



# REPACE: Registr trvalé kardiostimulace 2015

Česká asociace srdečního rytmu  
Česká kardiologická společnost

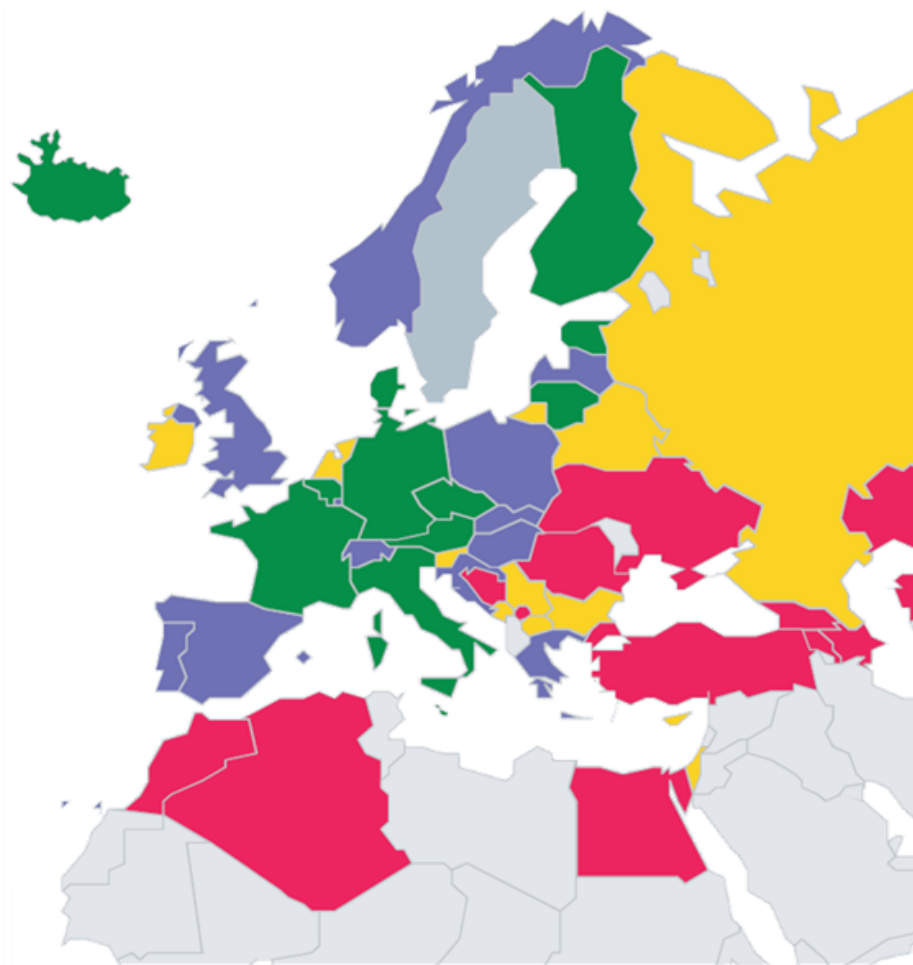
*Garant:*

*M. Tábořský*

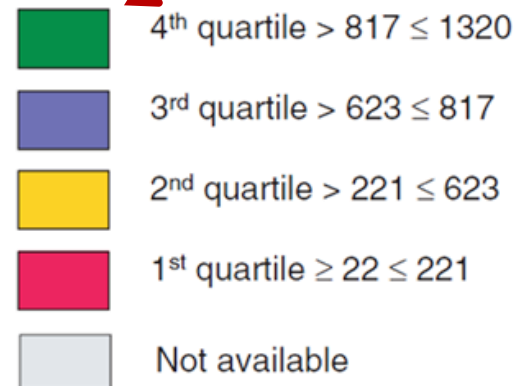
*Olomouc 7.11.2016*



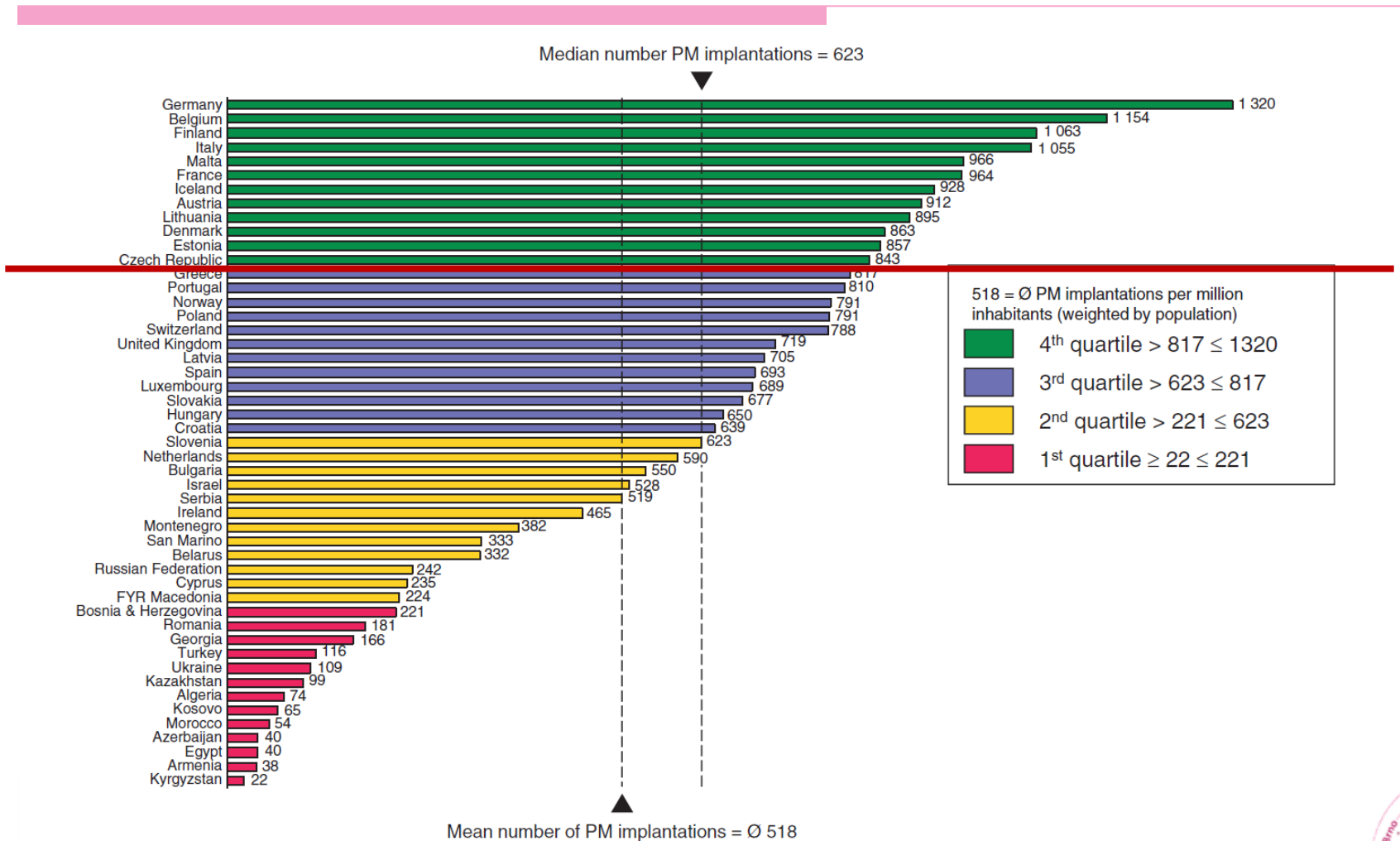
# Česká arytmologie v evropském kontextu I



518 =  $\bar{x}$  PM implantations per million inhabitants (weighted by population)



