KAROLINSKA HOSPITAL
DEPARTMENT OF CARDIOLOGY
SWEDEN

ANNUAL STATISTICAL REPORT 2019

SWEDISH ICD & PACEMAKER REGISTRY

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Foreword

The annual report for 2019 regarding Pacemaker and ICD usage in Sweden is now ready. We have over the last years focused on reporting data on longevity of devices, leads and complications to pacemaker and ICD surgery.
We also introduced patient-reported QoL using the EQ5D instrument last year. So far the number of patients reporting one year follow up is to small to be included in the annual report
We have also increased the data collected regarding lead extractions which is rapidly increasing in Sweden with an increased number of centres, now four major centres, Uppsala, Stockholm, Lund and Göteborg.
Complications are shown for each type of implantation on a national basis, for a specific region and each hospital.
There is an ongoing discussion regarding concentration of therapy to fewer centres to improve outcomes by increasing the numbers of procedures per operator. To aid in this transformation we publish data on all individual implanters.
The annual report contains data from all implanting hospitals and > 95% of all procedures are reported when validated against the Patient care registry from The National Board of Welfare, Socialstyrelsen, in our annual validation process.

Implant rates Pacemaker

There are now more than 10 million inhabitants in Sweden and 50623 pacemaker patients living in Sweden at the end of 2019.
As always there are regional differences in implant rates with the highest implant rates in the large northern region, 957 new implants per million ihabitants. Lowest is theStockholm. Stockholm has a low implant rate due to a younger population than the national average.
The overall implant rate has decreased somewhat from 2018 to 2019 719 to 712 new implants per million.
The total number of first implants increased to 7352 pacemakers.

The number of implanting hospitals increased with one new, Helsingborg to 43 centres.

Age and Gender distribution of pacemaker treatment

The average age for females receiving pacemaker treatment is 77 years for women and men, 76 years. 5 patients over 100 years of age received primary implants. There is a male predominance with 60% of the new implants going to male patients.
There is no change in this distribution compared to previous years.

Pacemakers and leads

The manufacturers # shares of the market show only slight redistribution and all regions are bound by tenders for 1-3 years. St Jude Medical is now Abbot and again largest with 48%, and Medtronic with the brand Vitatron in second place with 22% market share. Biotronik is is third in the brady segment with 18% and Boston Scientific fourth with 11%.
Right sided pacemaker leads are now solely bipolar. Active fixation is used to 99% both in the atrium and in the ventricle.
We have now active fixation LV leads and their market share is increasing with 27% of the LV leads being active fixation. Quadripolar lead technology for CRT has rapidly increased and 83% of the LV leads are now quadripolar.
16627 leads were implanted all together.
Only a small number of epicardial systems are implanted in small children and patients without venous access and in some CRT patients. Venous access is cephalic cut-down technique, 48%, and direct subclavian puncture 34% and 18% axillary punction, no difference since last year.

The leadless pacemaker systems are new in clinical use and Medtronic Micras were implanted in 34 patients in 2019, up from 18 in 2018, 0.5% of all implanted PM.

Pacemakers

All pacemakers implanted have RR capability and DDD-R is the most common subtype with 78% of all implanted pacemakers, SSI 15% and CRT-Ps are used in small numbers, 7%.
The rate of MRI safe systems increases rapidly, approximately 90% of the systems implanted are MRI safe. The trend from the manufacturers to label older leads together with new pulse generators as MRI safe has made it difficult to keep correct track of the actual percentage.
The most common aethiology for pacemaker treatment is still the “conductive tissue fibrosis” 80% and ischaemic disease is more common in males, 7% vs 4%. The usage of the term “conductive tissue fibrosis” is most probably too high and only represents a lack of proper diagnosis when entering registry data.
System upgrade is at a steady state, especially in brady-paced patients with heart failure and 2019 a total of 260 patients were upgraded from normal brady pacing to CRT compared to 273 in 2018.

The most common symptom is syncope followed closely by dizziness and dyspnea. ECG indications are 2019 as before mainly related to sinus node disease with AV conduction disorders second. Sinus node disease is slightly more common as an indication in women than in men.
Generators are used to ERI criteria are fulfilled in 66% of the cases and 0,7% exhibit premature EOL.
Lead failures are uncommon and survival rates are very good with a 10 year survival of 98%.

Implanting organisation

The number of procedures for each implanter vary to a large extent between hospitals. Recommendations as to minimum number of procedures from EHRA is not routinely followed especially regarding CRT implantation. A recommendation to implant volumes was made by the Swedish Cardilogy Society #s Arrhythmia Group in 2016 and has so far had no impact on the organization in hospital with low individual implant numbers.

Implant rates ICD

There are 12735 active ICD patients in Sweden 2019 and the number of new implants was 1508. The number centers implanting ICDs is 33 and represents roughly 2/3 of the PM implanting centers although 7 centers do <20 implants per year, well below recommendations by ESC and the Swedish national society.
The national implant rate is slightly higher in 2019 than 2018 146 vs 144 per million. Implant rates show the same regional differences as in pacemakers with the highest rates in the northern region 178, and the lowest in the Western region with 109 per million.
Primary prevention stand for roughly 67% of all implants. The implant rates for primary prevention varies much more than total implant with rates in the range 56-124 per million.
About 36 % of the ICD procedures are replacements, down from 38% in 2018 but could be expected to go down further with generators now showing increased longevity.
As with PM the regions are bound by ICD purchasing tenders and manufacturers share shows only slight variations over previous year. Medtronic is the largest with 41% market share, Abbot second with 39% and Boston third with 14%. Biotronic is smallest with 5% market share.

ICD Subtypes and leads

93% of the leads are now single coil and 99% were active fixation. An increase in single coil use from 65% in 2015. Venous access is comparable to PM implants with an equal distribution between cephalic cut-down and direct subclavian puncture.
Subtypes are 35% DDDR devices, 27% VVIR and 36% CRT-D devices.

A small number of S-ICD devices were implanted 30 which is up from 14 in 2018.
Only 58% of the ICD's are used until normal EOL/ERI, 11% are changed due to system upgrade, usually to a CRT system. Technical recalls stand for 1,2% of all box changes and premature EOL is 2%.

ICD leads display higher failure rates compared to pacemaker leads but overall longevity is still good. Specific statistics for Sprint Fidelis, Riata and Durata leads are displayed in the quality section.

The number of procedures per operator shows the same large variation in volumes as with pacemaker procedures at different hospitals and some are clearly below recommended volumes.

ICD Patients

The average age for ICD implant is stable at 64 years in males and 62 years in females for all types of implants, unchanged from previous years. 83 patients in the age group 80-89 received a first ICD implants of which 36 were primary prevention. Aethiology was ischaemic heart disease in 56% of all patients but more common in males, 68% vs 32% in females. Medication at the start of therapy is displayed in tables.

CRT implant rates

Implant rates of CRT system are only increasing slowly in Sweden, 64 per million CRT-Ds and 63 per million CRT-Ps new implants. The number of CRT-P systems is slowly increasing in share and vary between regions but is generally in the region of 50%.
The number of centres performing CRT implantations is less than the number doing ICDs, 25 vs 33. The number of CRT procedures per implanter range from 1-73 and only 7 implanters performed >50 implants and 23 implanters out of 72 perform > 20 implants per year which is the recommended minimum.
The failure rate at implant is according to the registry 32 compared to 1312 successfulimplants, 2,4%. This is most likely an underestimation when compared to the literature.

CRT patients

The average age of CRT-P patients at first implant is 77 y and CRT-D patients 67 years with a large male predominance, the same as last year. The number of CRT implants in elderly patients is clearly increasing with 268 CRT-P systems in patients 80-89 years and 39 CRT-D systems. A small number,9, of CRT-P systems were implanted in patients >90 years.
Medication for patients receiving CRT for the first time is given in tables.

ILR

A total of 1038 ILRs were implanted in Sweden 2019 is up from 1007 in 2018 with the main indication being dizzy spells and syncope. The distribution between sexes is equal.
At the end of the ILR investigation period 259 (24%) of the patients were found to have a PM indication and 36 (3%) an ICD indication, the rest showed no pathological rhythm during the FU. In 18 patients (1,7%) a new ILR was implanted to extend the monitoring period.

Quality of device treatment, pacemakers, pacing modes

The use of pacing mode in sinus node disease shows 5% VVI-R systems on average and the same in small and large hospitals.

Lead extraction

The numbers of lead extractions are increasing and there are now 5 centers performing regular assisted lead extraction. Karolinska, 205 leads, Sahlgrenska 124 leads, Lund 108 leads, Uppsala 68 leads and Linköping 14 leads.
The numbers are expected to increase further in 2020.
The most common reason is infection. Preventive extraction of leads with problems such as Medtronic Sprint Fidelis and SJM Riata is also performed in a lower number of cases in 2019 than before due to decreasing numbers of these leads still in use.
Methods and success rates are displayed for those hospitals that have complete reporting.

Complications Pacemaker

The total complication rate for pacemaker procedures is 3,8% vs 4,5% in 2018 with lead dislodgement being the most common. Passive atrial leads show the highest dislodgement rate with 3% vs 1.5 for active fix atrial leads. SC leads show the same tendency with 2% dislodgement for all passive types and 0,7% for the Medtronic screw-in type SC lead.

Infection rates are given as 0.4% in first implants, 1,8% in generator changes and 1,2% in upgrades to CRT systems.
There is a variation among the operating hospitals with possible under-reporting in many cases.
Hospitals that have registered <3% in total complication can be regarded as not having complete registration. This is based on literature regarding pacemaker procedure complications with a common rate of 5-15%.

Complications and gender

Infections are more common during generator changes than new implants and most common in CRT system changes. In PMR female sex is associated with less complications of all types but perforation and pneumothorax. This is different from the literature that usually has an overrepresentation of females in all types of complications.

Complications ICD

The overall complication rate to ICD treatment is 6,8% and is up slightly down 7,3% in 2017.
The most common complication is lead dislodgement 1,9% followed by infection with 1,3% in first implants, 2,3% in generator changes and 1,6% in upgrades to CRT systems.

The rate between hospitals is also given in tables and as with pacemaker treatment, <3% is considered incomplete registration.

Complications CRT

This is presented both as CRT-D and CRT-P complications. Both values, 7.3% and 4% are very low and do not compare well with literature findings of up to 15% complications.
Most common is as with ICDs and PMs lead dislodgement 0,3% vs 2.1 for CRT-P and CRT-D. Most commonly it is the sc lead that dislodges.

Procedures

Duration of fluoroscopy and procedure times are given for all types and hospitals in tables. The procedures that have been performed in less than 10 at different sites are marked as not reliable for comparison.
A single chamber device as a mean takes 38-41minutes to implant VVI and AAI systems, and a dual chamber device 48 min and a CRT system 86 min on average. The procedure times for ICD systems of the same subtypes are comparable.

Device longevity ICD and PM

Generators generally have very good longevity with an average for Pacemakers of 99.4% after 5 years and 56% after 10 years but there are large differences between models and manufacturers. The survival rates are calculated on implants performed after 2006. Each model is given in the tables.
Pacemaker lead survival is very good with a survival rate of 98,6% after 10 years with very little difference between models. Only two of the standard leads are showing slightly lower values, the Boston 4471 and 4480 Fineline leads with 95% 10 year survival.
ICD generator survival is more heterogenous than PM generator survival with larger differences between manufacturers and models and an average of 96% after 5 years and 21% 10 year survival based on implants after 2006.

SJM Fortify and Unify were identified as problem generators in 2014 in our registry.
ICD lead survival is also shorter than pacemaker lead survival, 95% vs 99% after 10 years based on implants after 2006 and including Sprint Fidelis and Riata leads.
The Medtronic Sprint Fidelis models were implanted in 903 cases in Sweden and the survival rate is 67% after 10 years and has decreased rapidly as expected from previous year.

In the St Jude Riata (1500 series)and Durata (7000 series) models failures are increasing and 10 year survival is now down to 73% and 82%.
Biotronik Linox leads are 94% at 5 years and 88 after 10 years.

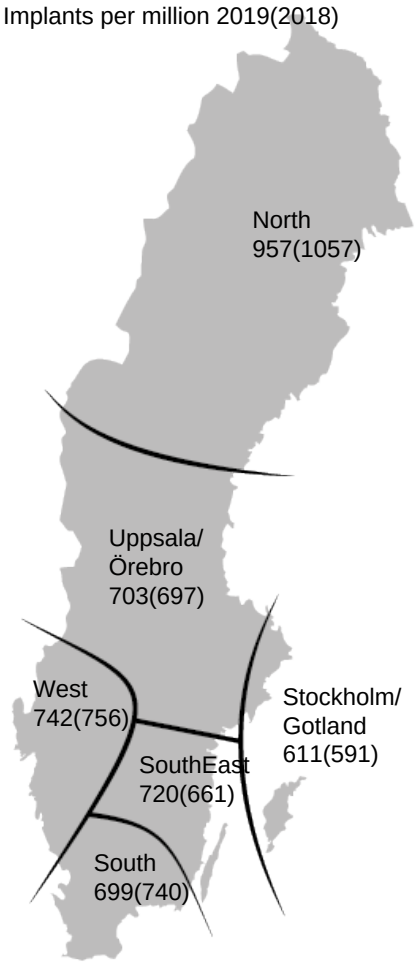
Patients

The ICD patient survival is 68% after 5 years for ICD patients vs 70% for pacemaker patients.
The ten year survival for PM patients is 45% and 51% for ICD patients.
The heart failure patients treated with CRT have also the shortest expected survival rate among the PM and ICD patients.
CRT-P patients have a 69% 5 year survival and CRT-D patients 32% even though the CRT-P patients are on average 10 years older at primary implant.
One-year mortality is 9.1 % in PM patients, 4.5 % in ICD patients, 8.8 % in CRT-P patients and 5.7 % in CRT-D patients.

Fredrik Gadler
Manager Swedish National ICD and Pacemaker Registry

The regions are based on where the patients live, not where they are treated

Region	Population	No of first impl	No per million	Active patients
Stockholm/Gotland	2436767	1490	611	10508
Uppsala/Örebro	2119665	1491	703	11029
South-East Sweden	1074540	774	720	4794
Southern Sweden	1878387	1313	699	9141
Western Sweden	1920244	1425	742	9628
Northern Sweden	897986	859	957	5523
Total	10327589	7352	712	50623



