONK	Arjen	Netherlands	2010
PRUSKI	Maciej	Poland	2010
PUCHOL	Alberto	Spain	2009
RAMANNA	Hemanth	Netherlands	2008
REBELLATO	Luca	Italy	2009
RESTLE	Christian	Germany	2009
RIVAS GANDARA	Nuria	Spain	2010
ROUX	Antoine	France	2010
RUSSO	Giovanni	Italy	2009
SCHAUMANN	Anselm	Germany	2009
SCHEFFER	Michael G	Netherlands	2008
SCHOONDERWOERD	Bas	Netherlands	2008
SCHRAGO	Gregoire	Switzerland	2010
SCHWAGTEN	Bruno	Belgium	2008

CP Certification candidates successful to exam

SEDLACEK	Kamil	Czech Republic	2010
SEGRETI	Luca	Italy	2010
SENOUF	David	Switzerland	2009
SIELSKI	Slawomir	Poland	2005
STATESCU	Cristian	Romania	2009
STEEN	Torkel	Norway	2007
STEFAN	Liliana	Czech Republic	2010
STEVENHAGEN	Jeroen	Netherlands	2008
STRIKWERDA	Sipke	Netherlands	2009
SWART	HP	Netherlands	2009
SZAMLEWSKI	Piotr	Sweden	2010
TAHAPARY	Giovanni	Netherlands	2009
TER BEKKE	Rachel	Belgium	2010
TEUBL	Alexander	Austria	2009
TIELEMAN	Robert	Netherlands	2009
TOMLINSON	David	United Kingdom	2009
TORCIVIA	Riccardo	Italy	2010
TORN	Marieke	Netherlands	2009
TOSSEBRO	Morten Shoren	Norway	2009
TRAYKOV	Vassil B	Hungary	2010
TREGUER	Frederic	France	2009
TRINES	Serge	Netherlands	2008
TUININGA	Ype	Netherlands	2009
TUREL	Baybars	Turkey	2009
URBAN	Lubos	Slovak Republic	2009
VALK	Suzanne	Netherlands	2010
VAN ALEM	Anouk	Netherlands	2010
VAN CASTEREN	Lieve	Belgium	2010
VAN DEN BOS	Ewout-Jan	Netherlands	2009
VAN DER HEIJDEN	Dirk	Netherlands	2010
VAN DER HEIJDEN	Robert	Netherlands	2010
VAN DER WAL	Henriette	Netherlands	2010
VAN DER WEERDT	Arno Peter	Netherlands	2007

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EHRA Certification

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

CP Certification candidates successful to exam

VAN EMPEL	Vanessa	Netherlands	2010
VAN GASTEL	Henk Christiaan	Netherlands	2010
VAN HERENDAEL	Hugo	Belgium	2009
VAN KRAAIJ	Dave	Netherlands	2009
VAN NOORD	Trudeke	Netherlands	2007
VAN OOSTROM	Antonie	Netherlands	2009
VAN REIJ	Frank	Netherlands	2010
VAN SCHAAARDENBURGH	Pepijn	Netherlands	2009
VAN SCHAIKVAN DER WIELEN	Marie Louise	Netherlands	2009
VAN VLIES	Bob	Netherlands	2010
VENABLES	Paul A	United Kingdom	2010
VERGARA	Pasquale	Italy	2009
VERNOOY	Kevin	Netherlands	2010
VET	Thijs	Netherlands	2008
VICENTINI	Alessandro	Italy	2009
VIERGEVER	Eric Paul	Netherlands	2010
VIJN	Arie Gerhard	Netherlands	2010
VILLUENDAS SABATE	Roger	Spain	2010
WESTRA	Sjoerd	Netherlands	2009
WIDDERSHOVEN	Josef Jos	United Kingdom	2009
WIJCHERS	Sip	Netherlands	2009
WILLEMS	Albert Richard	Netherlands	2009
WIM	Anne	Belgium	2008
WINTER	Siegmund	Austria	2010
ZALEVSKY	Valery P	Ukraine	2007
ZIMA	Endre	Hungary	2009
ZUCCHELLI	Giulio	Italy	2008



European Heart Rhythm Association

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