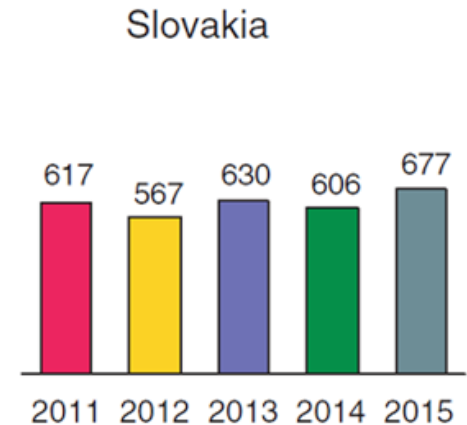
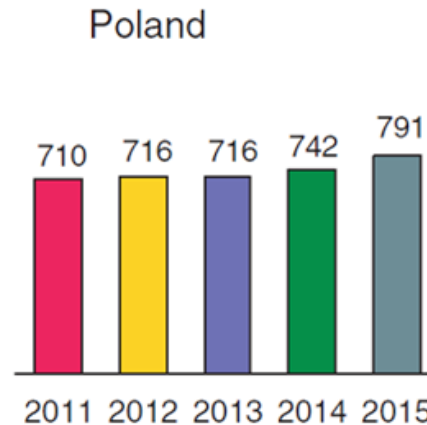
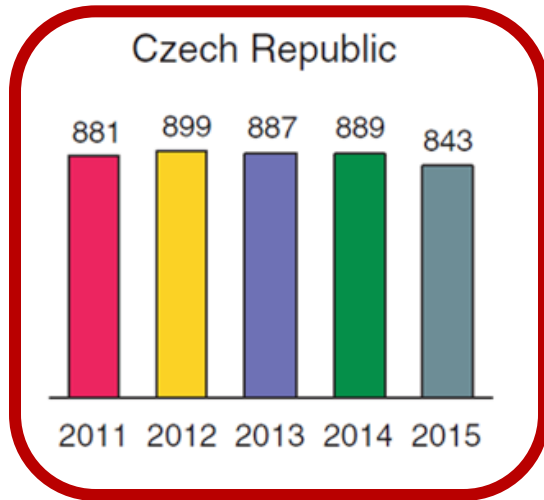
# Česká arytmologie v evropském kontextu II



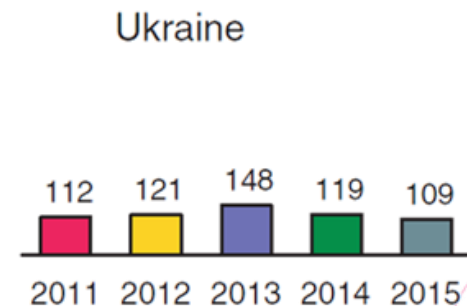
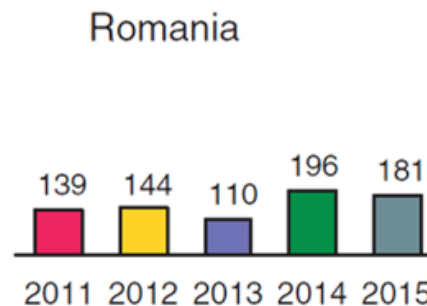
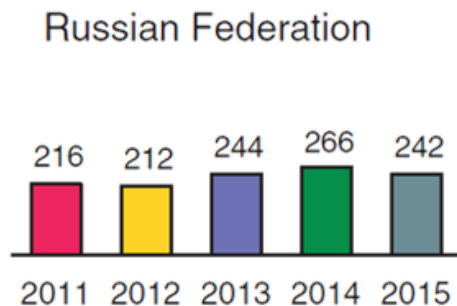
# Česká arytmologie v evropském kontextu III

## Eastern Europe

### TOP 3

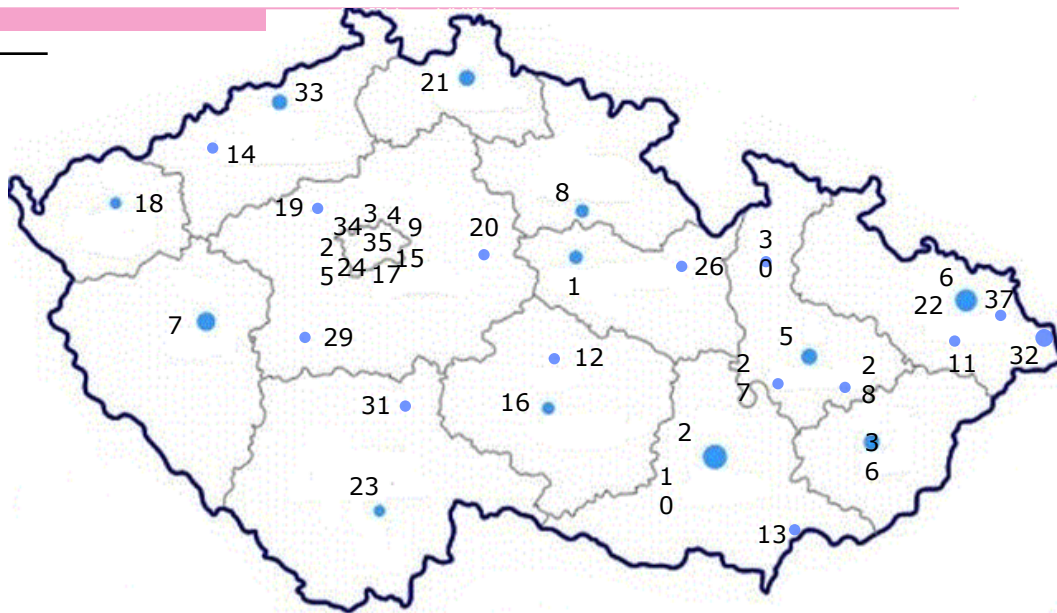


### Lowest 3



# PM centres

- 1 Kardiologické centrum AGEL a.s.
- 2 The University Hospital Brno – Dep. of Cardiology
- 3 The University Hospital Motol - Children´ Cardiocentre
- 4 The University Hospital Motol – Dep. of Cardiology
- 5 The University Hospital Olomouc – 1st Dep. of Medicine
- 6 The University Hospital Ostrava – Dep. of Cardiovascular Medicine
- 7 The University Hospital Plzeň - Dep. of Cardiology, arytmology
- 8 The University Hospital Hradec Králové – 1st Dep. of Internal Medicine
- 9 The University Hospital Královské Vinohrady - 3rd Dep. of Internal Medicine - Cardiology
- 10 The St. Anne's University Hospital Brno – Dep. of Cardiology
- 11 Hospital in Frýdek-Místek – Dep. of Internal Medicine
- 12 Hospital in Havlíčkův Brod – Dep. of Internal Medicine
- 13 TGM Hospital Hodonín – Centre of Cardiac Stimulation
- 14 Chomutov - Dep. of Internal Medicine
- 15 The Institute of Clinical and Experimental Medicine - Department of Cardiology
- 16 Jihlava - Dep. of Cardiology
- 17 The University Hospital Bulovka - Cardiology
- 18 Karlovy Vary - Kardiocentrum
- 19 Kladno - Dep. of Internal Medicine
- 20 Kolín - Dep. of Internal Medicine
- 21 Liberec – Cardio Centre
- 22 Ostrava City Hospital - Cardiology
- 23 Hospital in České Budějovice – Cardio Centre
- 24 Hospital of Merciful Sisters - Dep. of Internal Medicine
- 25 Hospital „Na Homolce“ - Dep. of Cardiology
- 26 Hospital in Ústí nad Orlicí -Dep. of Internal Medicine