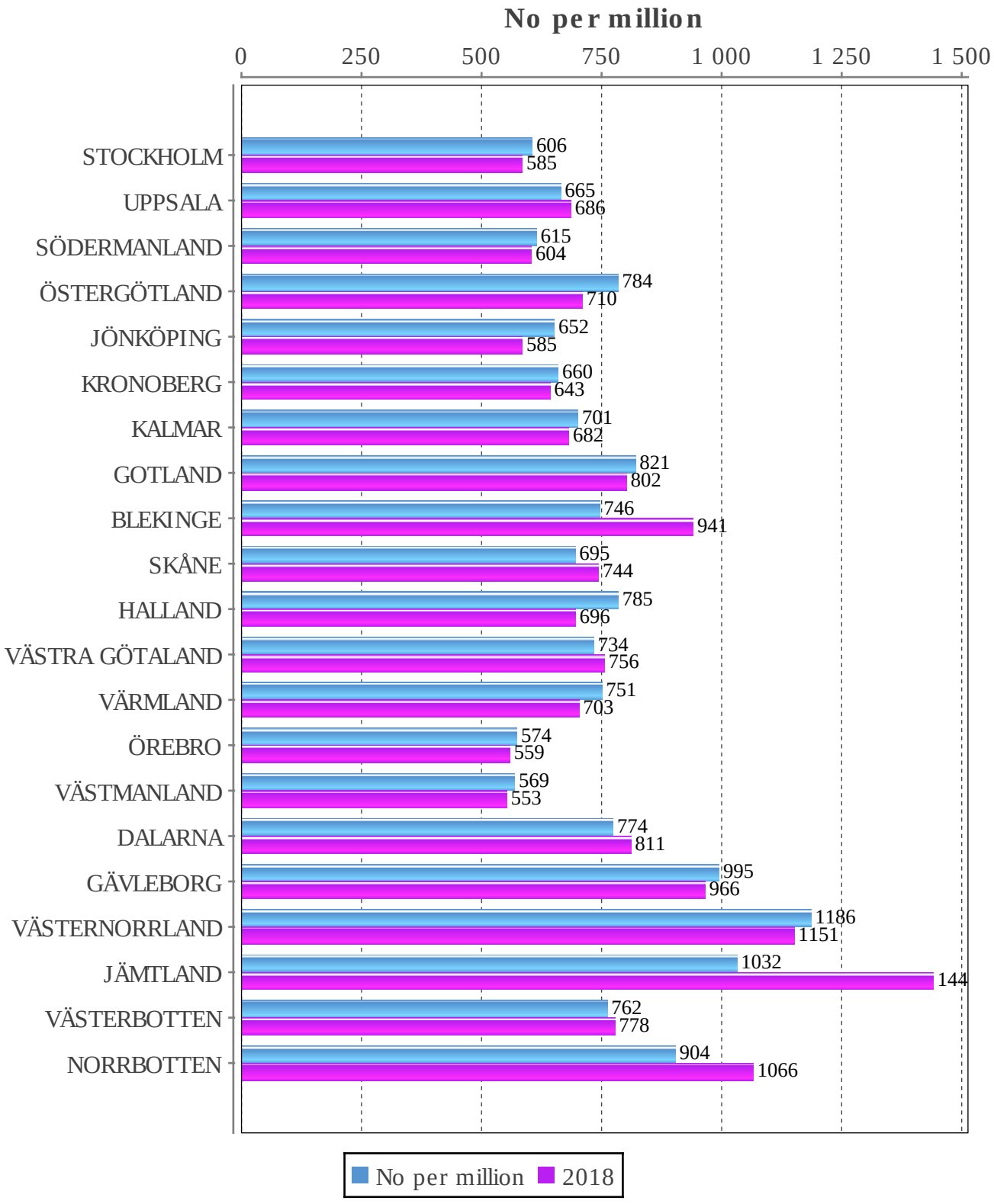
First implants per hospital

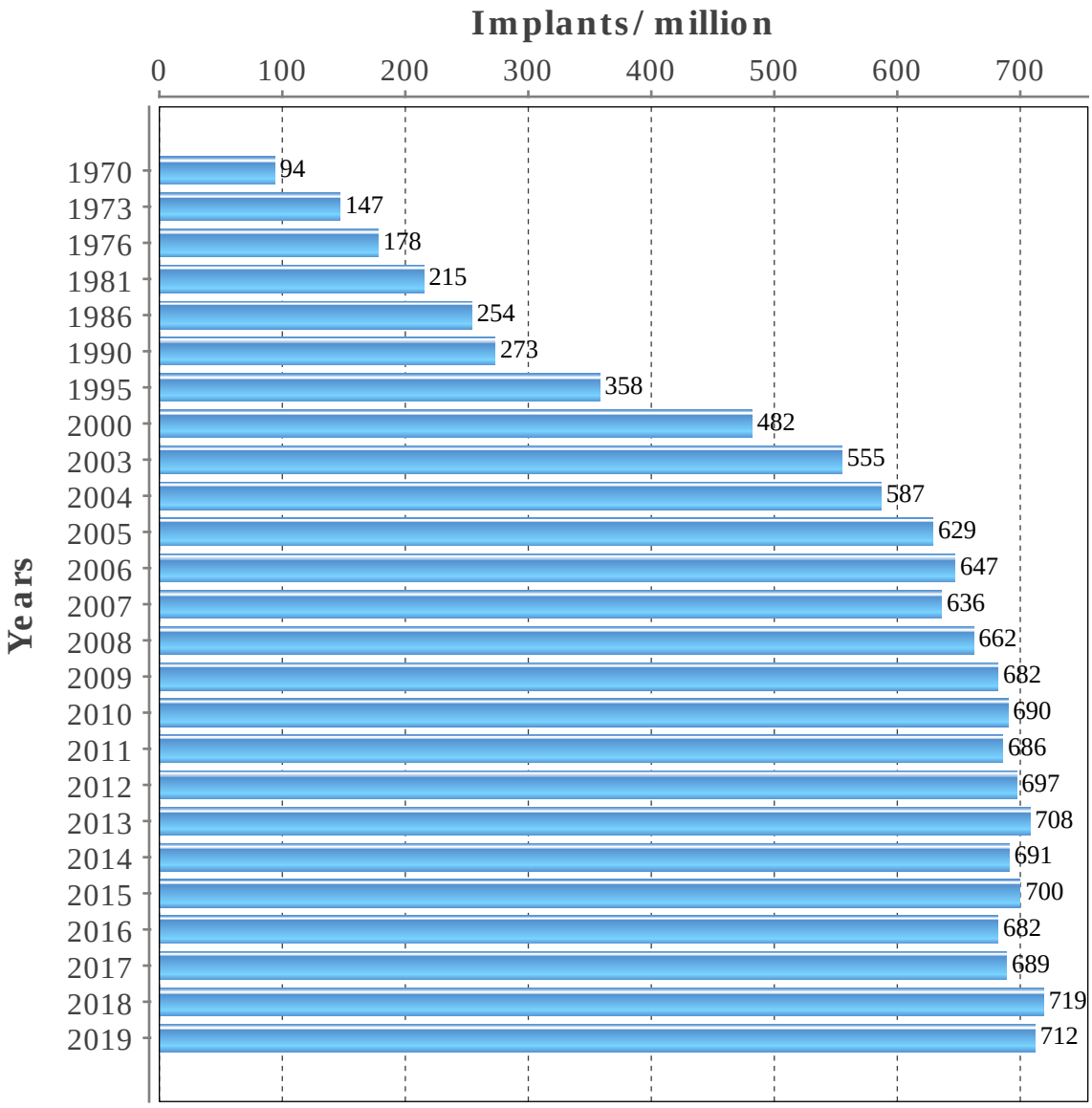
Region	Hospital	2019	2018
Northern Sweden	Norrlands Universitetssjukhus	173	187
	Skellefteå lasarett	57	52
	Sollefteå sjukhus	16	14
	Sunderby sjukhus	218	254
	Sundsvalls sjukhus	220	202
	Örnsköldsviks sjukhus	63	55
	Östersunds sjukhus	136	182
Southern Sweden	Blekingesjukhuset	132	158
	Centrallasarettet Växjö	127	122
	Centralsjukhuset Kristianstad	238	231
	Helsingborgs lasarett	224	224
	Länssjukhuset Halmstad	117	98
	Skånes universitetssjukhus, Lund	317	338
	Skånes universitetssjukhus, Malmö	202	236
	Varbergs sjukhus	128	119
South-East Sweden	Linköpings Universitetssjukhus	424	373
	Länssjukhuset Kalmar	97	106
	Länssjukhuset Ryhov	218	190
	Oskarshamns sjukhus	12	9
	Västerviks sjukhus	63	47
Stockholm/Gotland	Danderyds sjukhus	458	408
	Karolinska Universitetssjukhuset	418	417
	St Görans sjukhus	302	262
	Södersjukhuset	298	297
	Visby lasarett	21	26
Uppsala/Örebro	Akademiska sjukhuset	288	295
	Arvika sjukhus	2	1
	Centralsjukhuset Karlstad	167	154
	Centralsjukhuset Västerås	145	121
	Falu lasarett	225	230
	Gävle sjukhus	213	198
	Hudiksvalls sjukhus	62	74
	Mälarsjukhuset	168	162
	Torsby sjukhus	45	36
	Universitetssjukhuset Örebro	182	196
Western Sweden	Alingsås lasarett	56	50
	Drottning Silvias Bus	8	10
	Kungälvs sjukhus	97	83
	Sahlgrenska Universitetssjukhuset	480	459
	Sahlgrenska Universitetssjukhuset /Östra	62	60
	Skaraborgs sjukhus Skövde	186	224
	Södra Älvsborgs sjukhus	174	202
	Trollhättan, NÄL	237	230

STATISTICS – PACEMAKER – IMPLANTS PER COUNTY

The regions are based on where the patients live, not where they are treated

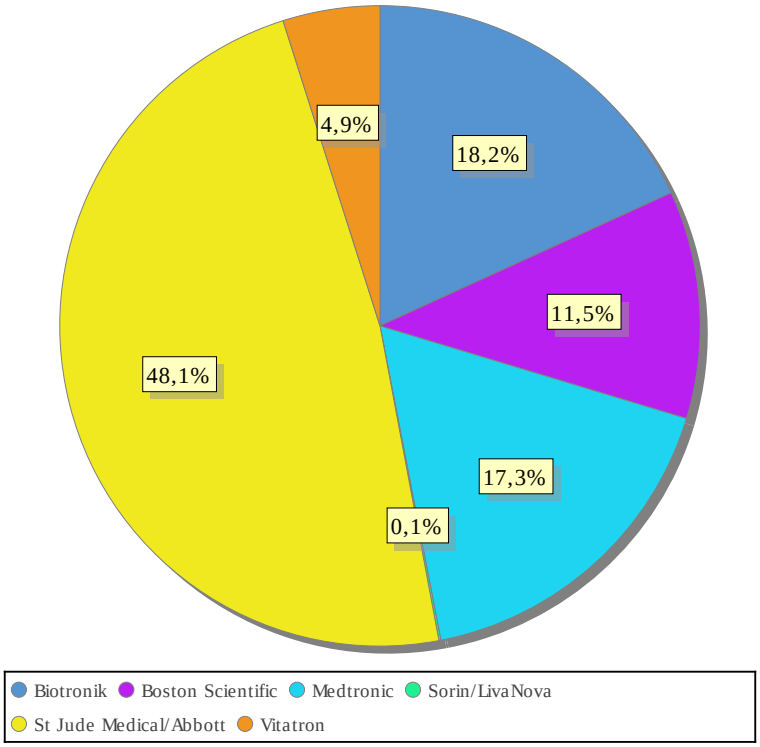
County	Population	No of first	No per million	Active patients
STOCKHOLM	2377081	1441	606	10092
UPPSALA	383713	255	665	1981
SÖDERMANLAND	297540	183	615	1477
ÖSTERGÖTLAND	465495	365	784	2230
JÖNKÖPING	363599	237	652	1569
KRONOBERG	201469	133	660	696
KALMAR	245446	172	701	995
GOTLAND	59686	49	821	416
BLEKINGE	159606	119	746	884
SKÅNE	1377827	958	695	6953
HALLAND	333848	262	785	1543
VÄSTRA GÖTALAND	1725881	1266	734	8691
VÄRMLAND	282414	212	751	1412
ÖREBRO	304805	175	574	1391
VÄSTMANLAND	275845	157	569	1336
DALARNA	287966	223	774	1611
GÄVLEBORG	287382	286	995	1821
VÄSTERNORRLAND	245347	291	1186	1626
JÄMTLAND	130810	135	1032	682
VÄSTERBOTTEN	271736	207	762	1467
NORRBOTTEN	250093	226	904	1748
Total	10327589	7352	712	50621


No per million
0
250
500
750
1 000
1 250
1 500
STOCKHOLM 606 585
UPPSALA 665 686
SÖDERMANLAND 615 604
ÖSTERGÖTLAND 784 710
JÖNKÖPING 652 585
KRONOBERG 660 643
KALMAR 701 682
GOTLAND 821 802
BLEKINGE 746 941
SKÅNE 695 744
HALLAND 785 696
VÄSTRA GÖTALAND 734 756
VÄRMLAND 751 703
ÖREBRO 574 559
VÄSTMANLAND 569 553
DALARNA 774 811
GÄVLEBORG 995 966
VÄSTERNORRLAND 1186 1151
JÄMTLAND 1032 144
VÄSTERBOTTEN 762 778
NORRBOTTEN 904 1066
No per million
2018


Implants/ million
0
100
200
300
400
500
600
700
Years
1970
1973
1976
1981
1986
1990
1995
2000
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
94
147
178
215
254
273
358
482
555
587
629
647
636
662
682
690
686
697
708
691
700
682
689
719
712

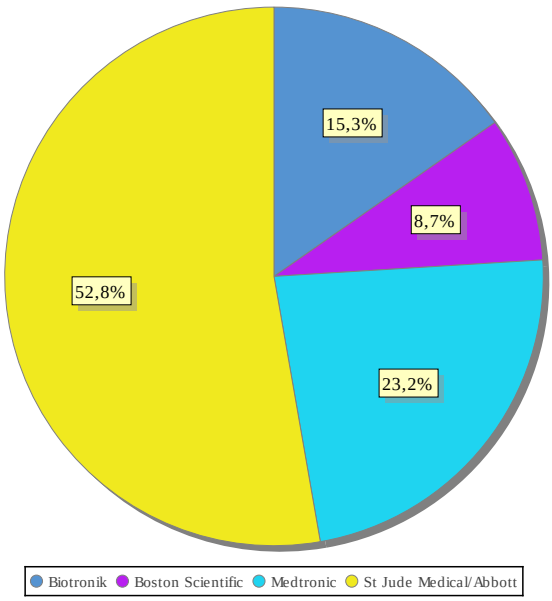
Market share per manufacturer in Sweden. Medtronic and Vitatron regarded as separat companies

Manufacturer	2016 %	2017 %	2018 %	2019 %
Biotronik	10.0	14.4	18.9	18.2
Boston Scientific	18.8	14.7	10.2	11.5
Medtronic	21.2	19.6	11.5	17.3
Sorin/LivaNova	2.0	1.4	0.5	0.1
St. Jude Medical	41.2	45.4	48.7	48.1
Vitatron	6.9	4.6	10.2	4.9
Nayamed International	-	-	-	-
Impulse Dynamics	-	-	-	-



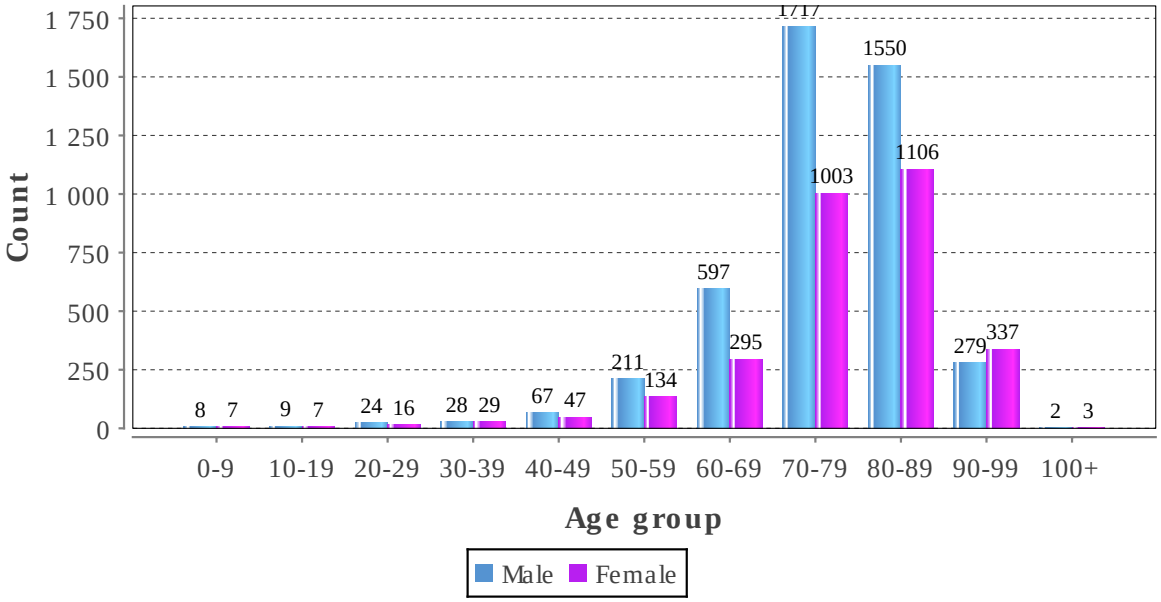
Market share per manufacturer in Sweden. Medtronic and Vitatron regarded as separat companies. From 2011 even including leads implanted in ICD systems.

Manufacturer	2016 %	2017 %	2018 %	2019 %
Biotronik	6.6	9.8	13.7	15.3
Boston Scientific	17.0	13.6	9.1	8.7
Medtronic	23.1	22.7	22.2	23.2
St. Jude Medical	52.9	53.5	54.8	52.7
Vitatron	0.2	0.2	-	-
Sorin/LivaNova	0.2	0.2	0.1	-
Greatbatch Medical	-	-	-	-



Age and gender distribution for new implants, total numbers

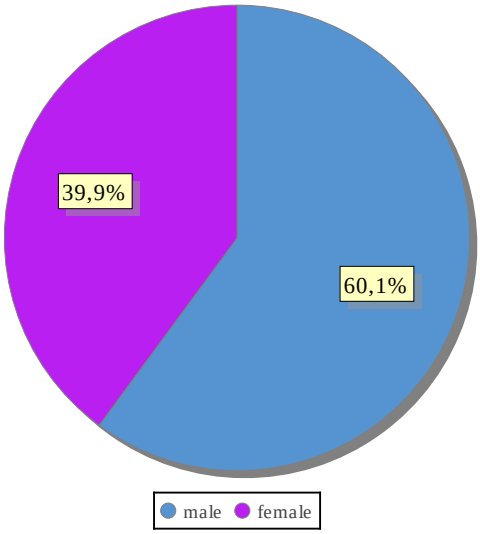
Age (years)	Total no	%	Male	Female
0-9	15	0.2	8	7
10-19	16	0.2	9	7
20-29	40	0.5	24	16
30-39	57	0.8	28	29
40-49	114	1.5	67	47
50-59	345	4.6	211	134
60-69	892	11.9	597	295
70-79	2720	36.4	1717	1003
80-89	2656	35.5	1550	1106
90-99	616	8.2	279	337
100+	5	0.1	2	3
Average age	76	0.0	76	77
				Total number of implants: 7476



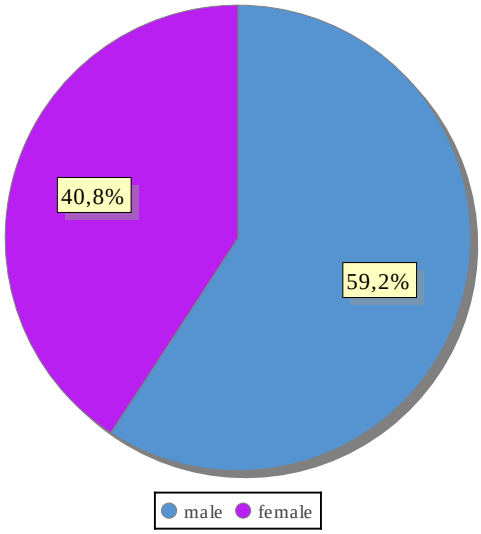
Ratio of new implants versus generator changes

	Total		Male		Female	
	no	%	no	%	no	%
First implant	7476	70.0	4492	60.1	2984	39.9
Replacement	3202	30.0	1895	59.2	1307	40.8
Total	10678	100.0	6387	59.8	4291	40.2

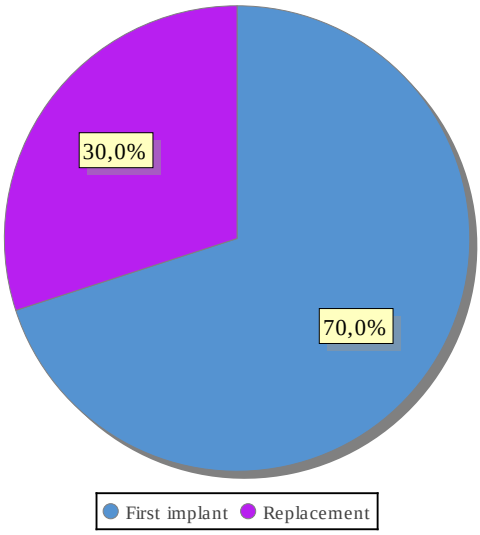
First implant



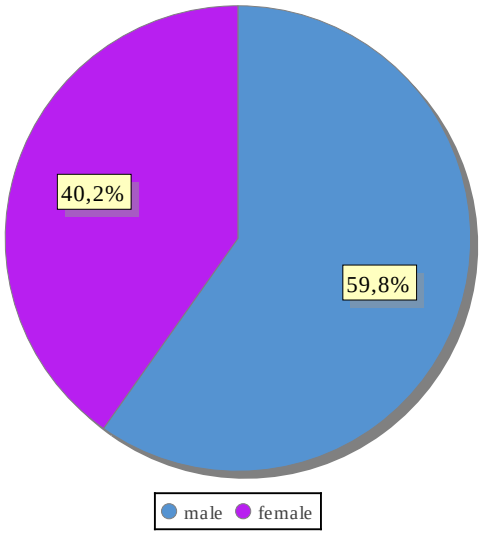
Replacement



Replacement ratio



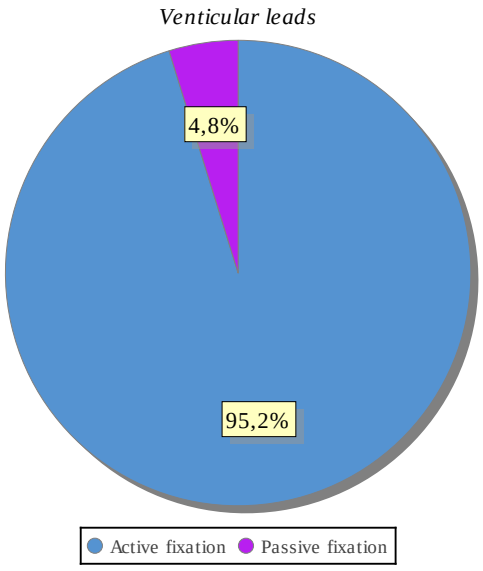
All implant

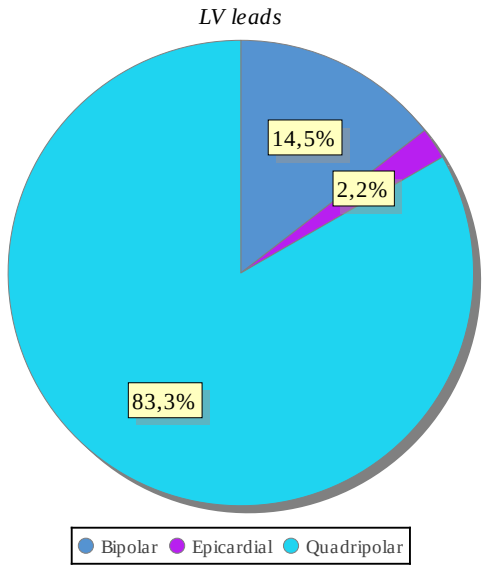


Lead type distribution for atrial and venticular use for first implants and replacements including all pace leads, pace and ICD systems

	Atrial		Venticular		LV-lead	
	no	**%**	**no**	**%**	**no**	**%**
Bipolar	7381	99.5	7760	99.2	200	14.5
Epicardial	37	0.5	56	0.7	31	2.2
Unipolar	1	-	1	-	-	-
Quadripolar	-	-	6	0.1	1149	83.3

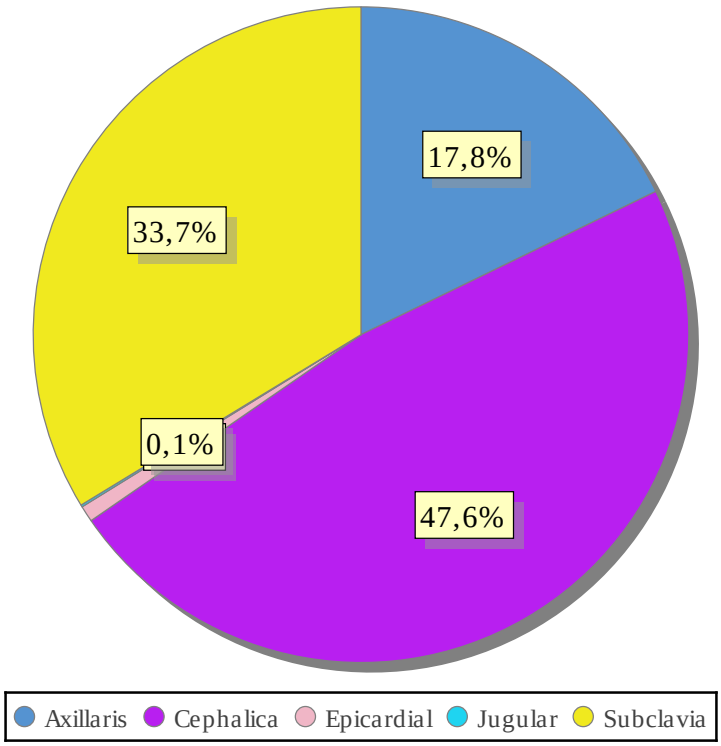
	Atrial		Venticular		LV-lead	
	no	**%**	**no**	**%**	**no**	**%**
Active fixation	7415	99.9	7455	95.2	381	27.6
Passive fixation	5	0.1	372	4.8	999	72.4
						Total number of leads: 16627





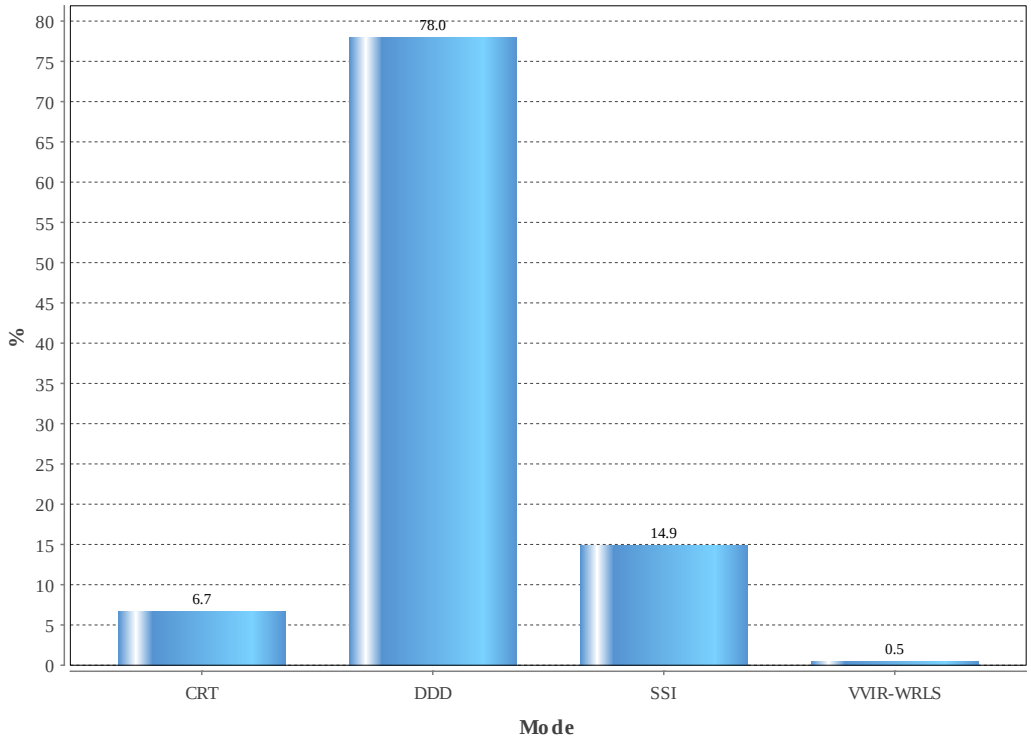
Venous access for first implants and replacements, all types of pace leads.

Lead access	No	%
Axillaris	2971	17.8
Cephalica	7936	47.6
Epicardial	129	0.8
Jugular	12	0.1
N/A	2	0.0
Subclavia	5613	33.7



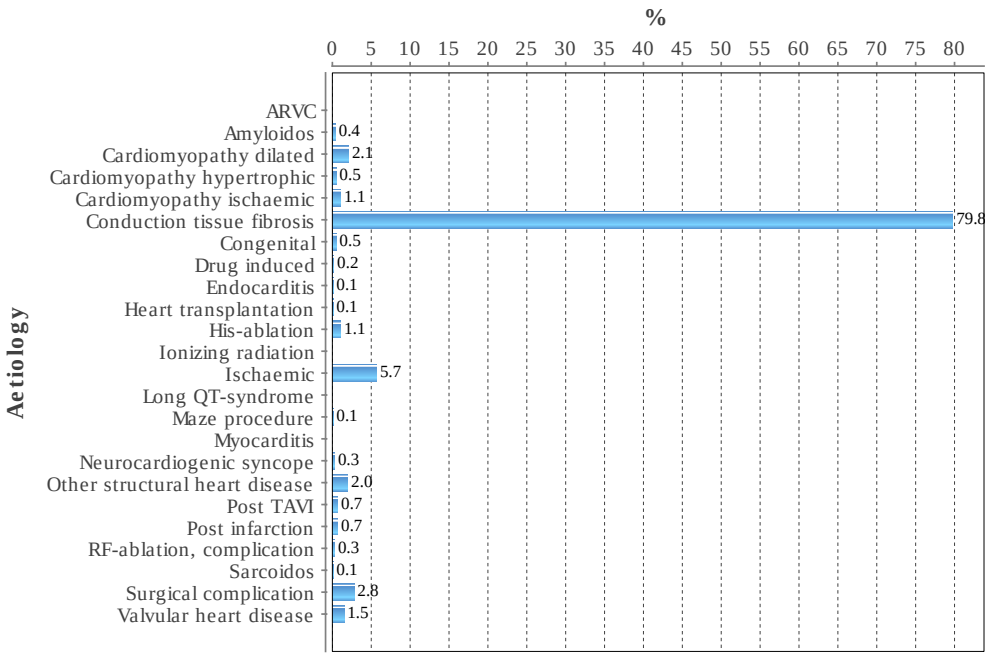
Implants by subtype (WRLS: wireless)

Mode	%	No
CRT	6.7	499
DDD	78.0	5830
SSI	14.9	1113
VVIR-WRLS	0.5	34
Total number of first implants 7476		



Main aetiology for implanting pacemakers

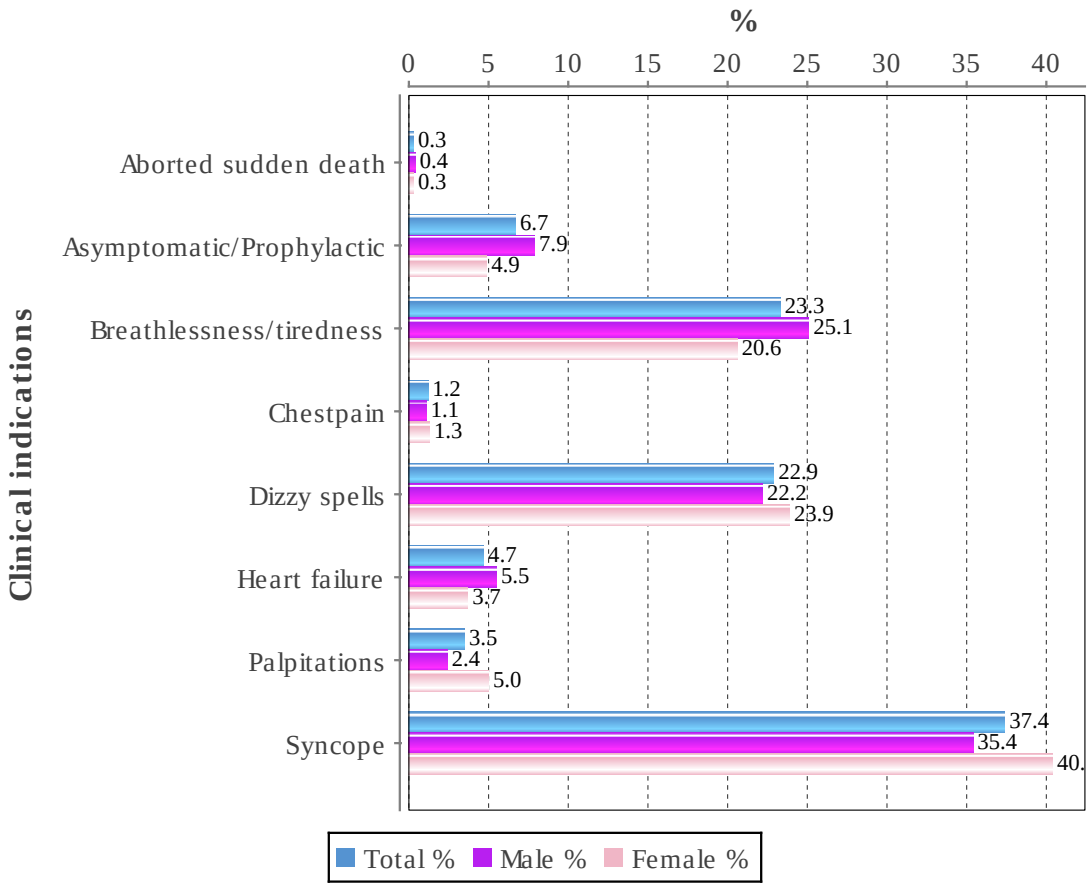
Aetiology	Total %	Male %	Female %
ARVC	0.0	0.0	0.0
Amyloidos	0.4	0.6	0.2
Cardiomyopathy dilated	2.1	2.4	1.7
Cardiomyopathy hypertrophic	0.5	0.4	0.6
Cardiomyopathy ischaemic	1.1	1.4	0.5
Conduction tissue fibrosis	79.8	78.1	82.4
Congenital	0.5	0.3	0.6
Drug induced	0.2	0.1	0.2
Endocarditis	0.1	0.1	0.1
Heart transplantation	0.1	0.2	0.0
His-ablation	1.1	0.5	2.0
Ionizing radiation	0.0	0.0	0.1
Ischaemic	5.7	7.1	3.7
Long QT-syndrome	0.0	0.0	0.0
Maze procedure	0.1	0.1	0.0
Myocarditis	0.0	0.0	0.1
Neurocardiogenic syncope	0.3	0.3	0.1
Other structural heart disease	2.0	1.9	2.0
Post TAVI	0.7	0.7	0.8
Post infarction	0.7	0.8	0.5
RF-ablation, complication	0.3	0.3	0.4
Sarcoidos	0.1	0.0	0.1
Surgical complication	2.8	2.8	2.6
Valvular heart disease	1.5	1.7	1.1

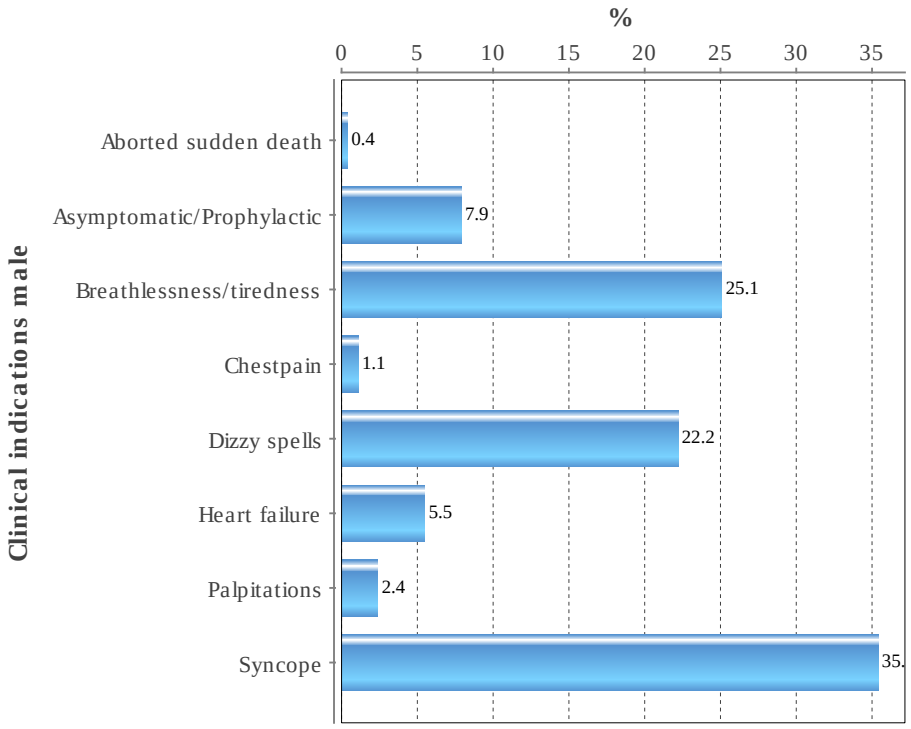


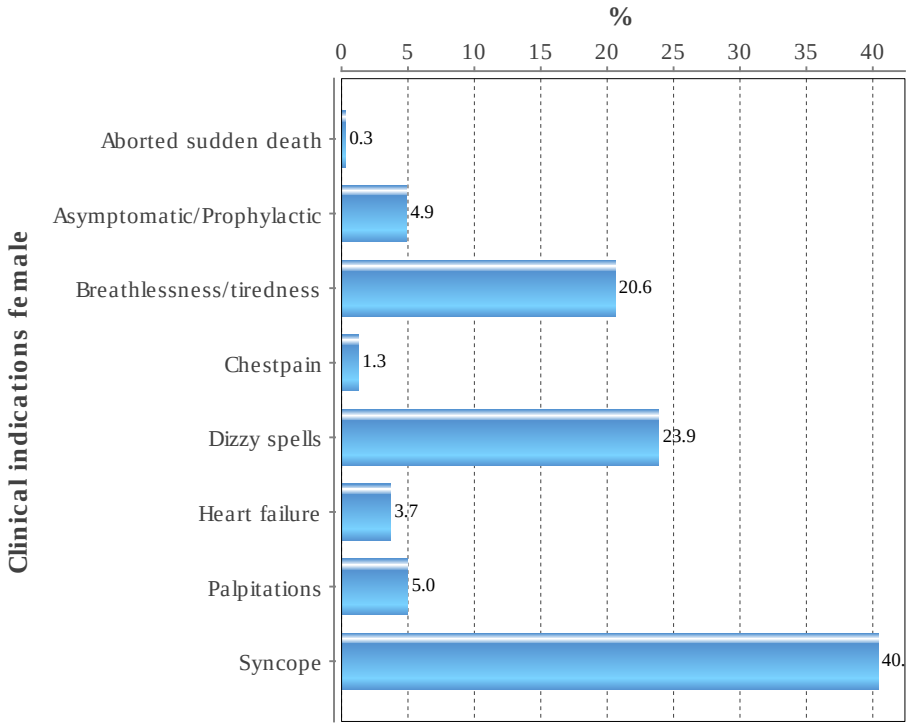
	2019	2018	2017	2016	2015	2014
VVI to VVIR	3	4	3	5	5	5
AAI/AAIR to DDD/DDDR	21	21	21	21	21	20
VVI/VVIR to DDD/DDDR	35	23	24	22	22	43
VVI/VVIR/DDD/DDDR to CRT	260	274	221	239	216	142

Main symptom for implanting pacemakers

Indication	Total %	Male %	Female %
Aborted sudden death	0.3	0.4	0.3
Asymptomatic/Prophylactic	6.7	7.9	4.9
Breathlessness/tiredness	23.3	25.1	20.6
Chestpain	1.2	1.1	1.3
Dizzy spells	22.9	22.2	23.9
Heart failure	4.7	5.5	3.7
Palpitations	3.5	2.4	5.0
Syncope	37.4	35.4	40.4

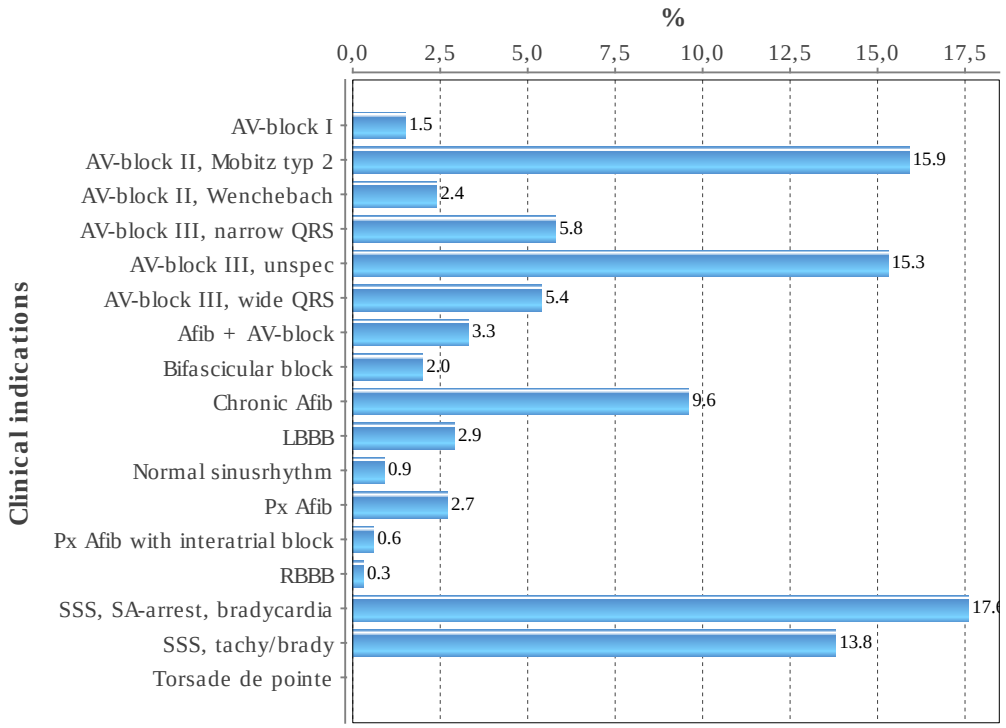



%
0
5
10
15
20
25
30
35
Clinical indications male
Aborted sudden death
0.4
Asymptomatic/Prophylactic
7.9
Breathlessness/tiredness
25.1
Chestpain
1.1
Dizzy spells
22.2
Heart failure
5.5
Palpitations
2.4
Syncope
35.


%
0
5
10
15
20
25
30
35
40
Clinical indications female
Aborted sudden death
0.3
Asymptomatic/Prophylactic
4.9
Breathlessness/tiredness
20.6
Chestpain
1.3
Dizzy spells
23.9
Heart failure
3.7
Palpitations
5.0
Syncope
40.