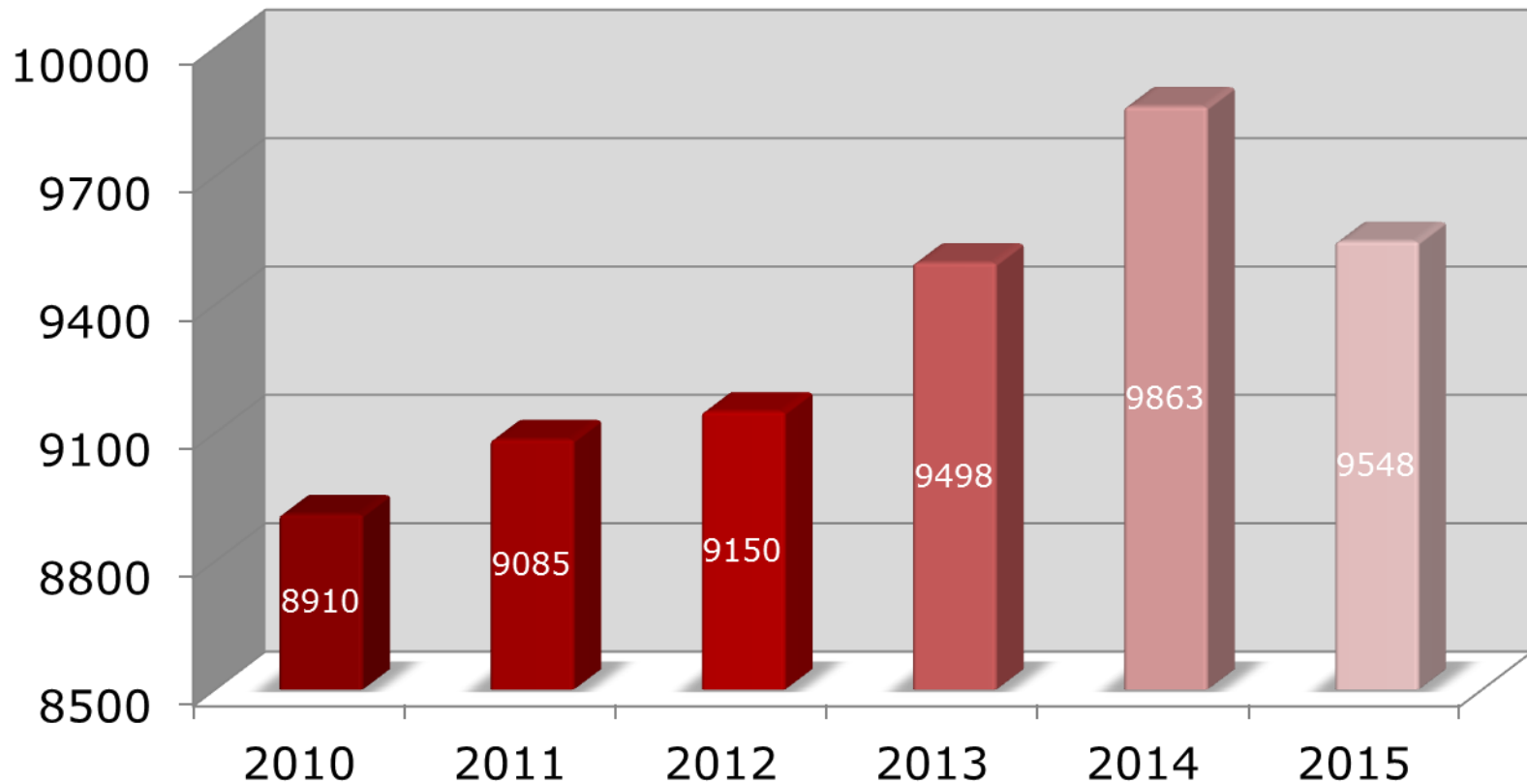


- 27 Prostějov - Dep. of Internal Medicine
- 28 Přerov - Dep. of Internal Medicine
- 29 Příbram - Dep. of Internal Medicine
- 30 Šumperk - Dep. of Internal Medicine
- 31 Tábor - Dep. of Internal Medicine
- 32 Třinec – Cardio Centre
- 33 Ústí nad Labem – Dep. of Cardiology
- 34 ÚVN - Dep. of Cardiology
- 35 The General University Hospital in Prague - 2nd Dep. of Internal Cardiovascular Medicine
- 36 Zlín - Dep. of Internal Medicine
- 37 Havířov Hospital with Polyclinic - Dep. of Internal Medicine



# Trend TKS v ČR: 2010-2015

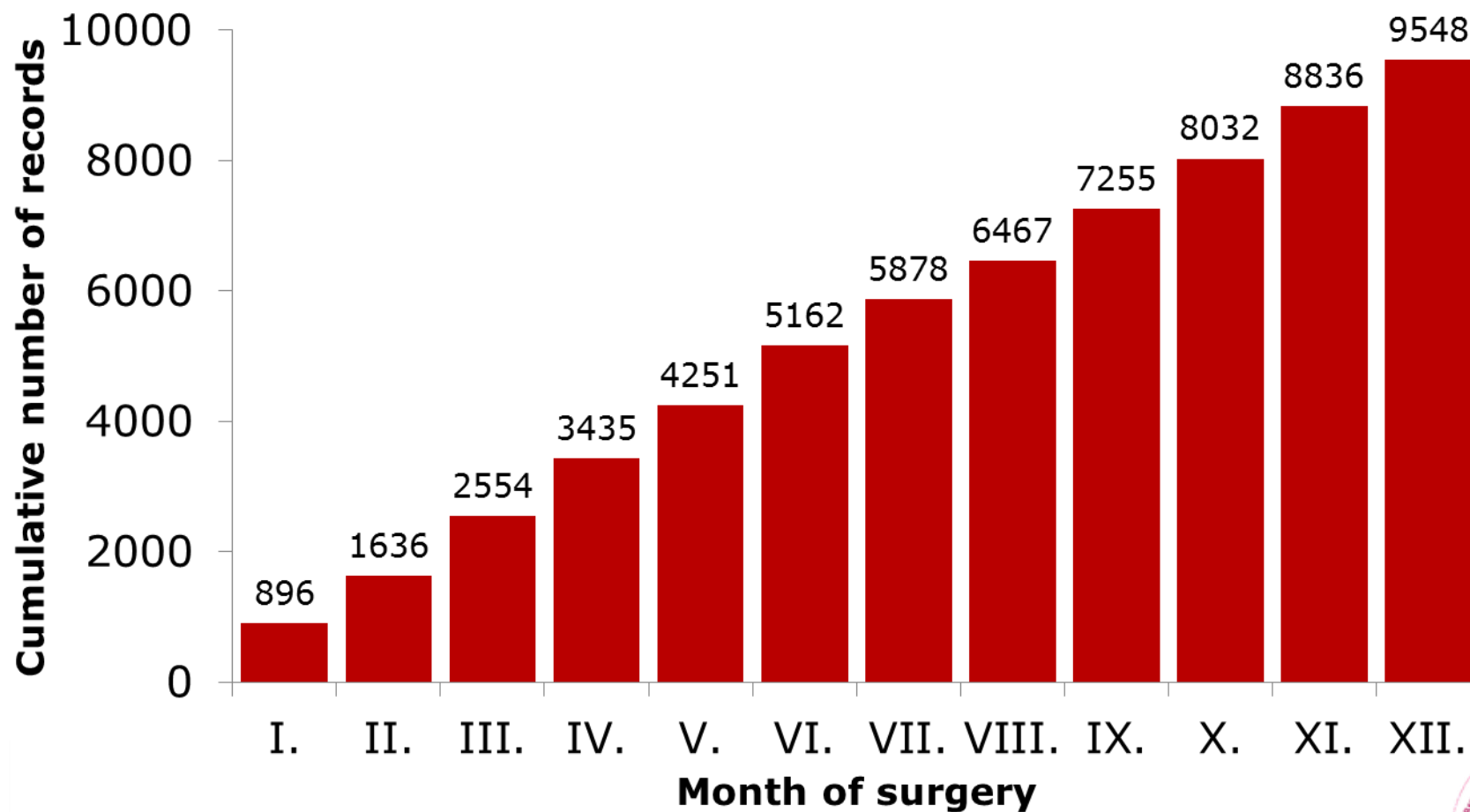
## ČASS 2015



# Cumulative number of records in time

Base: All records 2015 (N=9 548)

There are **9 548** records for year 2015.

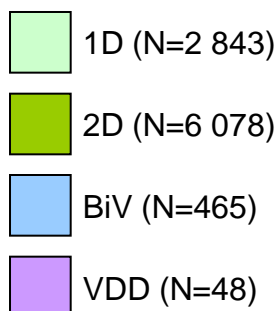
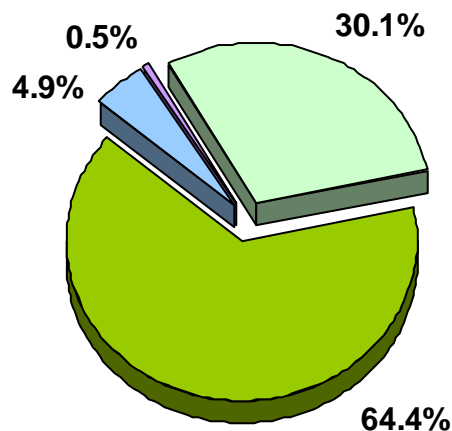


# Implanted and explanted devices – device type

Base: All records 2015 (N=9 548)

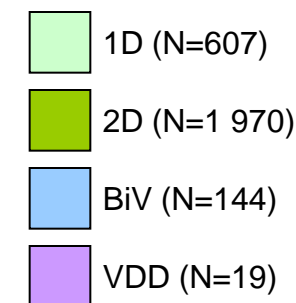
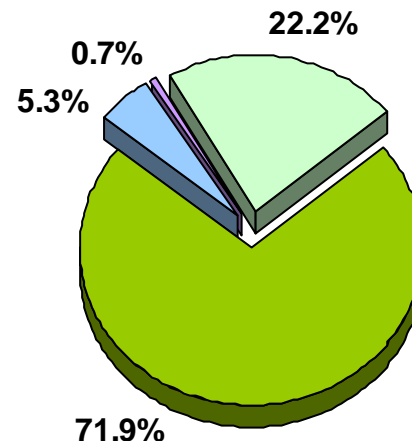
## Implanted devices

N=9 434



## Explanted devices

N=2 740



2D pacemaker is the most used device. It prevails among implanted also explanted devices.



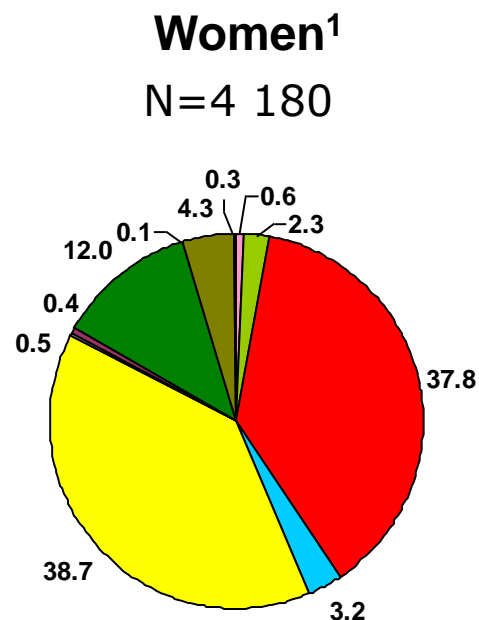
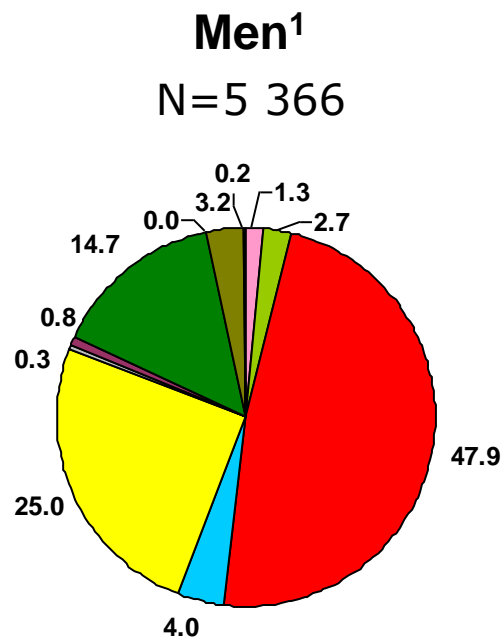
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# Main diagnosis according to sex of patient

Base: All records 2015 (N=9 548)



- Intraventricular conduction defects
- Cardiomyopathy
- Conduction disorder
- Valve disease
- Sick sinus syndrome
- Vasovagal syncope
- Hypersensitive carotid sinus
- IHD - atrial bradycardia
- IHD - ventricular tachycardia
- IHD - conduction disorder, SSS
- Unknown

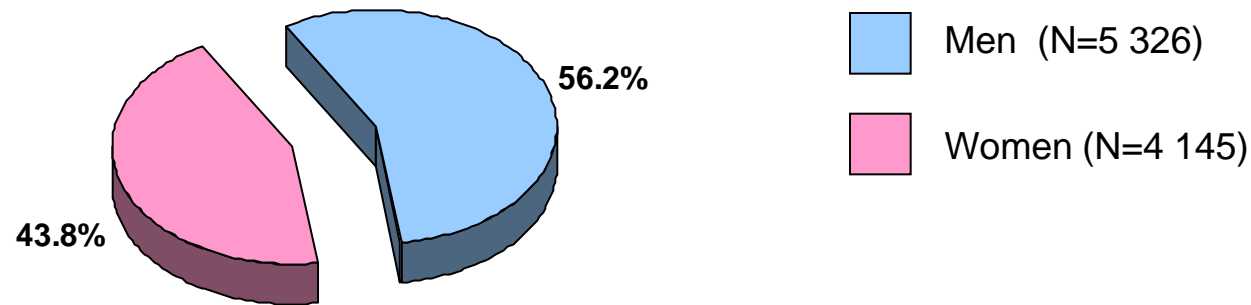
<sup>1</sup> unknown for two patients



# Patients according to sex

Base: Completed records 2015 without electrode surgery (N=9 473)

Patient sex<sup>1</sup>

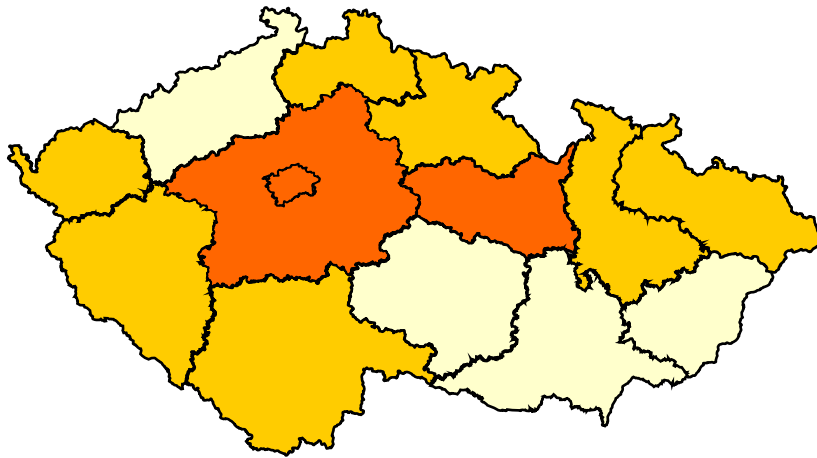


<sup>1</sup> unknown for two patients

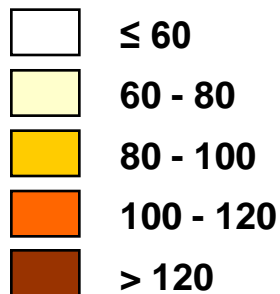


# Incidence according to patients region

Base: Completed records 2015 without electrode surgery (N=9 473)



Incidence  
(per 100 000 population per year):



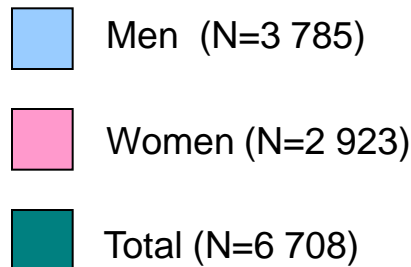
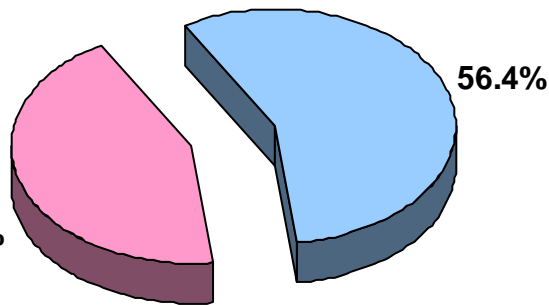
Region	Records		
	N	%	N/100 000 popul.
Pardubický	579	6.1	112
Praha hl.m.	1 370	14.5	109
Středočeský	1 341	14.2	102
Olomoucký	614	6.5	97
Jihočeský	598	6.3	94
Moravskoslezský	1 104	11.7	91
Karlovarský	266	2.8	89
Královehradecký	473	5.0	86
Liberecký	376	4.0	86
Plzeňský	489	5.2	85
Jihomoravský	921	9.7	79
Vysočina	364	3.8	71
Ústecký	558	5.9	68
Zlínský	386	4.1	66
Abroad / unknown	34	0.4	
<b>Total</b>	<b>9 473</b>	<b>100</b>	



# Primo-implantation: Patients sex and age in time of surgery

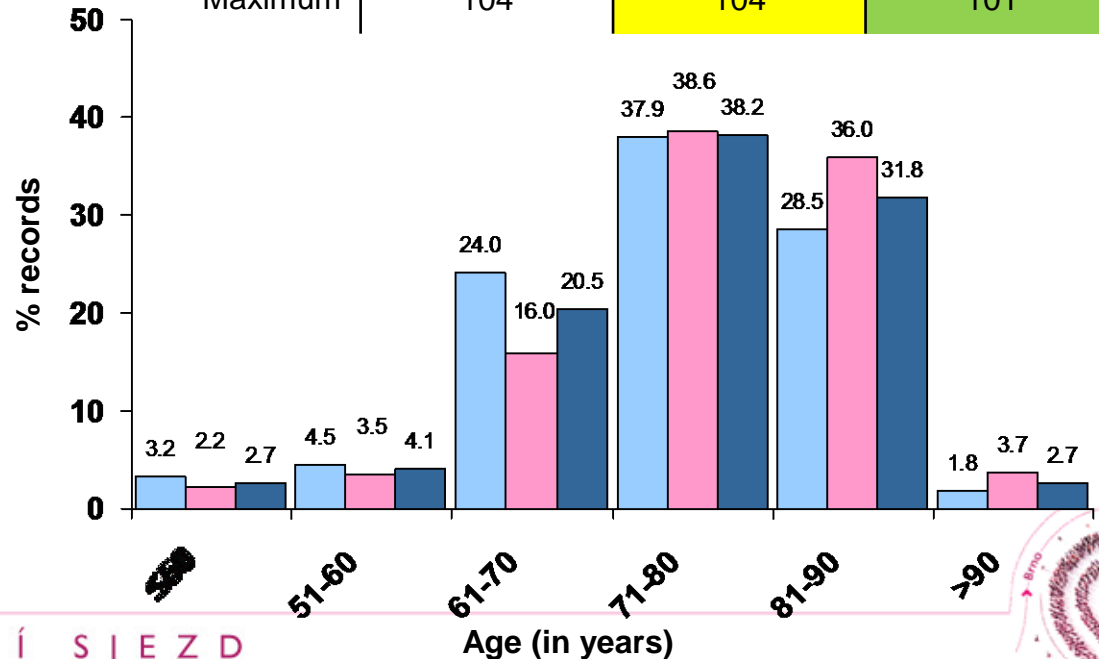
Base: Primo-implantations 2015 (N=6 710)