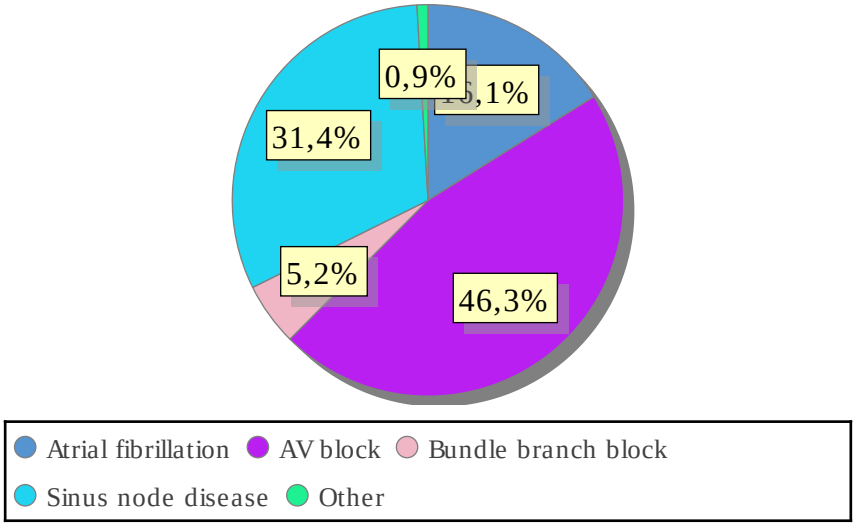
Main ECG indication, total

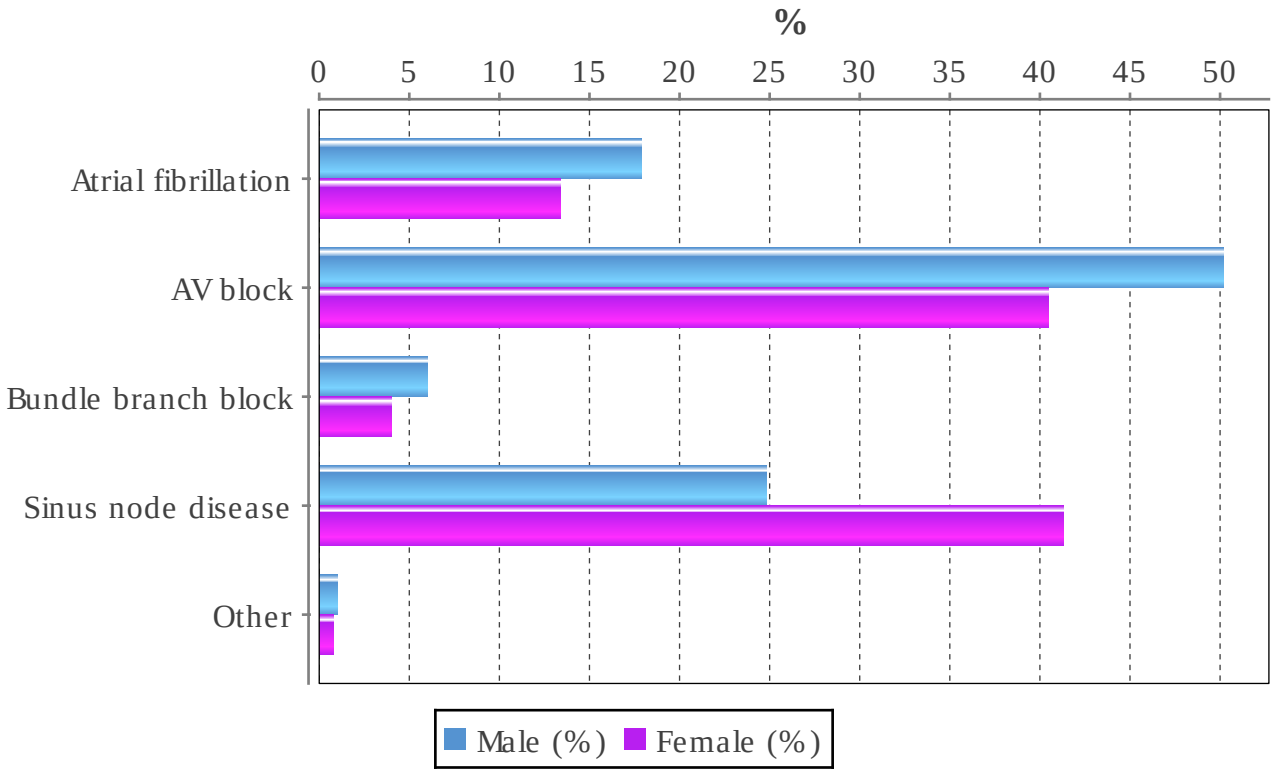
Indication	%
AV-block I	1.5
AV-block II, Mobitz typ 2	15.9
AV-block II, Wenchebach	2.4
AV-block III, narrow QRS	5.8
AV-block III, unspec	15.3
AV-block III, wide QRS	5.4
Afib + AV-block	3.3
Bifascicular block	2.0
Chronic Afib	9.6
LBBB	2.9
Normal sinusrhythm	0.9
Px Afib	2.7
Px Afib with interatrial block	0.6
RBBB	0.3
SSS, SA-arrest, bradycardia	17.6
SSS, tachy/brady	13.8
Torsade de pointe	0.0



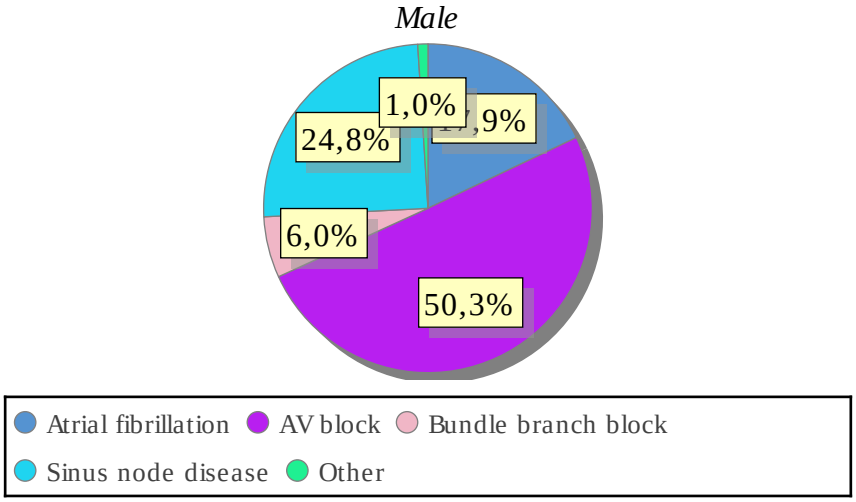
Main ECG indication by gender and for patients < 18 years of age

Indication	No	%	Male (%)	Female (%)	Younger than 18 (%)
Atrial fibrillation	1206	16.1	17.9	13.4	0.0
AV block	3464	46.3	50.2	40.5	90.0
Bundle branch block	391	5.2	6.0	4.0	0.0
Sinus node disease	2346	31.4	24.8	41.3	10.0
Other	69	0.9	1.0	0.8	0.0
					Total number of implants 7476

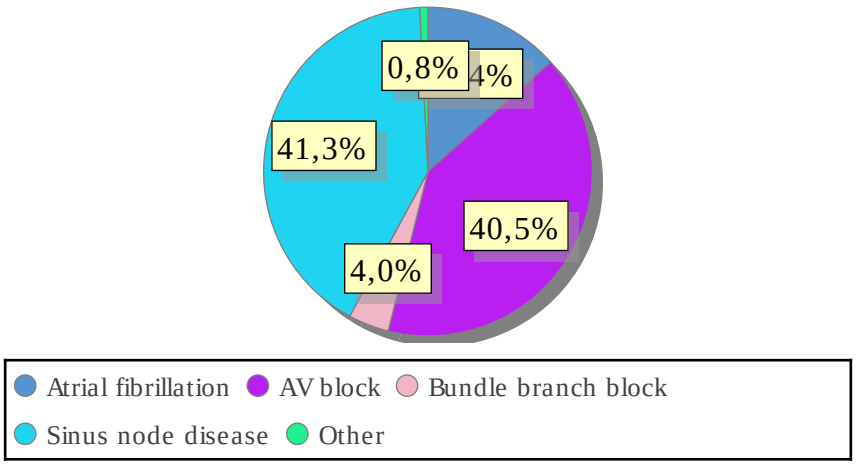




Male



Female



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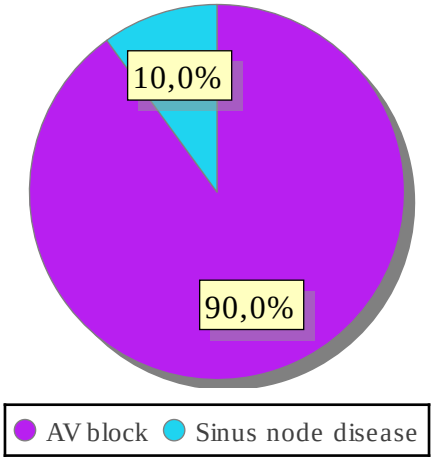
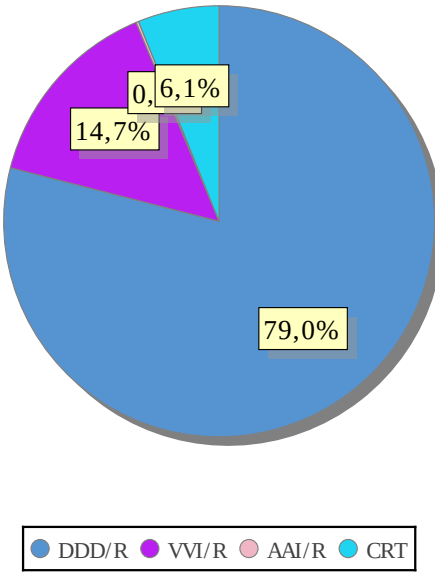


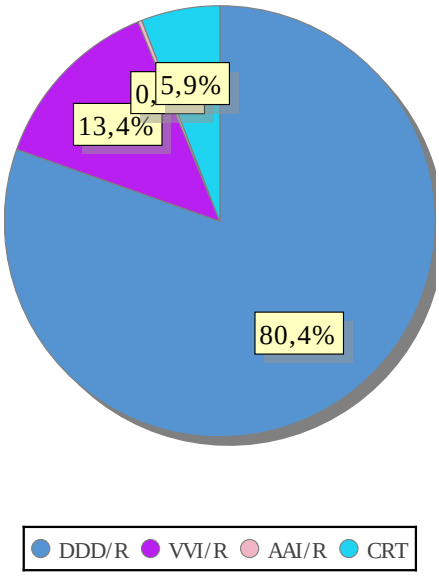
Use of pacemaker subtype for all indications per hospital size (number of new implants/year and hospital)

Size	Hospitals	DDD %	VVI %	AAI %	CRT %
Large	17	77.7	15.3	0.2	6.8
Medium	15	80.5	13.4	0.3	5.9
Small	12	85.8	14.0	0.2	0.0
Total	44	79.0	14.7	0.2	6.1

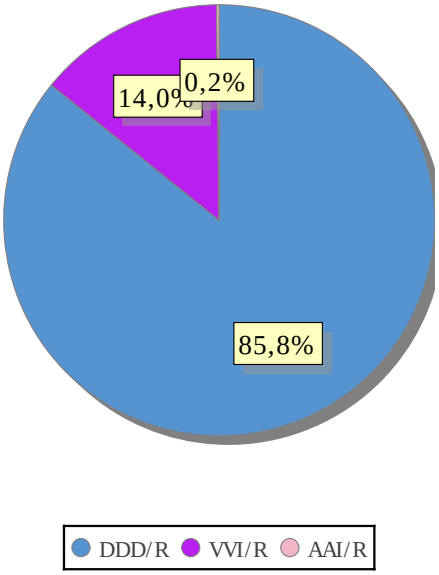
All hospitals



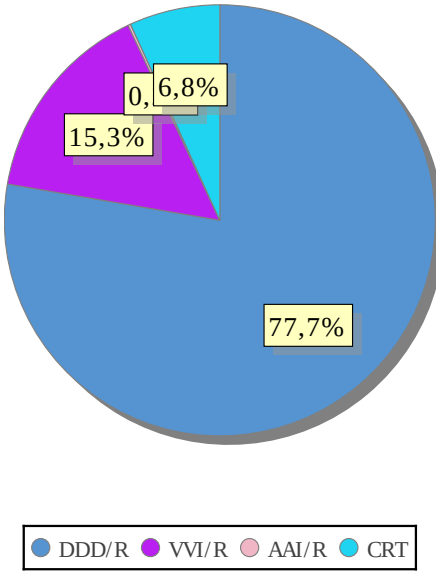
Medium hospitals



Small hospitals



Large hospitals



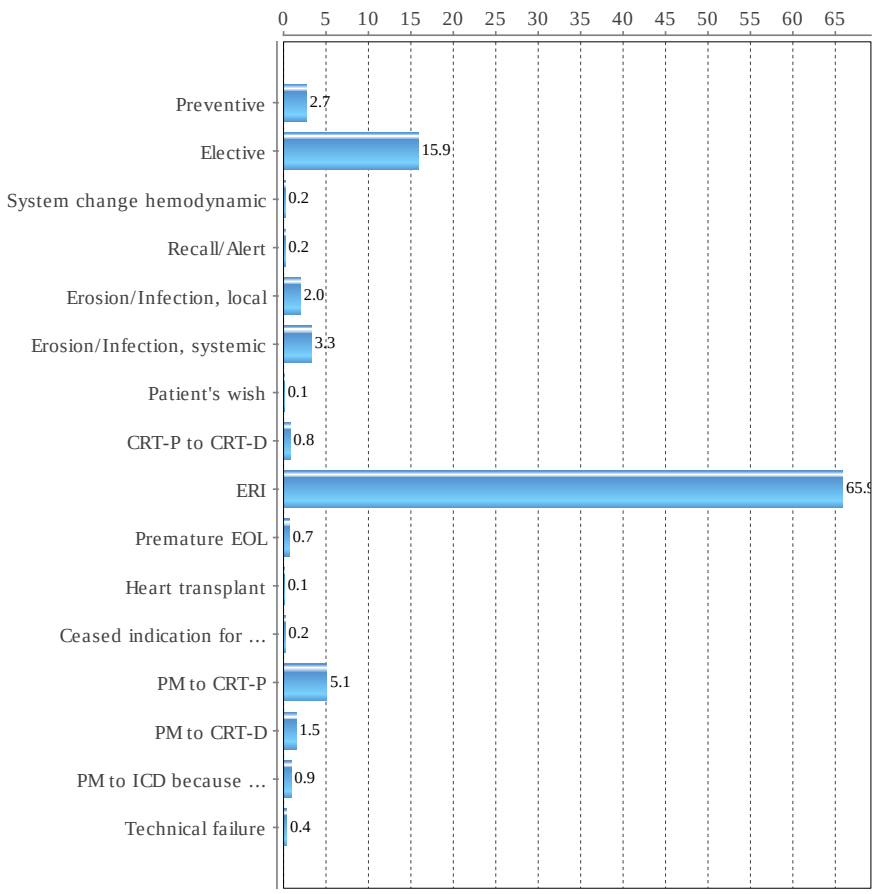
STATISTICS – PACEMAKER – USE OF PACING
MODES FIRST IMPLANT PER HOSPITAL

Use of pacemaker sub type for all indications per hospital (number of new implants / year and hospital))

Hospital	Number	DDD %	VVI %	AAI %	CRT %
Akademiska sjukhuset	286	76.9	15.4	0.7	7.0
Alingsås lasarett	56	80.4	19.6	0.0	0.0
Arvika sjukhus	2	50.0	50.0	0.0	0.0
Blekingesjukhuset	132	82.6	14.4	0.0	3.0
Centrallasarettet Växjö	127	80.3	16.5	0.0	3.1
Centralsjukhuset Karlstad	167	88.0	6.0	0.0	6.0
Centralsjukhuset Kristianstad	238	82.4	17.6	0.0	0.0
Centralsjukhuset Västerås	145	77.2	19.3	0.0	3.4
Danderyds sjukhus	458	78.6	13.8	0.0	7.6
Drottning Silvias Bus	7	85.7	0.0	14.3	0.0
Falu lasarett	225	76.4	16.9	0.0	6.7
Gävle sjukhus	212	74.5	17.9	0.0	7.5
Helsingborgs lasarett	224	81.3	17.9	0.4	0.4
Hudiksvalls sjukhus	61	93.4	6.6	0.0	0.0
Karolinska Universitetssjukhuset	417	74.8	13.2	0.2	11.8
Kungälvs sjukhus	97	76.3	21.6	2.1	0.0
Linköpings Universitetssjukhus	424	79.0	8.7	0.0	12.3
Länssjukhuset Halmstad	117	82.9	17.1	0.0	0.0
Länssjukhuset Kalmar	91	80.2	16.5	1.1	2.2
Länssjukhuset Ryhov	218	82.1	17.9	0.0	0.0
Mälarsjukhuset	168	76.8	10.7	0.6	11.9
Norrlands Universitetssjukhus	173	75.7	12.7	1.2	10.4
Oskarshamns sjukhus	12	66.7	33.3	0.0	0.0
Sahlgrenska Universitetssjukhuset	468	75.2	12.8	0.6	11.3
Sahlgrenska Universitetssjukhuset /Östra	61	85.2	14.8	0.0	0.0
Skaraborgs sjukhus Skövde	186	72.0	9.1	0.0	18.8
Skellefteå lasarett	57	78.9	21.1	0.0	0.0
Skånes universitetssjukhus, Lund	303	77.2	10.2	0.3	12.2
Skånes universitetssjukhus, Malmö	202	84.7	15.3	0.0	0.0
Sollefteå sjukhus	16	93.8	6.3	0.0	0.0
St Görans sjukhus	302	82.5	15.9	0.0	1.7
Sunderby sjukhus	218	79.4	15.1	0.0	5.5
Sundsvalls sjukhus	220	81.8	15.5	0.0	2.7
Södersjukhuset	298	72.8	21.5	1.0	4.7
Södra Älvsborgs sjukhus	174	83.9	8.6	0.0	7.5
Torsby sjukhus	45	80.0	20.0	0.0	0.0
Trollhättan, NÄL	237	69.6	25.7	0.0	4.6
Universitetssjukhuset Örebro	181	82.9	14.4	0.0	2.8
Varbergs sjukhus	128	81.3	12.5	0.0	6.3
Visby lasarett	21	76.2	23.8	0.0	0.0
Västerviks sjukhus	63	93.7	6.3	0.0	0.0
Örnsköldsviks sjukhus	63	92.1	7.9	0.0	0.0
Östersunds sjukhus	136	82.4	14.0	0.0	3.7

Reason for generator explant. Elective used for changes performed before reached ERI/EOL.