Patients according to sex<sup>1</sup>



<sup>1</sup> unknown for two patients

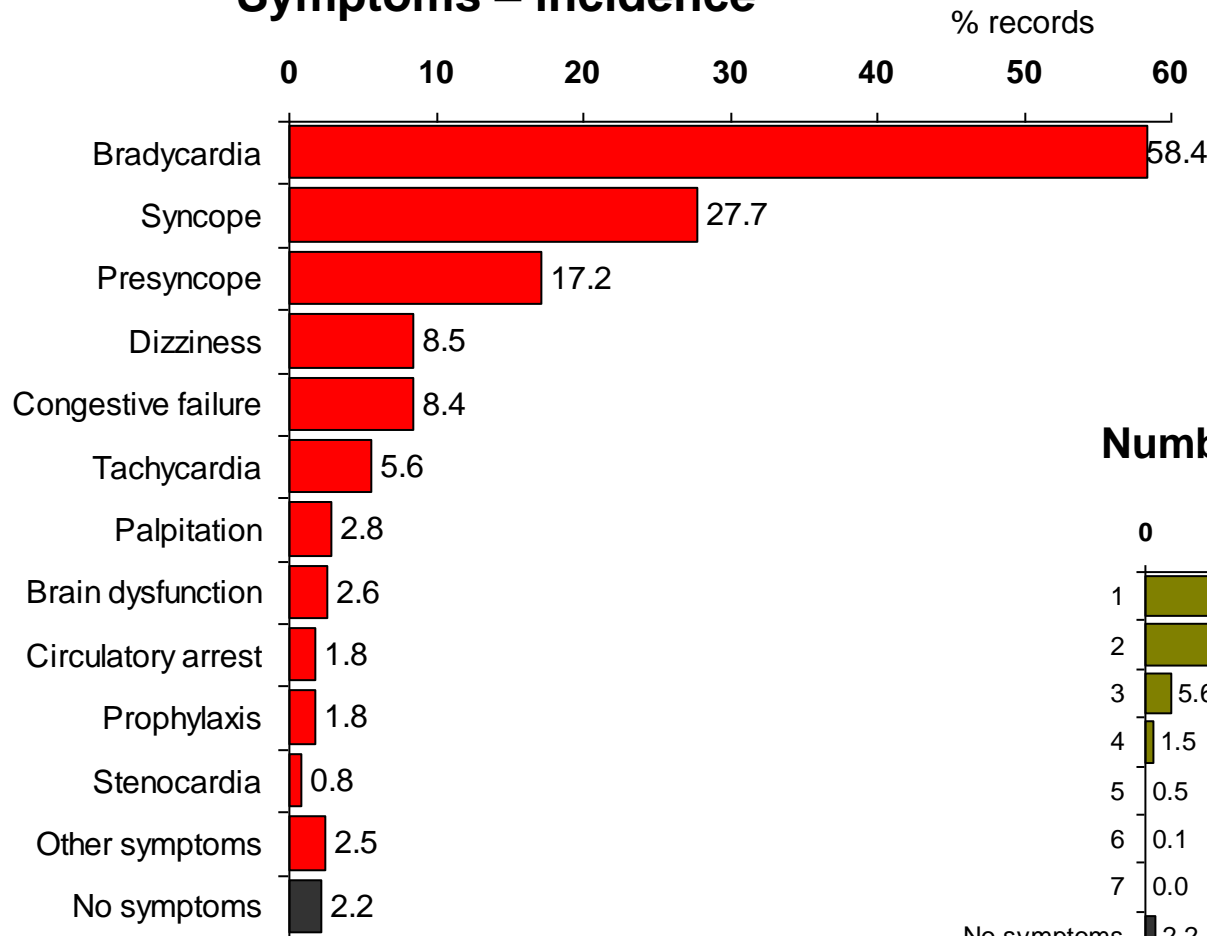
Age in time of surgery	Total	Women	Men
Mean (95% CI)	75.2 (74.9; 75.5)	76.7 (76.3; 77.0)	74.1 (73.7; 74.5)
Median (5-95% percentile)	77 (57; 89)	78 (60; 90)	75 (56; 88)
Minimum	0	0	0
Maximum	104	104	101



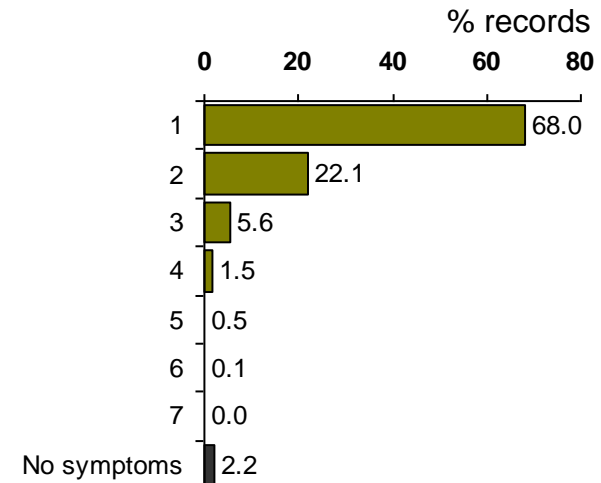
# Primo-implantation: Indications for implantable PM – symptoms

Base: Primo-implantations 2015 (N=6 710)

## Symptoms – incidence

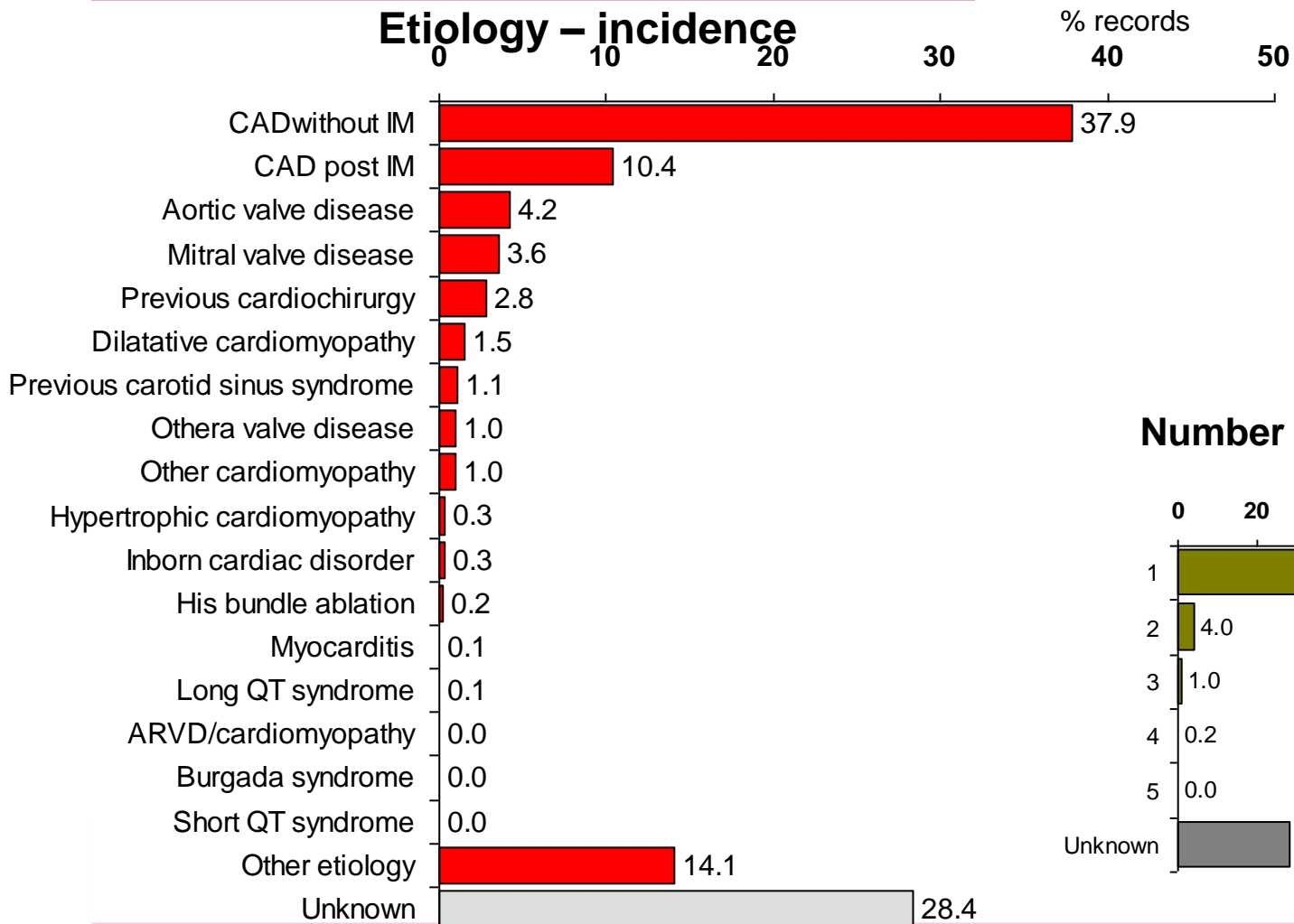


## Number of symptoms

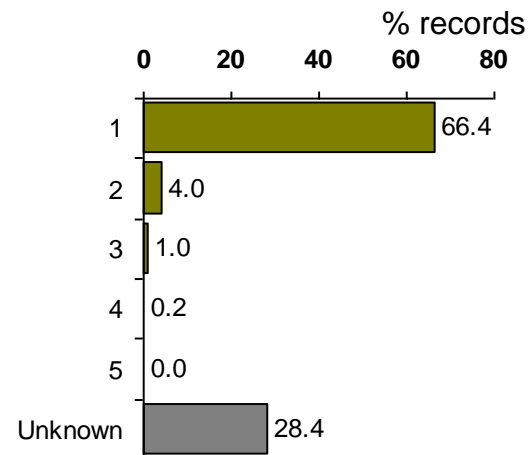


# Primo-implantation: Indications for implantable PM – etiology

Base: Primo-implantations 2015 (N=6 710)



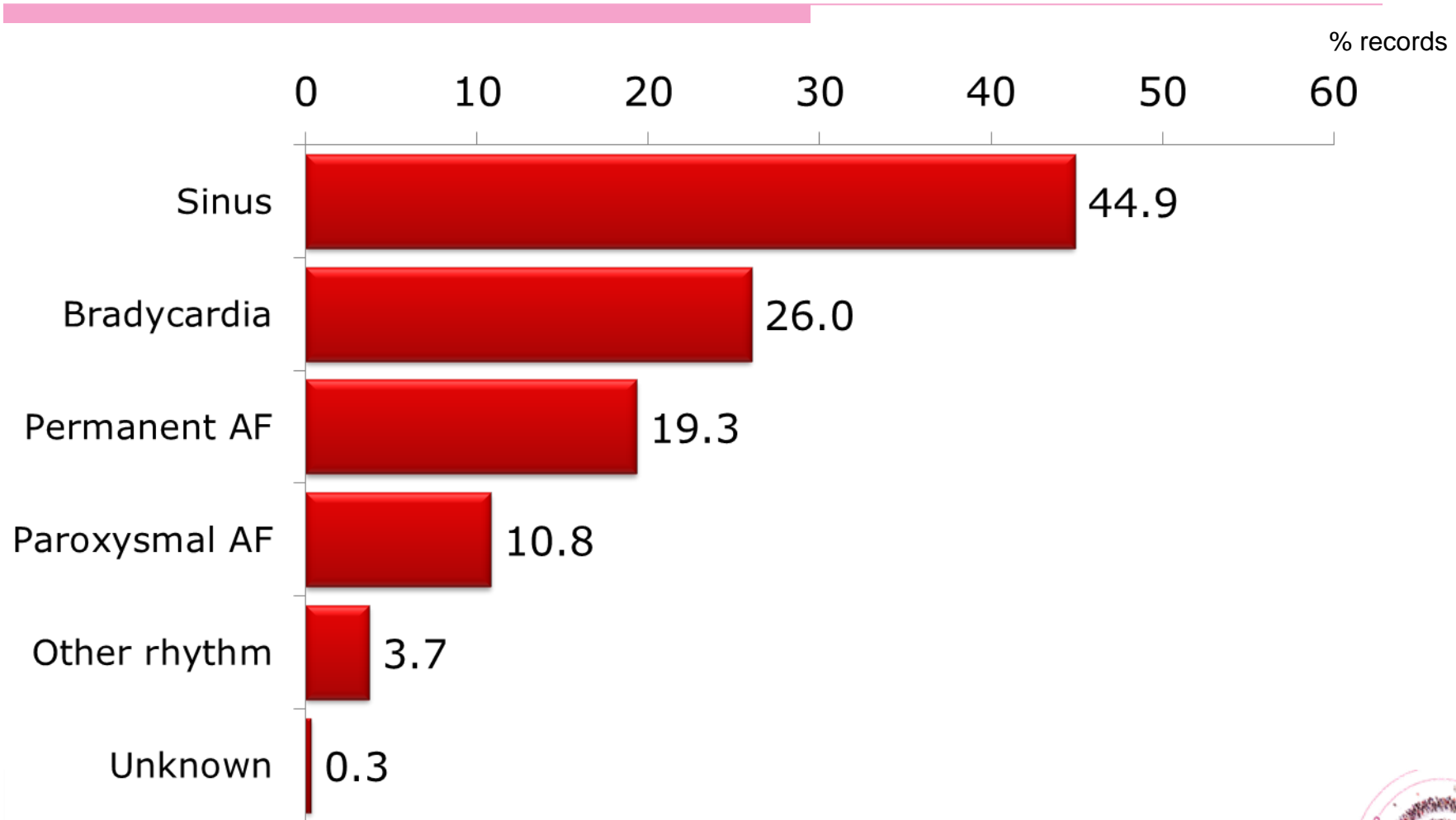
## Number of etiologies



# Primo-implantation:

## Indications for implantable PM – heart rhythm before surgery

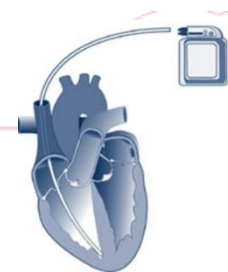
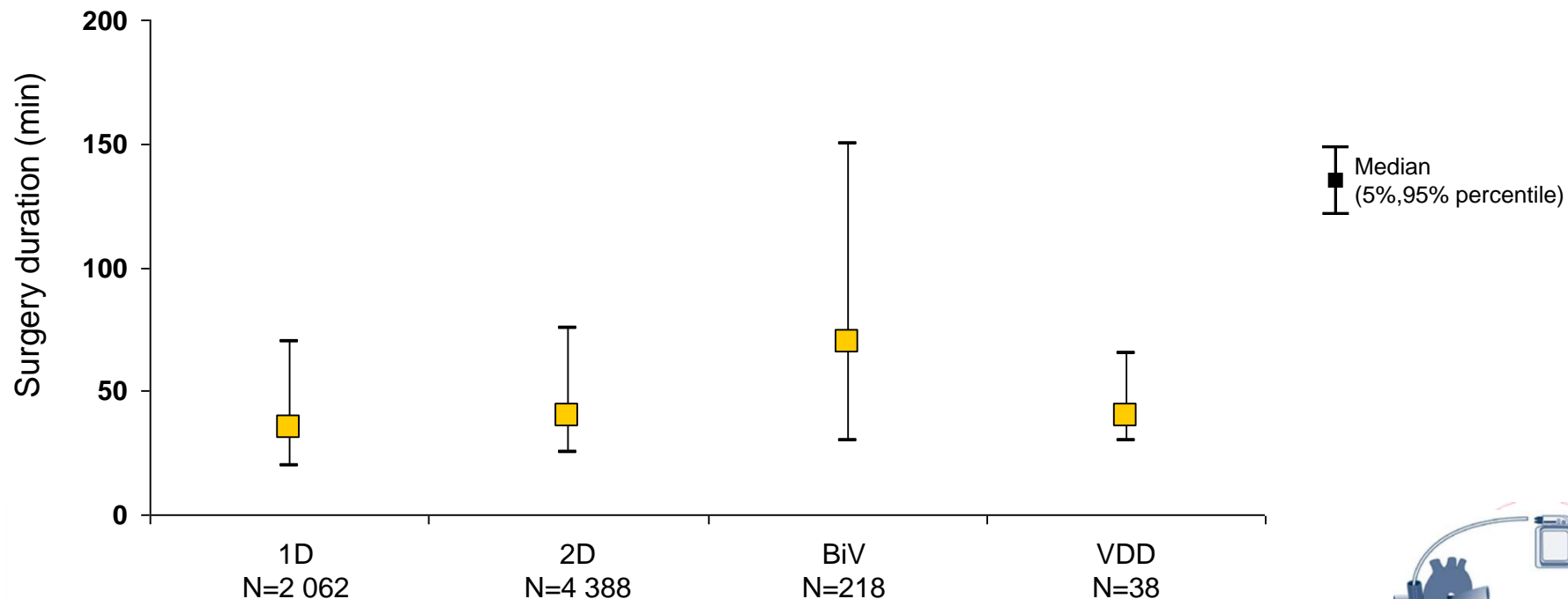
Base: *Primo-implantations 2015 (N=6 710)*