Reason	All hospitals %	(large) %	(medium) %	(small) %
Preventive	2.7	2.0	4.7	0.4
Elective	15.9	18.1	13.7	6.2
System change hemodynamic	0.2	0.3	0.1	0.0
Recall/Alert	0.2	0.3	0.1	0.4
Erosion/Infection, local	2.0	2.4	1.3	1.2
Erosion/Infection, systemic	3.3	4.5	1.5	0.4
Patient's wish	0.1	0.2	0.0	0.4
CRT-P to CRT-D	0.8	0.5	1.5	0.0
ERI	65.9	62.0	69.0	86.8
Premature EOL	0.7	0.6	0.3	3.3
Heart transplant	0.1	0.1	0.0	0.0
Ceased indication for PM therapy	0.2	0.1	0.4	0.0
PM to CRT-P	5.1	6.1	4.3	0.0
PM to CRT-D	1.5	1.4	2.1	0.0
PM to ICD because of arrhythmia	0.9	1.1	0.6	0.0
Technical failure	0.4	0.2	0.5	0.8

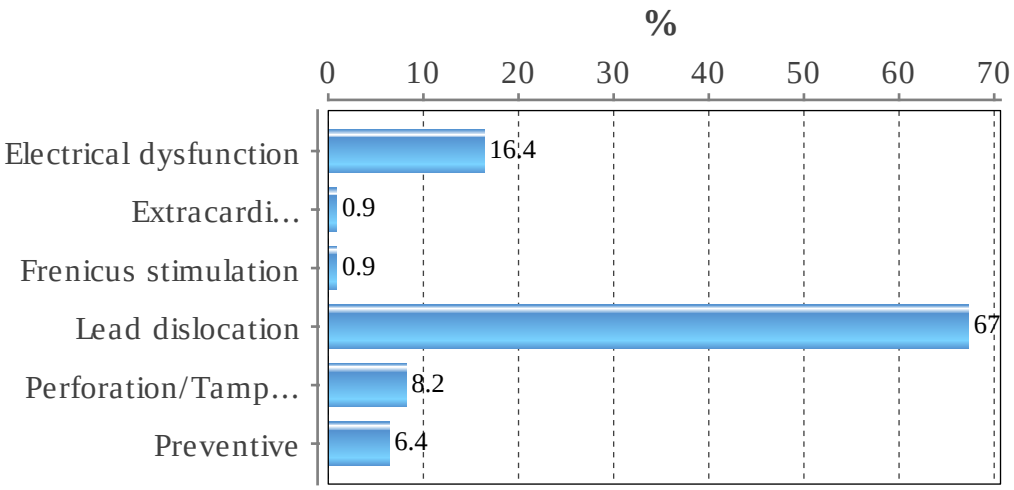


Historical explant indications

Reason	2015 %	2016 %	2017 %	2018 %	2019 %
Preventive	4.3	3.6	3.7	2.1	2.7
Elective	10.3	11.7	12.6	13.7	15.9
System change hemodynamic	0.8	0.9	0.7	0.9	0.2
Erosion/Infection, local	3.1	2.9	2.8	2.7	2.0
Erosion/Infection, systemic	2.2	2.9	3.5	3.8	3.3
Patient's wish	0.4	0.2	0.4	0.1	0.1
CRT-P to CRT-D	0.4	0.5	0.6	0.5	0.8
ERI	68.4	64.8	66.4	66.2	65.9
Premature EOL	0.8	0.8	0.8	0.6	0.7
Heart transplant	0.1	0.1	0.0	0.1	0.1
Ceased indication for PM therapy	0.3	0.5	0.3	0.5	0.2
PM to CRT-P	4.5	5.6	4.9	5.6	5.1
PM to CRT-D	3.0	2.4	1.9	2.0	1.5
PM to ICD because of arrhythmia	1.0	1.3	1.2	0.9	0.9
Technical failure	0.4	0.6	0.1	0.2	0.4
Recall/Alert	0.0	1.2	0.0	0.1	0.2
CRT-P to PM because of discontinued CRT-indication	0.0	0.0	0.0	0.1	0.0

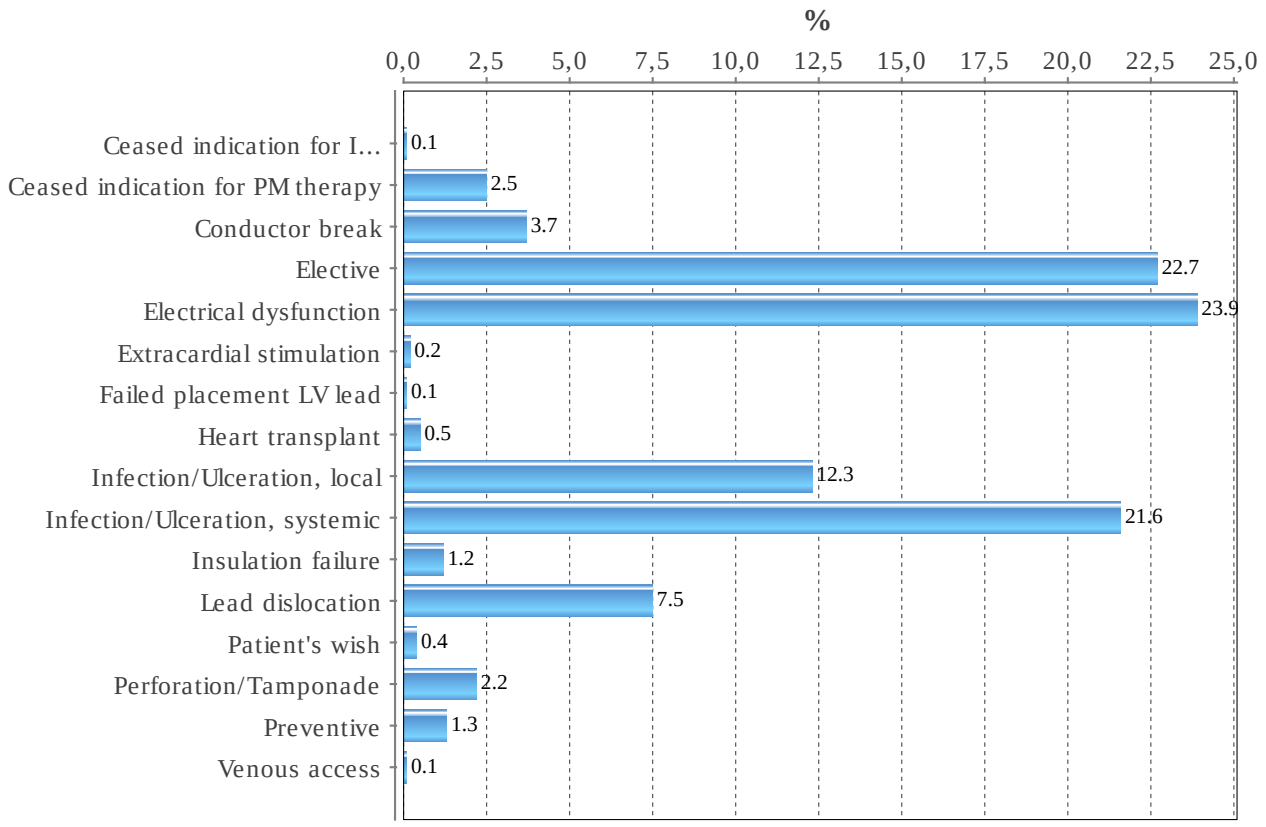
Reason for lead correction/reoperation by hospital size (number of new implants/ year and hospital) Electrical dysfunction including undersense and threshold increase.

Reason	All hospital (%)	Small (%)	Medium (%)	Large (%)
Electrical dysfunction	16.4	33.3	5.7	19.0
Extracardial stimulation	0.9	0.0	0.0	1.6
Frenicus stimulation	0.9	0.0	0.0	1.6
Lead dislocation	67.3	66.7	77.1	61.9
Perforation/Tamponade	8.2	0.0	5.7	11.1
Preventive	6.4	0.0	11.4	4.8
				Total no 110



Reason for lead explants by hospital size. (number of new implants/year and hospital)

Reason	All hospitals(%)	Small (%)	Medium (%)	Large (%)
Ceased indication for ICD therapy	0.1	-	0.4	-
Ceased indication for PM therapy	2.5	1.7	7.6	1.2
Conductor break	3.7	18.6	4.0	2.5
Elective	22.7	15.3	29.6	21.4
Electrical dysfunction	23.9	55.9	24.2	21.5
Extracardial stimulation	0.2	-	0.4	0.1
Failed placement LV lead	0.1	-	0.4	-
Heart transplant	0.5	-	-	0.6
Infection/Ulceration, local	12.3	6.8	9.0	13.5
Infection/Ulceration, systemic	21.6	-	9.9	26.2
Insulation failure	1.2	1.7	-	1.5
Lead dislocation	7.5	-	11.7	6.9
Patient's wish	0.4	-	-	0.5
Perforation/Tamponade	2.2	-	0.4	2.8
Preventive	1.3	-	2.2	1.1
Venous access	0.1	-	-	0.1
				Total no 1109



Procedures per operator (exclusive CRT)

Hospital	Operator	No
Akademiska sjukhuset	Arvanitis	77
	Ciubine	40
	Dimberg	2
	Grinnemo	1
	Janiec	2
	Jidéus	6
	Melki	1
	Ostrowska	61
	Schiller	1
	Sciaraffia	84
	Teder	88
	Thorén	11
	Vali	2
	Vikholm	2
	Zemgulis	4
Alingsås lasarett	Anders Holmdahl	28
	Kennergren	19
	Westerberg	52
Arvika sjukhus	Annan	2
	Westbom	7
Ålands centralsjukhus	Ove Carlström	7
	Slotte	40
Blekingesjukhuset	Anders Ericsson	25
	Genadi Kaninski	18
	Jan-Olov Borg	29
	Martin Stefanik	52
	Michael Ringborn	31
	Nicoleta Sora	15
	Per Landelius	2
Centrallasarettet Växjö	Annan	23
	Carin Påhlman	44
	Johansson P	26
	Jonasson	31
	Rosén Helena	17
	Strandberg	17
Centralsjukhuset Karlstad	Hallén	1
	Khalili	91
	Niklas Aldergård	57
	Saidi	74
Centralsjukhuset Kristianstad	Babiak	81
	Bakos	189
	Östenson	81
Centralsjukhuset Västerås	Amra Kåregren	47
	Johanna Sandström	3
	SkoglundAndersson	61
	Wiberg	85
Danderyds sjukhus	1	120
	2	123
	3	142
	4	183
	6	45
Drottning Silvias Bus	Hallhagen	3
	Hans Lidén	2
	Nilsson B	2
	Oskar Väärt	5
	Synnergren	4
Falu lasarett	Monheim	78
	Svedberg	13
	Berglund	72
	Forsgren	99
	Guggi	31
	MFO	1
Gävle sjukhus	Falck	8
	Johansson Staffan	73
	Kastberg	81
	Magnusson Peter	27
	Mati Jalakas	110
Helsingborgs lasarett	Borgquist	3
	Jacobsson	68
	Löfgren	30
	Petrik	1
	Rorsman	108
	Utter	121
Hudiksvalls sjukhus	Falck	1
	Roussinne	90
Karolinska Universitetssjukhus	Annan	22
	Gadler	177
	Hörnsten	187
	Reistam	209
Kungälvs sjukhus	Norström	2
	Schultz	130
Länssjukhuset Halmstad	Martin Löfgren	75
	Rikard Berggren	82
	Rorsman-Söderström	5
Länssjukhuset Kalmar	David Olsson	53
	Hendrik Schreyer	51
	Jörg Carlsson	6
	Ove Carlström	6
Länssjukhuset Ryhov	Lagerberg	148
	Stumpf	133
	Walid El-Saadi	29
Linköpings universitetssjukhus	Annan	1
	Pinna C	85

Hospital	Operator	No
	Säfström K	122
	Sonesson L	100
	Svenson A	44
	Szymanowski A	102
Mälarsjukhuset	Carl Westholm	67
	Georgios Matthaiou	44
	Kave Keshavarz	57
	Linda Ärlehag	39
Norrlands Universitetssjukhus	Andersson	53
	Annan	3
	Höglund	30
	Jensen	18
	Kesek	49
	Landström	29
	Rönn	33
Oskarshamns sjukhus	Verstraaten	12
Örnsköldsviks sjukhus	Ehlin	63
	Meidell	19
Östersunds sjukhus	Björklund	14
	Christian Gjessing	19
	F.Björklund/ C.Gjessing	4
	Friberg	29
	Friberg/Gjessing	5
	Friberg/Hansson	1
	Hansson	85
	Hansson/ Gjessing	7
Sahlgrenska universitetssjukhuset	Ammar Taha	40
	Anders Holmdahl	61
	Annan	9
	Gäbel/ Szamlewski	1
	Jakob Gäbel	3
	Johansson B	23
	Konstantinos Liakatsidas	124
	Piotr Szamlewski	108
	Shabbar Jamaly	103
	Stefan Jakobsson	88
Sahlgrenska universitetssjukhuset / Östra	Johansson B	77
	Johansson/ Morales Martinez	27
	Morales Martinez	14

Hospital	Operator	No
Skaraborgs sjukhus Skövde	Anna Widunder	53
	Annan	1
	Falmer	10
	Lorentzen	77
	Paulsson	30
	Winterfeldt	51
Skånes universitetssjukhus, Lund	Annan	51
	David Mörtsell	49
	Erik Ljungström	6
	Fredrik Utter	1
	Jesper van der Pals	5
	Johan Brandt	121
	LingWei Wang	50
	Maiwand Farouq	28
	Patrycja Näsgaard	26
	Pyotr Platonov	1
	Steen Jensen	3
	Tina Tanha	7
	Uzma Chaudry	69
Skånes universitetssjukhus, Malmö	Annan	131
	Johan Brandt	30
	Torbjörn Persson	112
Skellefteå lasarett	Annan	4
	Boström	1
	Bygdén	26
	Christina Nilzon	23
	Lindqvist	17
Sollefteå sjukhus	Åström	15
	Rudenstam	11
Södersjukhuset	Jonsson J-E	66
	Kjellman B	120
	Olson J	98
	Rydlund K	103
Södra Älvsborgs sjukhus	Heinze	1
	Lodin	80
	Riemer	58
	Widfeldt	78
St Görans sjukhus	1	163
	1+2	2
	2	121
	3	117
Sunderby sjukhus	Agneta Johansson	76

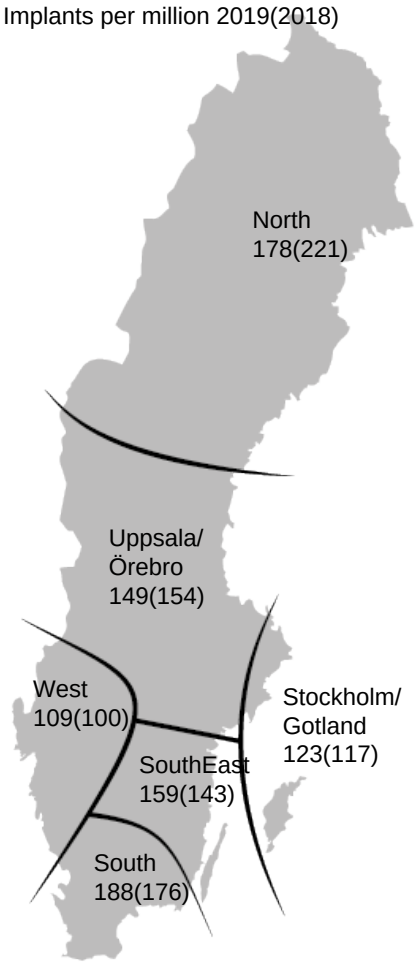
Hospital	Operator	No
	Annica Wennberg	36
	Marcus Baas	51
	Peter Johansson	35
	Peter Rangson	70
Sundsvalls sjukhus	Annan	9
	Ciubine Alessio	64
	Haupt Jan	20
	Khadhim Negham	82
	Sundelin Torbjörn	65
	Teder Priit	34
Torsby sjukhus	Bentjerodt	52
Trollhättan, NÄL	Alice David	25
	Dinu Dusceac	5
	Jabbar	29
	Javid	102
	Orsolya Bene	128
	Söderbergh	17
	Wetterling	33
Universitetssjukhuset Örebro	Anna Björkenheim	79
	Áron Sztanislav	47
	Barbara Kurt	27
	Lindell	102
	Örjan Friberg	3
	Soon-Ok Cha	1
Varbergs sjukhus	Emma Sandgren	56
	Rorsman	116
Västerviks sjukhus	Emil Tomov	33
	Joachim Starck	42
Visby lasarett	Annan	2
	Gadler	2
	Jacobsson L	36
	Litorell	8

First implants per hospital (inclusive CRT)

Region	Hospital	2019	2018
Northern Sweden	Norrlands Universitetssjukhus	37	50
	Skellefteå lasarett	2	7
	Sunderby sjukhus	49	41
	Sundsvalls sjukhus	44	53
	Örnsköldsviks sjukhus	5	8
	Östersunds sjukhus	17	36
Southern Sweden	Blekingesjukhuset	52	41
	Centrallasarettet Växjö	26	32
	Helsingborgs lasarett	12	0
	Länssjukhuset Halmstad	2	1
	Skånes universitetssjukhus, Lund	229	236
	Skånes universitetssjukhus, Malmö	12	0
	Varbergs sjukhus	70	39
South-East Sweden	Linköpings Universitetssjukhus	92	79
	Länssjukhuset Kalmar	47	45
	Länssjukhuset Ryhov	32	29
Stockholm/Gotland	Danderyds sjukhus	70	56
	Karolinska Universitetssjukhuset	144	120
	St Görans sjukhus	35	61
	Södersjukhuset	58	51
	Visby lasarett	3	3
Uppsala/Örebro	Akademiska sjukhuset	47	71
	Centralsjukhuset Karlstad	38	37
	Centralsjukhuset Västerås	30	26
	Falu lasarett	47	53
	Gävle sjukhus	52	57
	Hudiksvalls sjukhus	9	9
	Mälarsjukhuset	34	15
	Universitetssjukhuset Örebro	54	52
Western Sweden	Sahlgrenska Universitetssjukhuset	87	76
	Skaraborgs sjukhus Skövde	26	25
	Södra Älvsborgs sjukhus	20	19
	Trollhättan, NÄL	38	49

The regions are based on where the patients live, not where they are treated

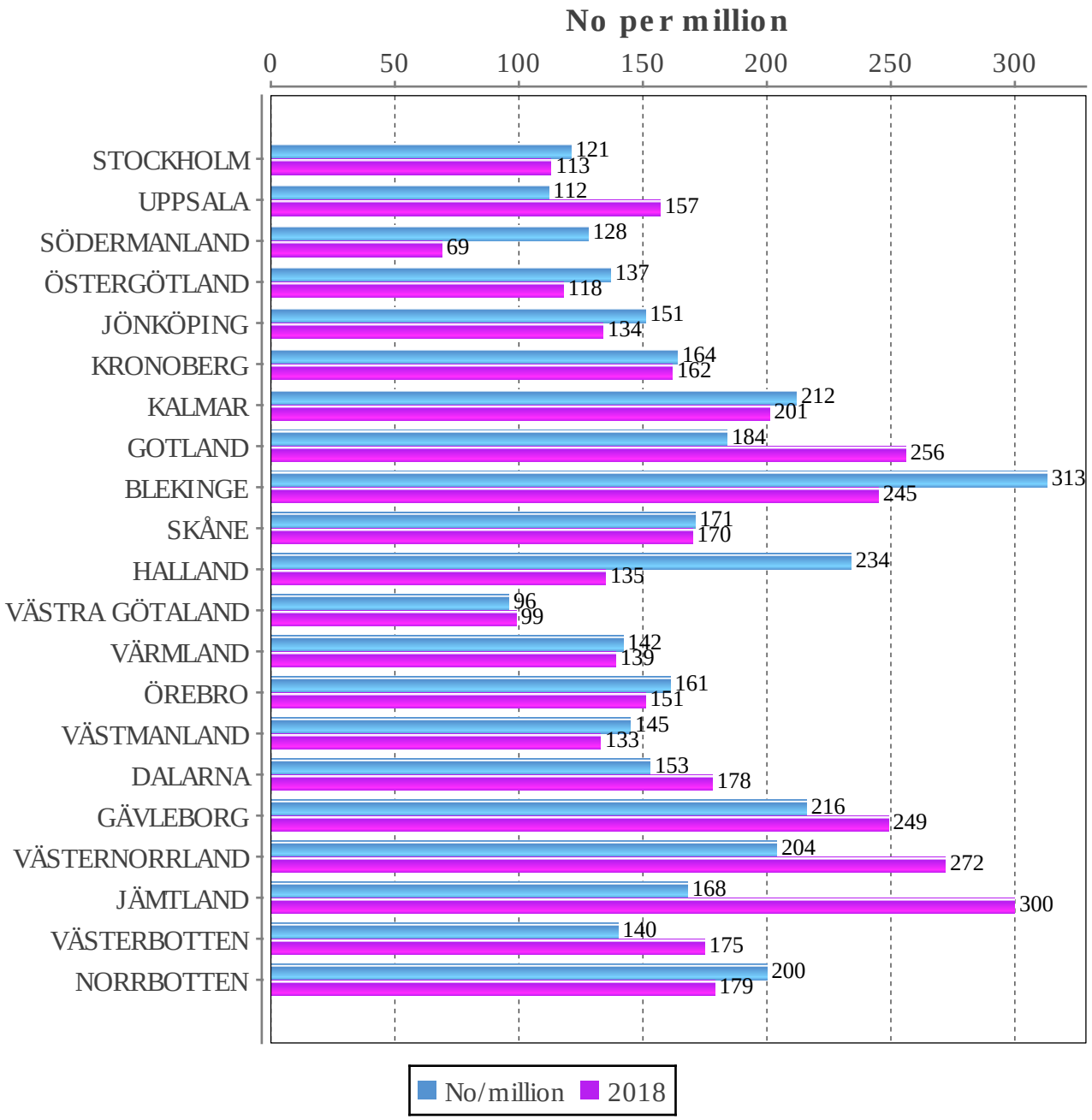
Region	Population	No of first impl	No per million	Active patients
Stockholm/Gotland	2436767	299	123	2736
Uppsala/Örebro	2119665	316	149	2934
South-East Sweden	1074540	171	159	1306
Southern Sweden	1878387	353	188	2497
Western Sweden	1920244	209	109	1784
Northern Sweden	897986	160	178	1478
Total	10327589	1508	146	12735



STATISTICS – ICD – IMPLANTS PER COUNTY

The regions are based on where the patients live, not where they are treated

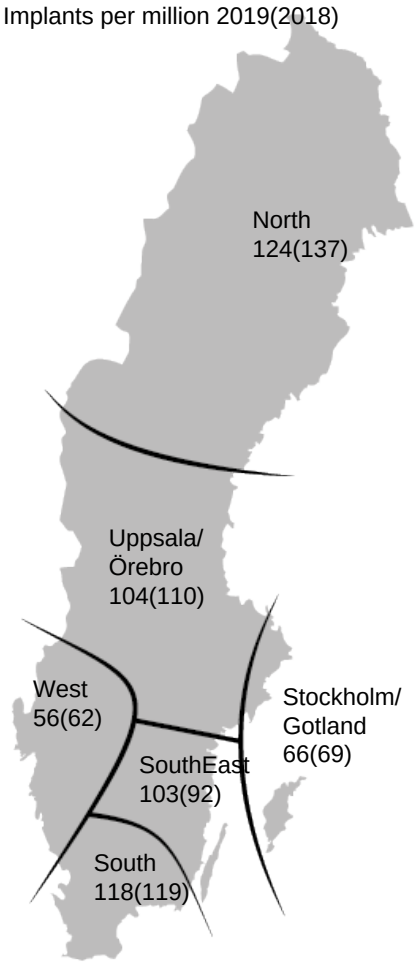
County	Population	No of first	No/million	Active patients
STOCKHOLM	2377081	288	121	2630
UPPSALA	383713	43	112	529
SÖDERMANLAND	297540	38	128	348
ÖSTERGÖTLAND	465495	64	137	502
JÖNKÖPING	363599	55	151	440
KRONOBERG	201469	33	164	280
KALMAR	245446	52	212	364
GOTLAND	59686	11	184	106
BLEKINGE	159606	50	313	278
SKÅNE	1377827	235	171	1735
HALLAND	333848	78	234	438
VÄSTRA GÖTALAND	1725881	165	96	1550
VÄRMLAND	282414	40	142	327
ÖREBRO	304805	49	161	405
VÄSTMANLAND	275845	40	145	353
DALARNA	287966	44	153	449
GÄVLEBORG	287382	62	216	523
VÄSTERNORRLAND	245347	50	204	410
JÄMTLAND	130810	22	168	206
VÄSTERBOTTEN	271736	38	140	395
NORRBOTTEN	250093	50	200	467
Total	10327589	1507	146	12735


No per million
0
50
100
150
200
250
300
STOCKHOLM
121
113
UPPSALA
112
157
SÖDERMANLAND
128
69
ÖSTERGÖTLAND
137
118
JÖNKÖPING
151
134
KRONOBERG
164
162
KALMAR
212
201
GOTLAND
184
256
BLEKINGE
313
245
SKÅNE
171
170
HALLAND
234
135
VÄSTRA GÖTALAND
96
99
VÄRMLAND
142
139
ÖREBRO
161
151
VÄSTMANLAND
145
133
DALARNA
153
178
GÄVLEBORG
216
249
VÄSTERNORRLAND
204
272
JÄMTLAND
168
300
VÄSTERBOTTEN
140
175
NORRBOTTEN
200
179
No/million
2018

STATISTICS – ICD – PRIMARY PREVENTION PER REGION

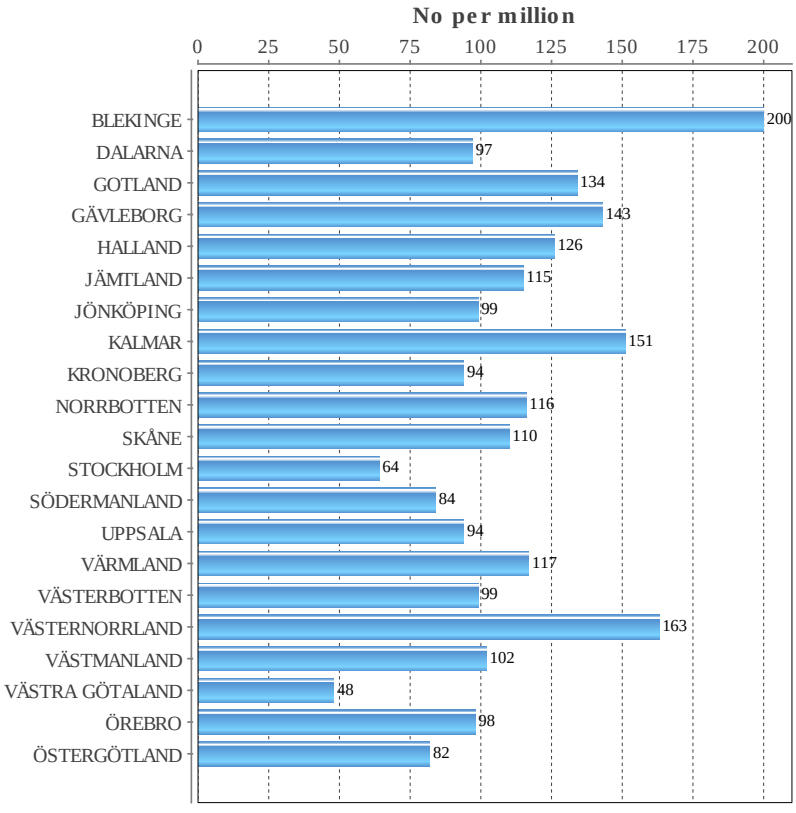
The regions are based on where the patients live, not where they are treated

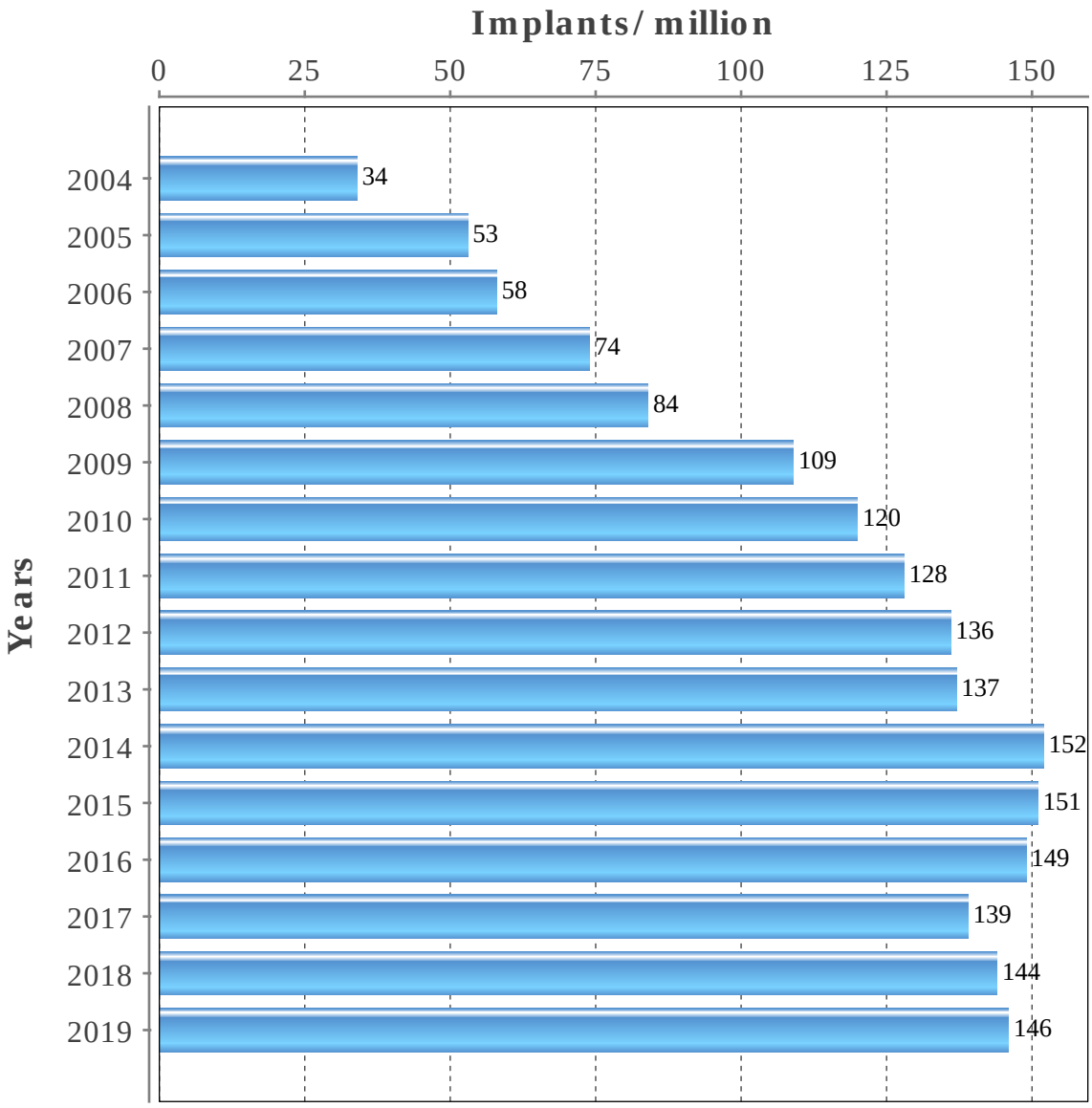
Region	Population	No of first impl	No per million	Active patients
Stockholm/Gotland	2436767	160	66	1594
Uppsala/Örebro	2119665	221	104	1720
South-East Sweden	1074540	111	103	796
Southern Sweden	1878387	221	118	1457
Western Sweden	1920244	107	56	873
Northern Sweden	897986	111	124	831
Total	10327589	931	90	7271



The regions are based on where the patients live, not where they are treated

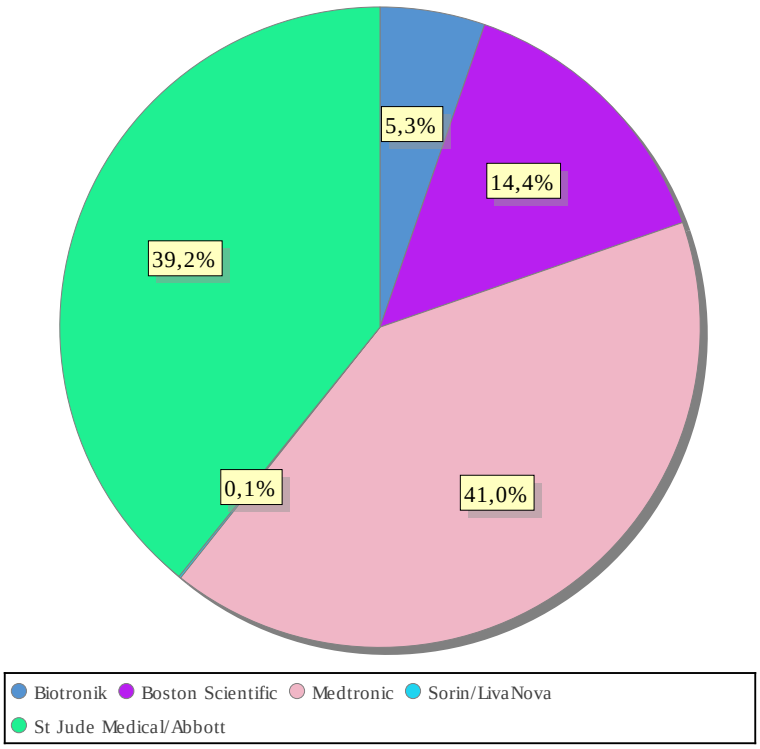
County	Population	No of first	No/million
BLEKINGE	159606	32	200
DALARNA	287966	28	97
GOTLAND	59686	8	134
GÄVLEBORG	287382	41	143
HALLAND	333848	42	126
JÄMTLAND	130810	15	115
JÖNKÖPING	363599	36	99
KALMAR	245446	37	151
KRONOBERG	201469	19	94
NORRBOTTEN	250093	29	116
SKÅNE	1377827	152	110
STOCKHOLM	2377081	152	64
SÖDERMANLAND	297540	25	84
UPPSALA	383713	36	94
VÄRMLAND	282414	33	117
VÄSTERBOTTEN	271736	27	99
VÄSTERNORRLAND	245347	40	163
VÄSTMANLAND	275845	28	102
VÄSTRA GÖTALAND	1725881	82	48
ÖREBRO	304805	30	98
ÖSTERGÖTLAND	465495	38	82
Total	10327589	930	90




Implants/ million
0
25
50
75
100
125
150
Years
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
34
53
58
74
84
109
120
128
136
137
152
151
149
139
144
146

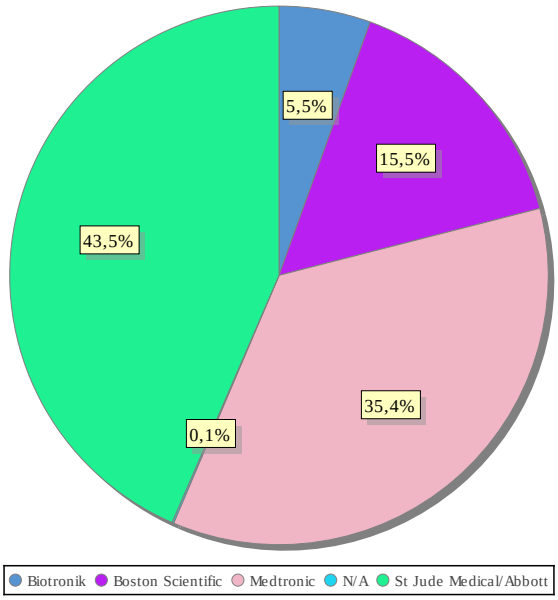
Market share per manufacturer in Sweden

Manufacturer	2016 %	2017 %	2018 %	2019 %
Biotronik	4.9	4.7	3.9	5.3
Boston Scientific	10.9	11.6	14.6	14.4
Medtronic	39.6	38.3	39.6	41.0
St. Jude Medical	44.2	45.3	41.8	39.2
NayaMed International	0.4	-	-	-
Sorin/LivaNova	-	-	-	0.1
Boston Scientific includes Cameron Health from 2015				



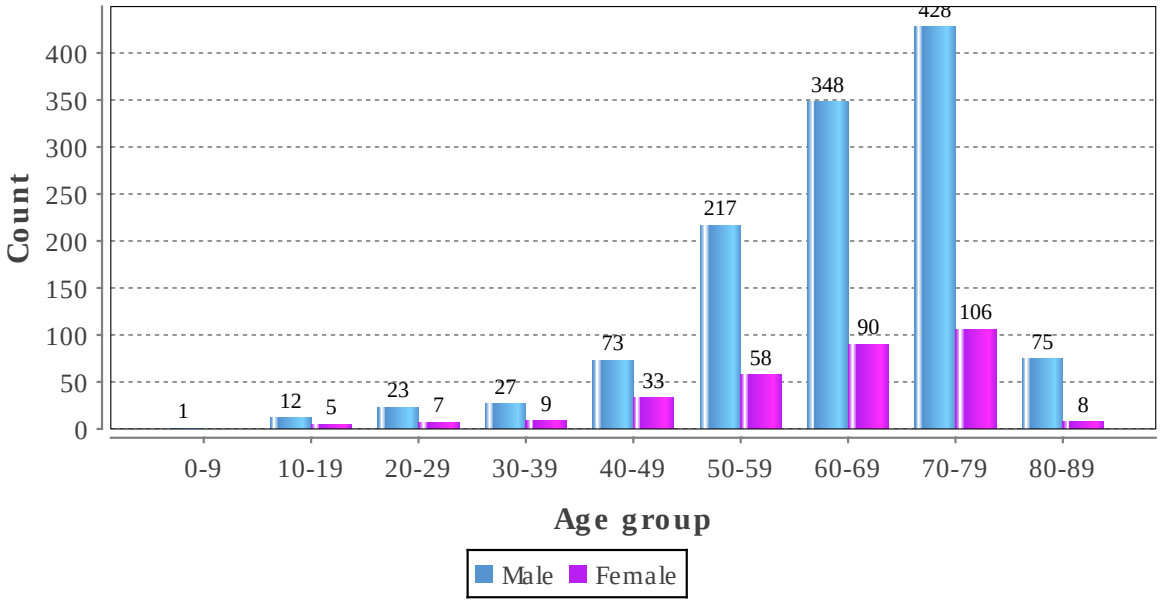
Market share per manufacturer in Sweden

Manufacturer	2016 %	2017 %	2018 %	2019 %
Biotronik	5.9	4.3	3.8	5.5
Boston Scientific	9.2	11.0	12.9	15.5
Medtronic	29.6	30.8	34.5	35.4
St. Jude Medical	55.2	53.8	48.8	43.5
NayaMed International	0.1	-	-	-
N/A	-	-	-	0.1
Boston Scientific includes Cameron Health from 2015				



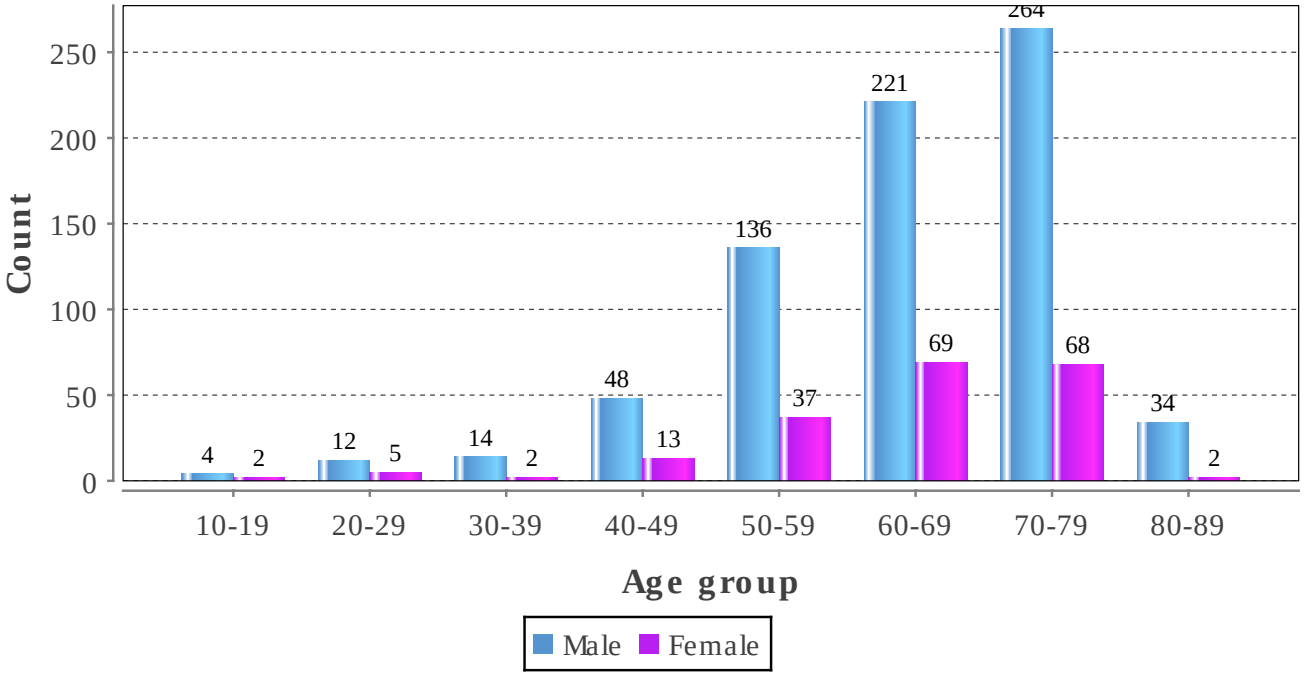
Age and gender distribution for new implants, total numbers

Age (years)	Total no	%	Male	Female
0-9	1	0.1	1	0
10-19	17	1.1	12	5
20-29	30	2.0	23	7
30-39	36	2.4	27	9
40-49	106	7.0	73	33
50-59	275	18.1	217	58
60-69	438	28.8	348	90
70-79	534	35.1	428	106
80-89	83	5.5	75	8
Average age	64	-	64	62
				Total number of implants: 1520



Primary prevention divided by gender and age.