# Primo-implantation: Surgery duration – according to device type

Base: Primo-implantations 2015 (N=6 710)

Time (minutes)	1D	2D	BiV	VDD
5% percentile	20	25	30	30
Median	35	40	70	40
95% percentile	70	75	150	65





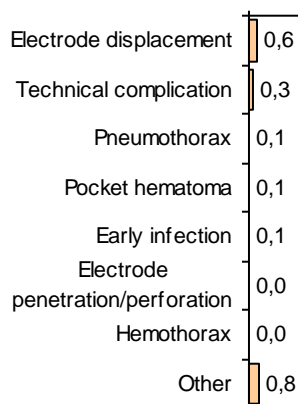
# Surgery complication – according to type of surgery

Base: All records 2015 (N=9 548)

## Primo-implantation

(N=6 710) % records

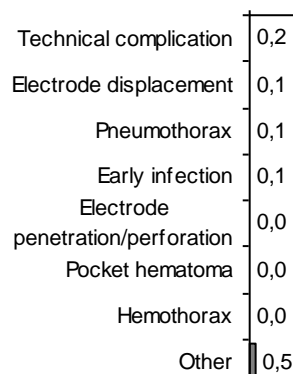
0 5 10 15 20



## Re-implantation

(N=2 591) % records

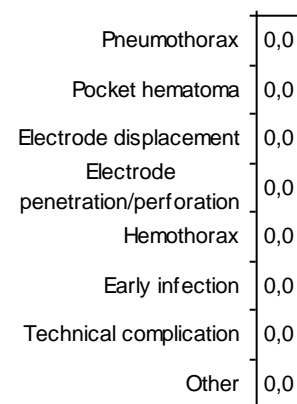
0 5 10 15 20



## Upgrade

(N=135) % records

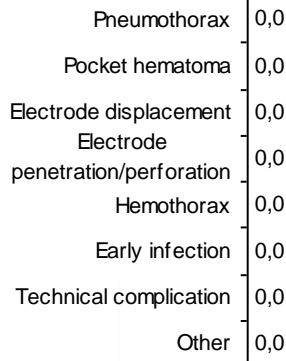
0 5 10 15 20



## Explantation

(N=27) % records

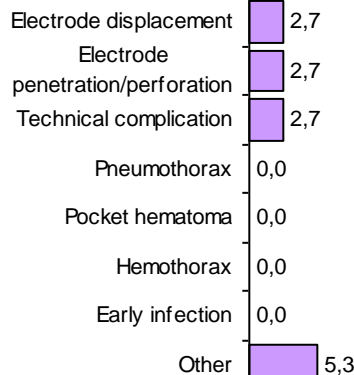
0 5 10 15 20



## Electrode surgery

(N=75) % records

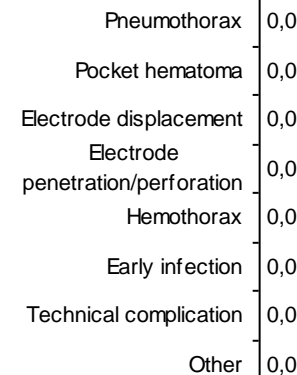
0 5 10 15 20



## Other surgery

(N=10) % records

0 5 10 15 20



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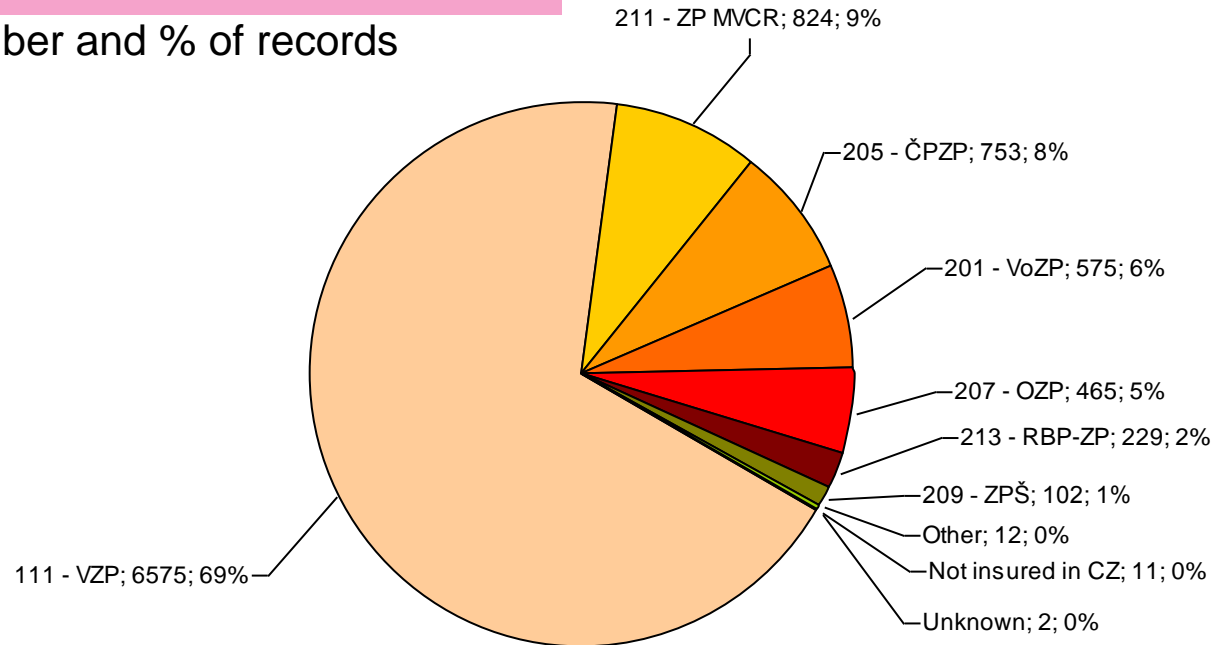
Surgery complications are quite rare.  
There are almost no complications  
during primo- or re- implantation.



# Number of records according to insurance company

Base: All records 2015 (N=9 548)

Number and % of records



Insurance	N	%
111 - Všeobecná zdravotní pojišťovna	6575	68.9
211 - Zdravotní pojišťovna Ministerstva vnitra ČR	824	8.6
205 - Česká průmyslová zdravotní pojišťovna	753	7.9
201 - Vojenská zdravotní pojišťovna	575	6.0
207 - Oborová pojišťovna zaměstnanců bank, pojišťoven a stavebnictví	465	4.9
213 - Revírní bratrská pokladna	229	2.4
209 - Zaměstnanecká pojišťovna Škoda	102	1.1
Other	12	0.1
Not insured in CZ	11	0.1
Unknown	2	0.0



# Implanting centres – number of records

Base: All records 2015 (N=9 548)