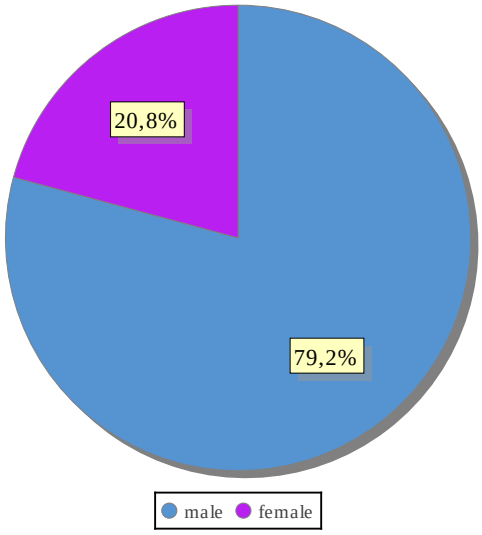
Age (years)	Total no	%	Male	Female
10-19	6	0.6	4	2
20-29	17	1.8	12	5
30-39	16	1.7	14	2
40-49	61	6.6	48	13
50-59	173	18.6	136	37
60-69	290	31.1	221	69
70-79	332	35.7	264	68
80-89	36	3.9	34	2
Average age	64	-	64	63
				Total number of implants: 931



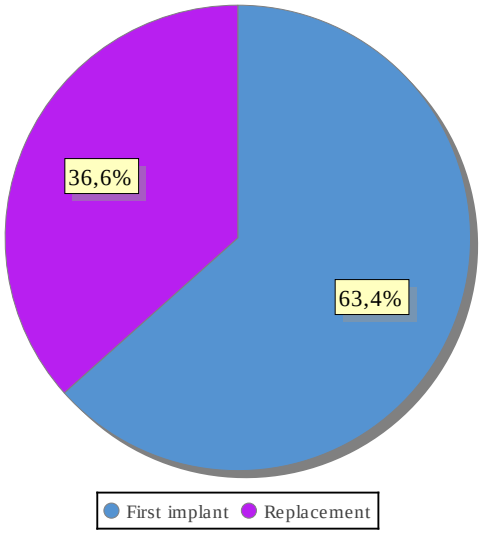
Ratio of new implants versus generator changes

	Total		Male		Female	
	no	%	no	%	no	%
First implant	1520	63.4	1204	79.2	316	20.8
Replacement	878	36.6	688	78.4	190	21.6
Total	2398	100.0	1892	78.9	506	21.1

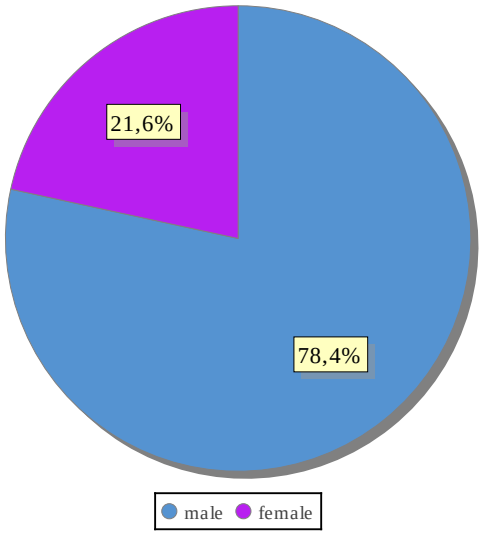
First implant



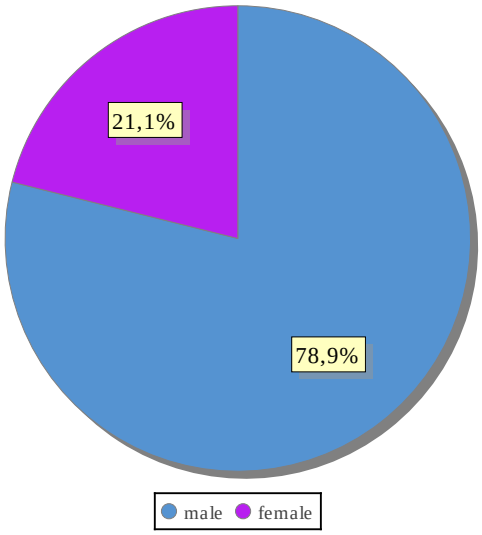
Replacement ratio



Replacement

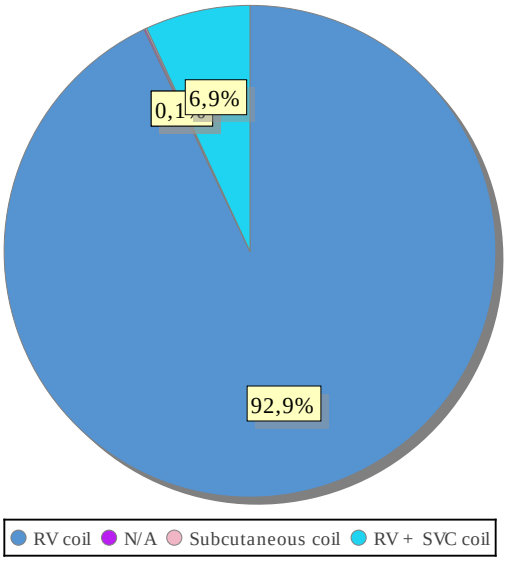


All implant



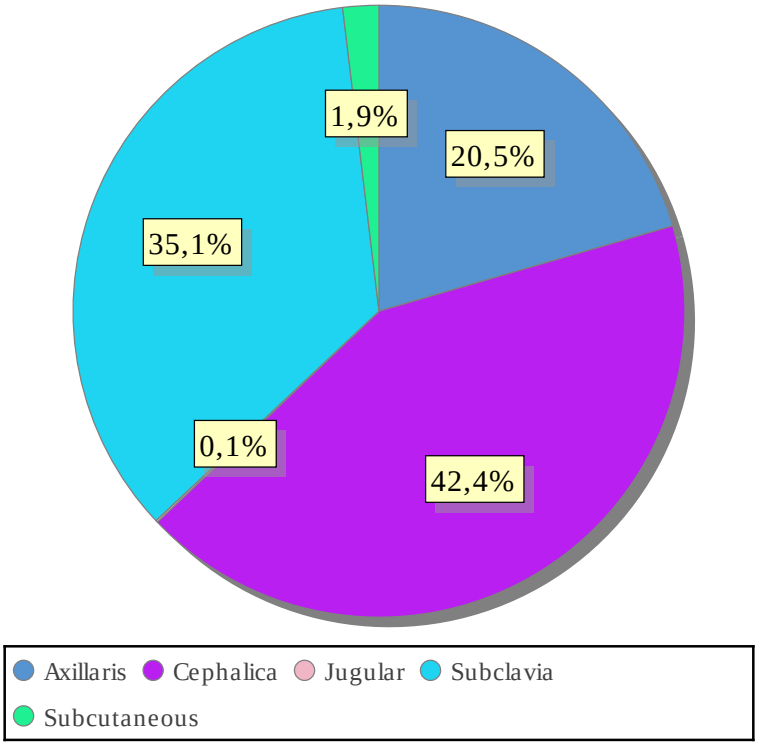
Lead type distribution for atrial and venticular use for new implants and replacements.

	2019		2018	
	no	%	no	%
RV coil	1524	92.9	1491	91.8
N/A	1	0.1	0	0.0
Subcutaneous coil	2	0.1	0	0.0
RV + SVC coil	113	6.9	133	8.2
Active fixation	1619	98.7	1618	99.6
Passive fixation	20	1.2	6	0.4
N/A	1	0.1	0	0.0
Total number of leads - 2019: 1640, 2018: 1624				



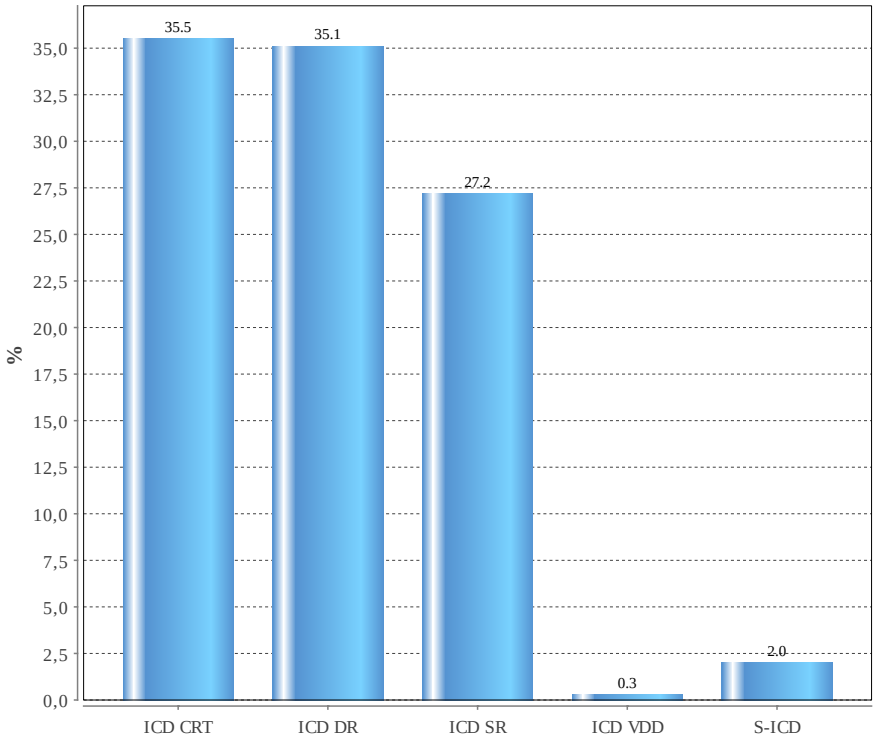
Venous access for new implants and replacements, all type of pacemakers

Lead access	No	%
Axillaris	343	20.5
Cephalica	708	42.4
Jugular	1	0.1
Subclavia	586	35.1
Subcutaneous	32	1.9



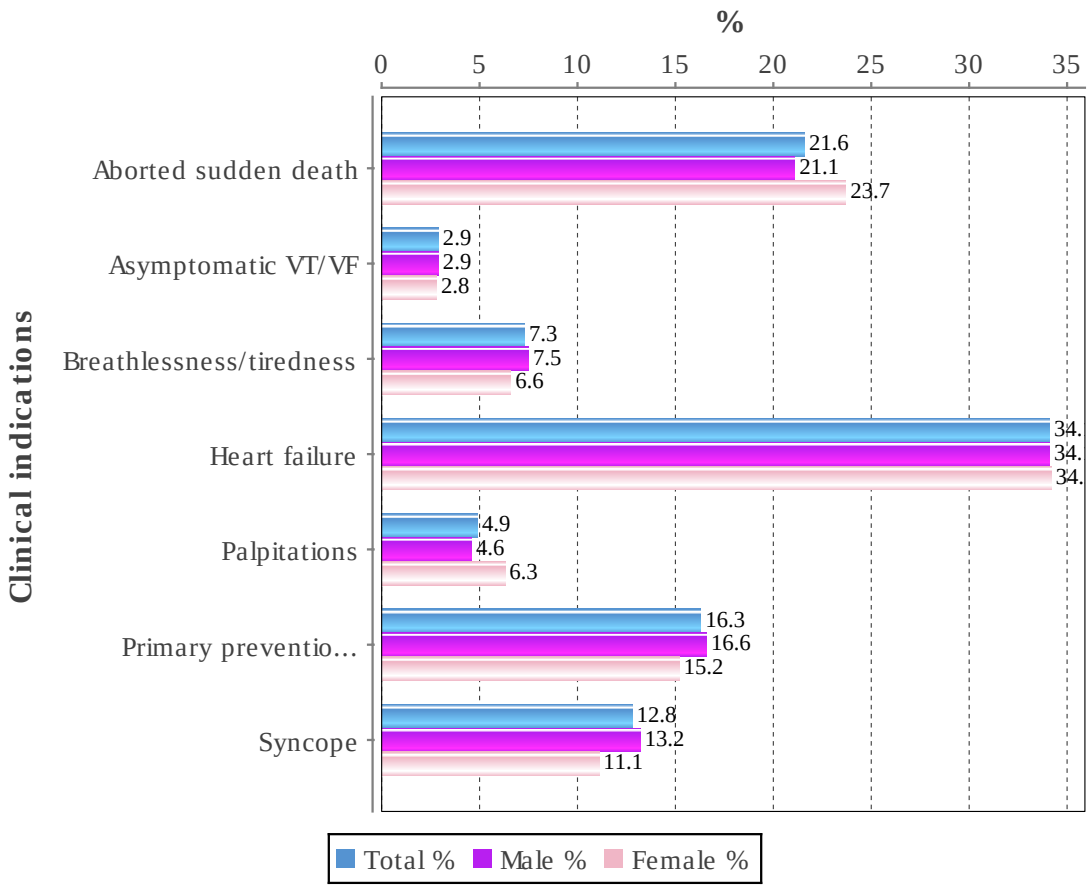
ICD subtype for new implants

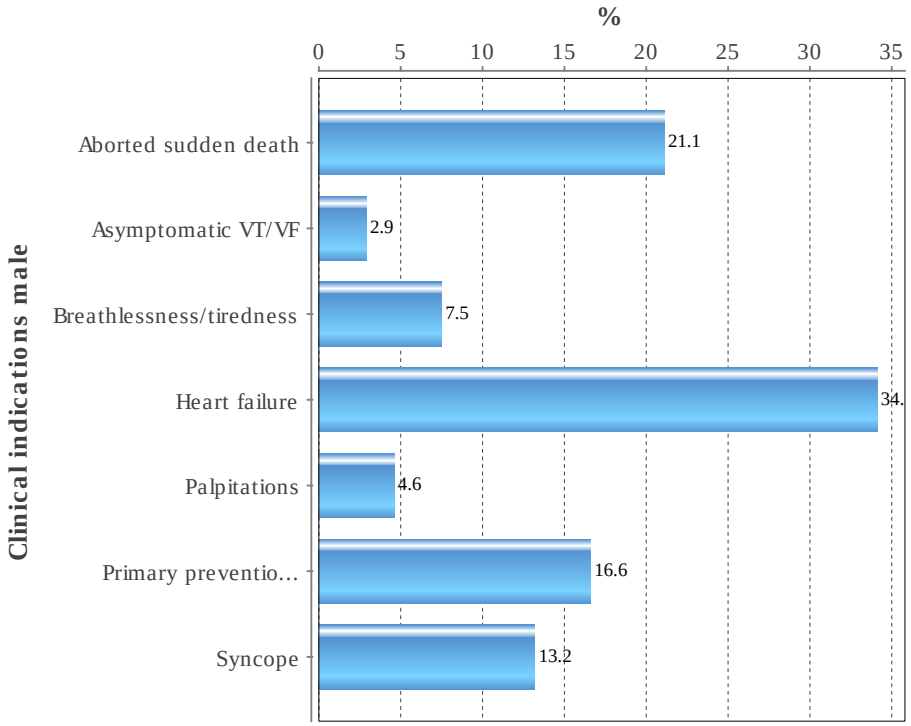
Mode	%	No
ICD CRT	35.5	540
ICD DR	35.1	533
ICD SR	27.2	413
ICD VDD	0.3	4
S-ICD	2.0	30

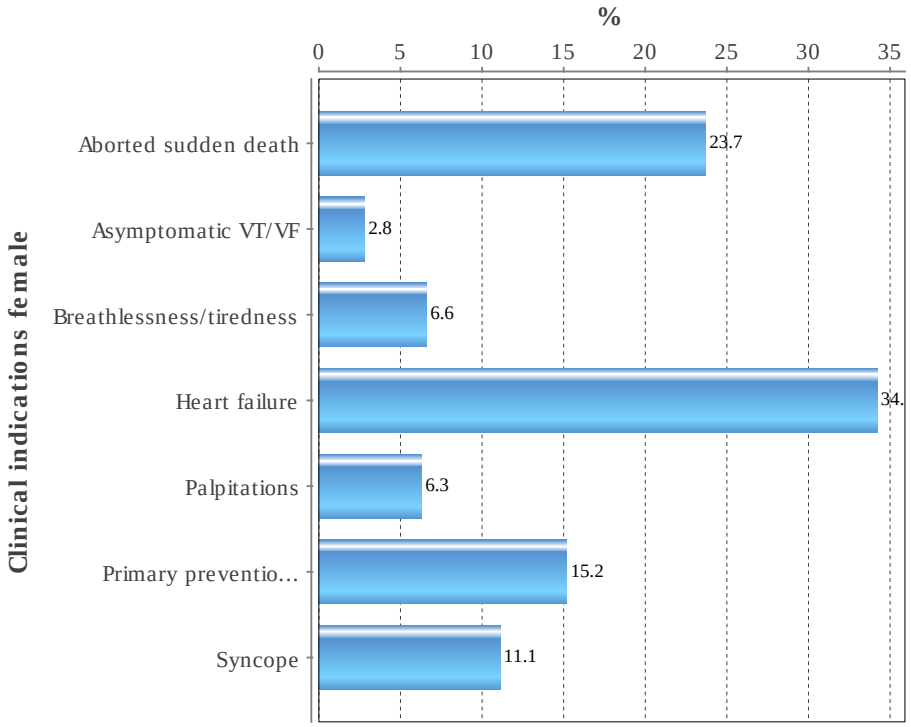


Main symptom for implanting ICDs

Indication	Total %	Male %	Female %
Aborted sudden death	21.6	21.1	23.7
Asymptomatic VT/VF	2.9	2.9	2.8
Breathlessness/tiredness	7.3	7.5	6.6
Heart failure	34.1	34.1	34.2
Palpitations	4.9	4.6	6.3
Primary prevention, asymptomatic	16.3	16.6	15.2
Syncope	12.8	13.2	11.1




%
0
5
10
15
20
25
30
35
Clinical indications male
Aborted sudden death
21.1
Asymptomatic VT/VF
2.9
Breathlessness/tiredness
7.5
Heart failure
34.
Palpitations
4.6
Primary preventio...
16.6
Syncope
13.2

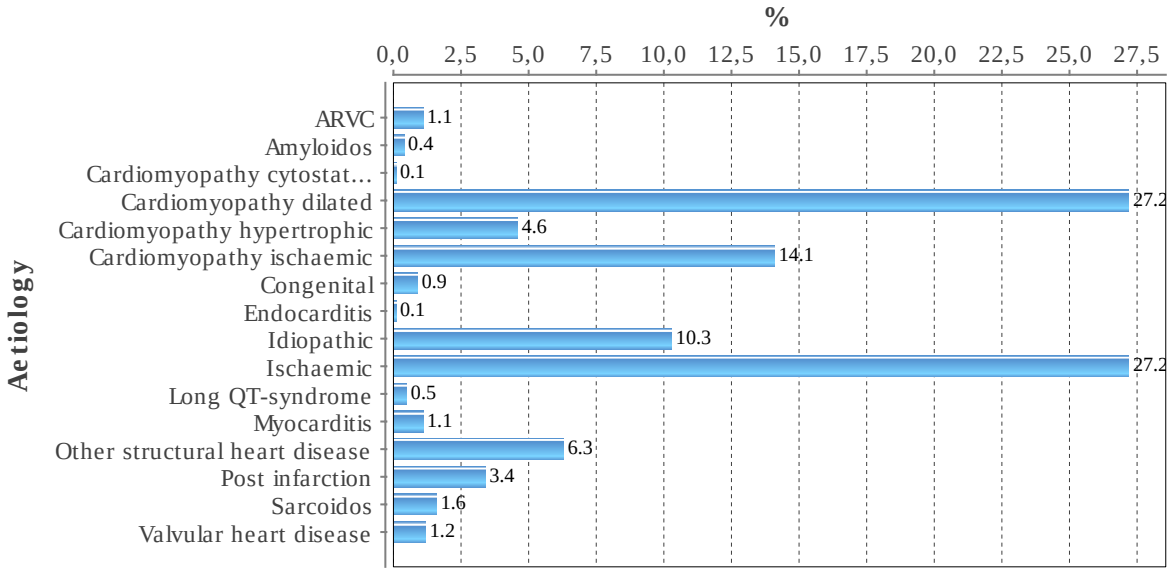

%
0
5
10
15
20
25
30
35
Clinical indications female
Aborted sudden death
23.7
Asymptomatic VT/VF
2.8
Breathlessness/tiredness
6.6
Heart failure
34.
Palpitations
6.3
Primary preventio...
15.2
Syncope
11.1