Centre/procedure type	Primo-implantation (N=6 710)	Re-implantation (N=2 591)	Upgrade (N=135)	Explantation (N=27)	Electrode surgery (N=75)	Other surgery (N=10)	Total (N=9 548)
Nemocnice Na Homolce - Kardiologické odd.	324	217	–	12	1	–	554
FN Plzeň - Kardiologické odd.	310	172	–	2	3	–	487
FNUSA Brno - Kardiologická klinika	347	135	3	–	2	–	487
IKEM Praha - Kardiologická klinika	260	172	26	10	7	–	475
FN Ostrava - Kardiiovaskulární odd.	323	112	4	–	3	–	442
FNKV Praha – III.interní - kardiologická klinika	292	113	8	–	–	–	413
Nemocnice České Budějovice - kardiocentrum	257	145	6	–	2	1	411
FN Olomouc - I. interní klinika - kardiologická	324	66	13	–	3	–	406
Liberec - Kardiocentrum	309	88	3	–	6	–	406
FNHK - 1. IK	259	120	26	–	–	–	405
Trinec - Podlesí - kardiocentrum	309	38	1	–	–	–	348
VFN Praha - II.IK - Kardiologická klinika	197	127	20	–	2	–	346
FN Brno - Kardiologická klinika	252	83	–	–	–	–	335
Orlickoústecká nemocnice - interní odd.	284	38	–	–	–	–	322
Kardiologické centrum AGEL a.s.	222	82	1	–	11	–	316
Zlín - Interní klinika	206	58	5	–	2	–	271
Kardiologie na Bulovce, s.r.o.	175	78	–	–	9	2	264
ÚVN - Kardiologické odd.	157	98	5	1	3	–	264
ÚnL - Kardiologické odd.	191	53	2	1	1	–	248
Kladno - Interní odd.	148	69	–	–	–	6	223
Městská nemocnice Ostrava-kardiologie	193	24	1	1	1	1	221
Tábor - Interní odd.	148	65	–	–	2	–	215
Kolín - Interní odd.	137	69	1	–	4	–	211
FN Motol - Kardiologické oddělení	139	50	6	–	4	–	199
Karlovy Vary nemocnice - Kardiocentrum	142	49	–	–	–	–	191
Jihlava - Kardiologické odd.	134	35	2	–	–	–	171
Frydek Místek - Interní oddělení	136	18	2	–	4	–	160
Hodonín - Kardiostimul.centrum Nem. TGM p.o.	112	35	–	–	2	–	149
Přerov - Interní odd.	95	42	–	–	1	–	138
Prostějov - Interní odd.	89	34	–	–	–	–	123
Chomutov - Interní odd.	69	34	–	–	–	–	103
Příbram - Interní oddělení	59	22	–	–	1	–	82
Šumperk - Interní odd	63	12	–	–	1	–	76
Havlíčkův Brod - Interní oddělení	38	23	–	–	–	–	61
FN Motol - Dětské kardiocentrum	10	14	–	–	–	–	24
Nemocnice Milosrdných sester - Interní odd.	–	1	–	–	–	–	1

# Implanting centres – number of implanted devices (trends)

	2014->2015 trend	2015	2014	2013	2012	2011	2010
FN Plzeň - Kardiologické odd., arytologie	54	481	427	424	303	432	467
VFN Praha - II.IK - Kardiologická klinika	50	344	294	287	352	372	393
ÚVN - Kardiologické odd.	40	260	220	232	237	218	212
IKEM Praha - Kardiologická klinika	27	463	436	425	403	373	427
FN Motol - Kardiologické oddělení	24	195	171	180	157	199	204
Chomutov - Interní odd.	23	103	80	109	106	121	117
Prostějov - Interní odd.	20	123	103	100	101	93	111
Frýdek Místek - Interní oddělení	20	155	135	139	145	137	126
Městská nemocnice Ostrava-kardiologie	20	218	198	211	175	187	132
Liberec - Kardiocentrum	19	399	380	401	394	389	348
Hodonín - Kardiostimul.centrum Nem. TGM p.o.	12	147	135	151	149	147	148
Třinec - kardiocentrum	11	348	337	358	323	362	310
Havlíčkův Brod - Interní oddělení	11	61	50	86	86	66	75
Příbram - Interní oddělení	10	81	71	102	89	89	86
FN Ostrava - Kardiovaskulární odd.	10	439	429	501	411	422	311
Přerov - Interní odd.	7	137	130	108	109	105	115
FNUSA Brno - Kardiologická klinika	7	485	478	473	491	480	454
FN Motol - Dětské kardiocentrum	0	24	24	19	25	35	26
NsP Havířov, p.o. - Interní oddělení	0	0	0	8	0	0	0
Kolin - Interní odd.	-1	207	208	247	191	211	193
Nemocnice Milosrdných sester - Interní odd.	-2	1	3	7	16	9	42
Kardiologické centrum AGEL, s.r.o.	-5	305	310	246	270	260	272
Tábor - Interní odd.	-5	213	218	197	192	174	144
Nemocnice České Budějovice - kardiocentrum	-6	407	413	409	429	428	383
Orlickoústecká nemocnice - interní odd.	-7	322	329	359	313	337	316
ÚnL - Kardiologické odd.	-9	244	253	222	233	200	182
Jihlava - Kardiologické odd.	-10	171	181	157	161	148	148
FNHK - 1. IK	-24	405	429	396	472	453	404
Zlín - Interní klinika	-26	268	294	237	243	249	236
Kardiologie na Bulovce, s.r.o.	-27	253	280	256	153	152	278
FN Olomouc - I. interní klinika - kardiologická	-29	403	432	309	325	237	180
Karlovy Vary - Kardiocentrum	-30	191	221	236	189	176	200
Šumperk - Interní odd	-31	75	106	90	92	98	111
Kladno - Interní odd.	-32	217	249	271	268	256	235
FNKV Praha - III.interní - kardiologická klinika	-43	413	456	403	391	365	367
Nemocnice Na Homolce - Kardiologické odd.	-126	541	667	642	695	679	693
FN Brno - Kardiologická klinika	-206	335	541	500	461	426	464

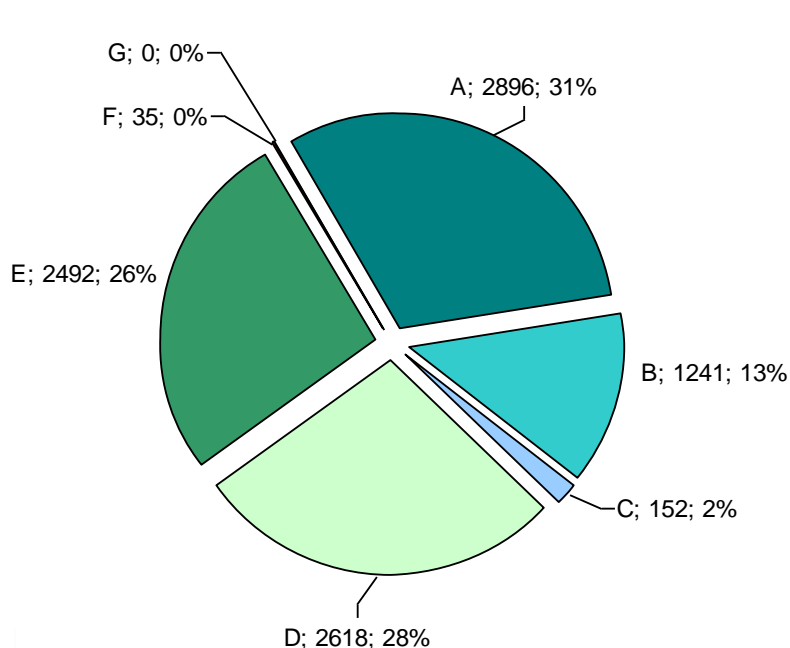


# Manufacturers market share

Base: All records 2015 (N=9 548)

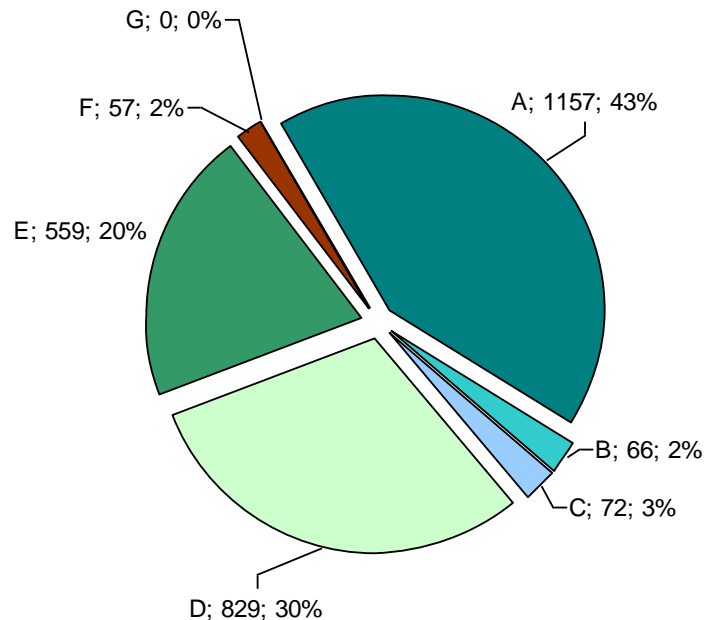
## Implanted devices manufacturer

N=9 434



## Explanted devices manufacturer

N=2 740





*Arne Larson*

XXIV

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