Main symptom for implanting ICDs, historical distribution

Indication	2018 %	2019 %
Aborted sudden death	18.9	21.6
Asymptomatic VT/VF	2.6	2.9
Primary prevention	67.4	62.7
Syncope	11.0	12.8

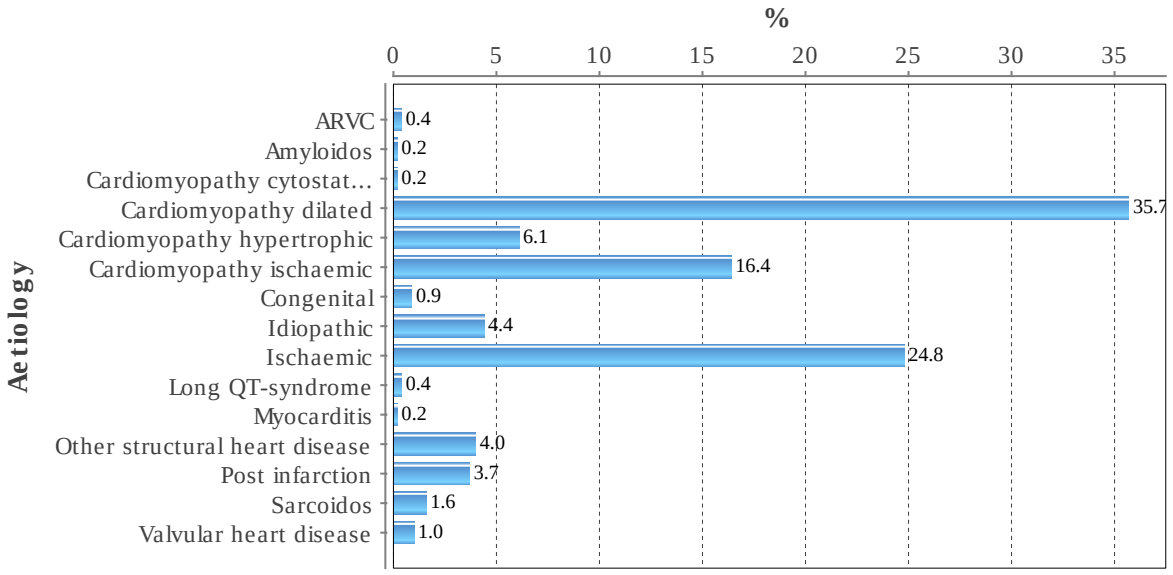
Main aetiology for implanting pacemakers

Aetiology	Total %	Male %	Female %
ARVC	1.1	0.8	2.2
Amyloidos	0.4	0.4	0.3
Cardiomyopathy cytostatic induced	0.1	0.2	0.0
Cardiomyopathy dilated	27.2	25.4	33.9
Cardiomyopathy hypertrophic	4.6	4.2	6.3
Cardiomyopathy ischaemic	14.1	15.3	9.8
Congenital	0.9	1.0	0.6
Endocarditis	0.1	0.1	0.3
Idiopathic	10.3	9.5	13.3
Ischaemic	27.2	29.5	18.4
Long QT-syndrome	0.5	0.1	1.9
Myocarditis	1.1	1.1	0.9
Other structural heart disease	6.3	6.0	7.3
Post infarction	3.4	4.0	0.9
Sarcoidos	1.6	1.2	3.2
Valvular heart disease	1.2	1.3	0.6



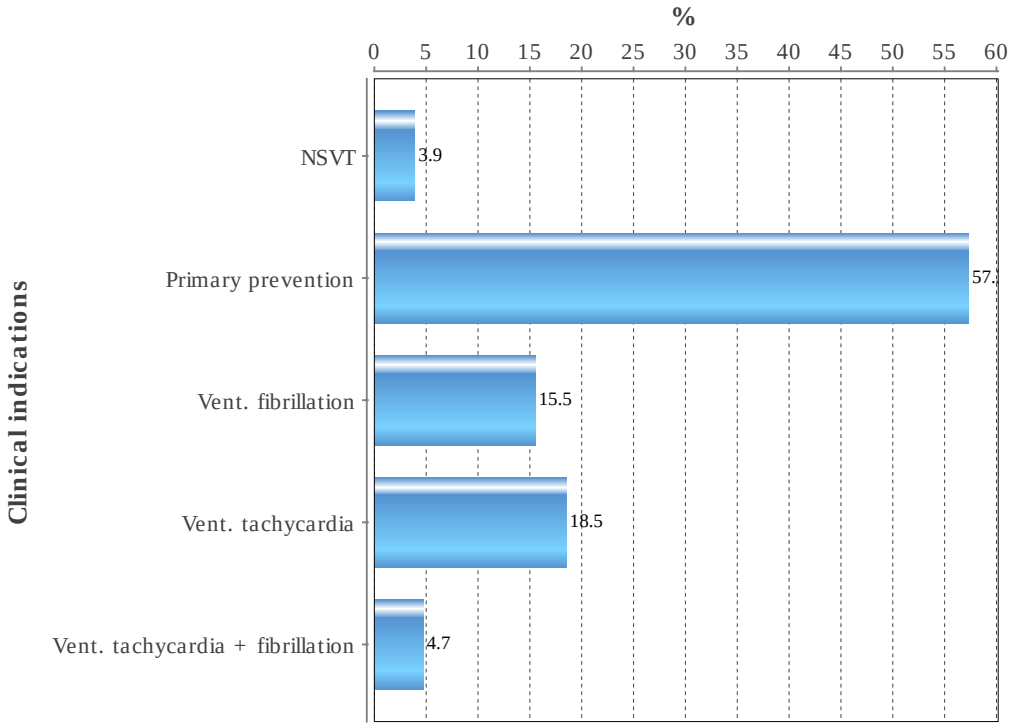
Main aetiology for implanting ICDs due to primary prevention

Aetiology	Total %	Male %	Female %
ARVC	0.4	0.4	0.5
Amyloidos	0.2	0.3	0.0
Cardiomyopathy cytostatic induced	0.2	0.3	0.0
Cardiomyopathy dilated	35.7	33.4	43.9
Cardiomyopathy hypertrophic	6.1	5.6	8.1
Cardiomyopathy ischaemic	16.4	17.6	12.1
Congenital	0.9	1.0	0.5
Idiopathic	4.4	4.4	4.5
Ischaemic	24.8	26.7	17.7
Long QT-syndrome	0.4	0.1	1.5
Myocarditis	0.2	0.0	1.0
Other structural heart disease	4.0	3.4	6.1
Post infarction	3.7	4.2	1.5
Sarcoidos	1.6	1.4	2.5
Valvular heart disease	1.0	1.2	0.0



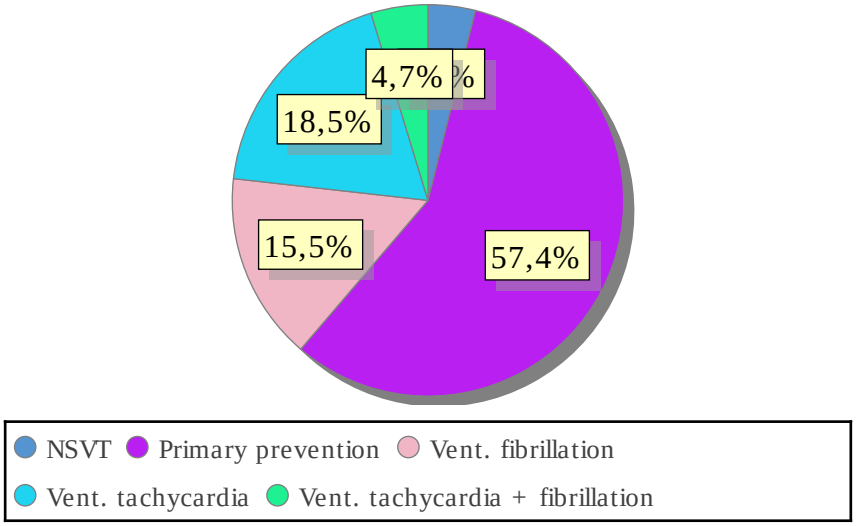
Documented ECG leading to ICD implant. (NSVT=non sustained VT)

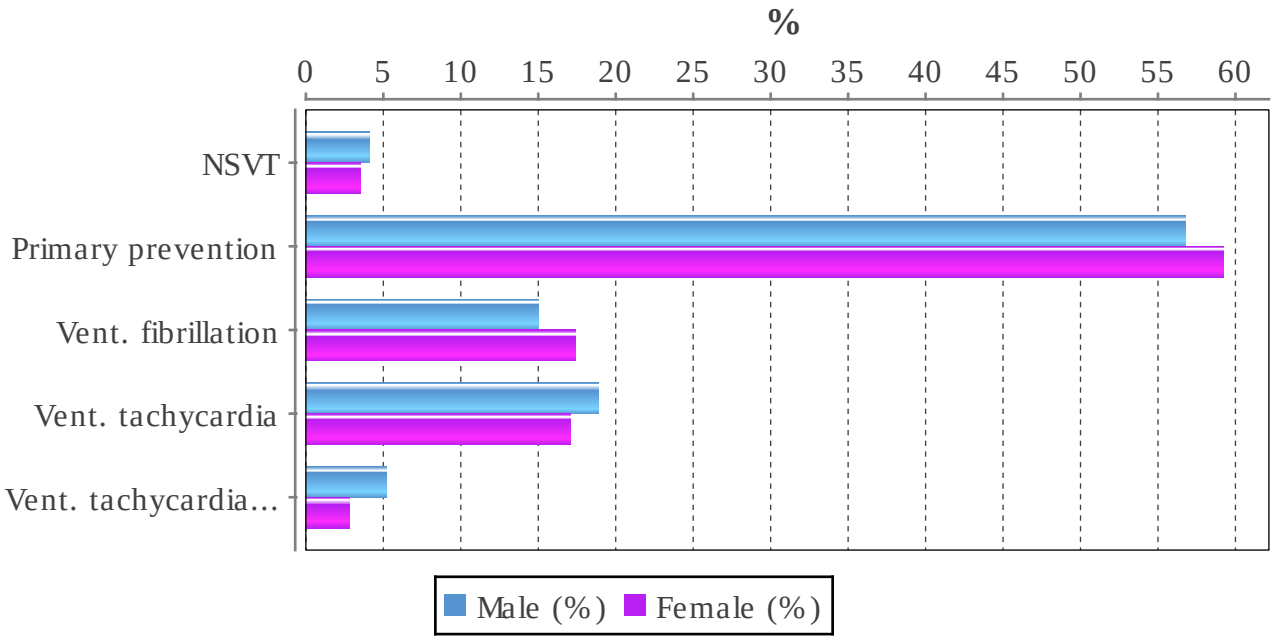
Indication	%
NSVT	3.9
Primary prevention	57.3
Vent. fibrillation	15.5
Vent. tachycardia	18.5
Vent. tachycardia + fibrillation	4.7



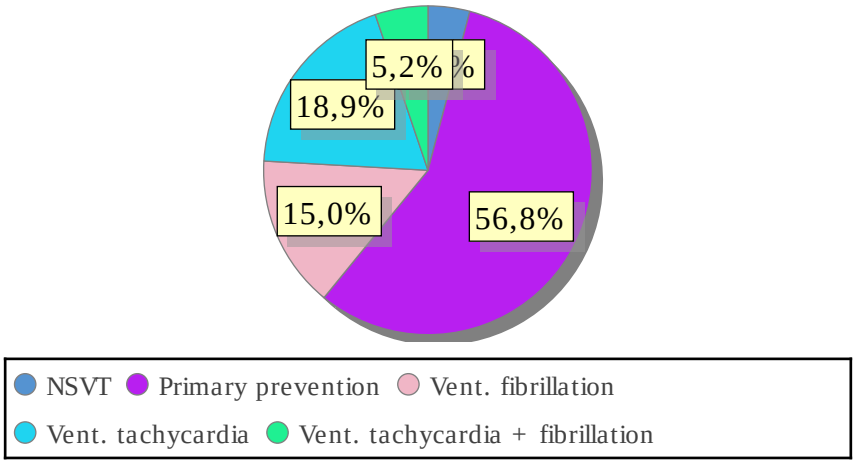
Documented ECG leading to ICD implant.(NSVT = non sustained VT) by gender and patients < 18 years

Indication	No	Total %	Male (%)	Female (%)	lt 18 (%)
NSVT	60	3.9	4.1	3.5	0.0
Primary prevention	871	57.3	56.8	59.2	25.0
Vent. fibrillation	236	15.5	15.0	17.4	25.0
Vent. tachycardia	281	18.5	18.9	17.1	8.3
Vent. tachycardia + fibrillation	72	4.7	5.2	2.8	41.7
				Total number of implants	1520

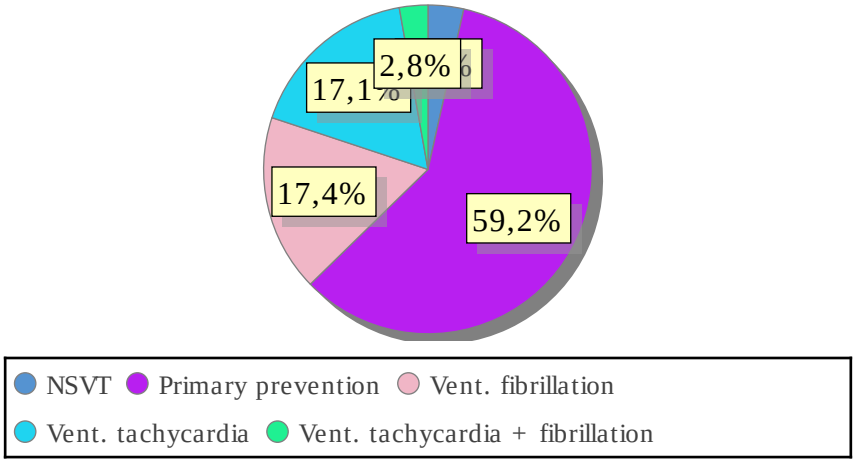




Male



Female



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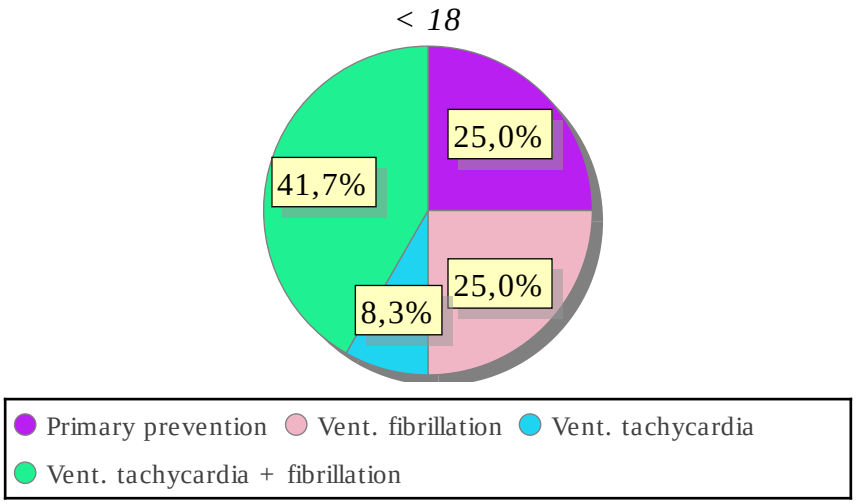
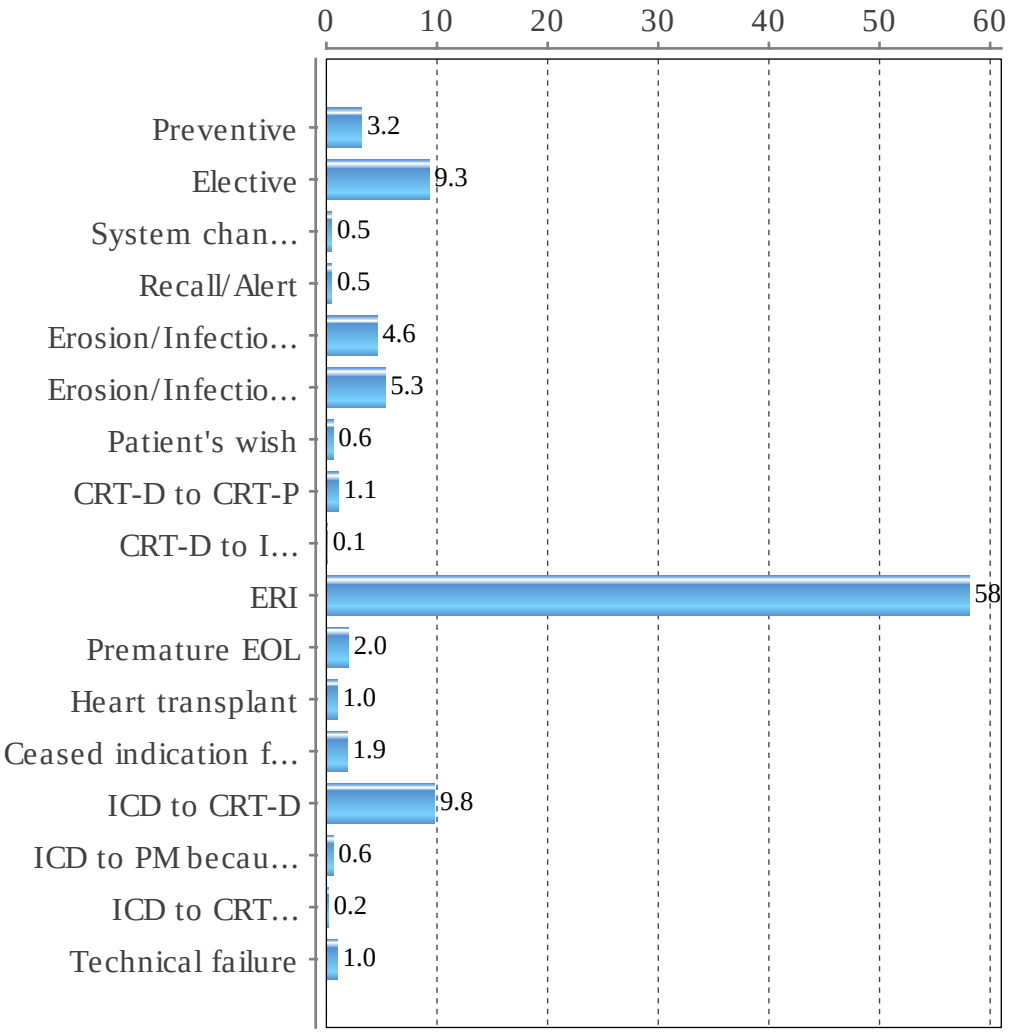


Use of ICD sub type for all indications per hospital (number of new implants / year and hospital))

Hospital	Number	ICD DR %	ICD SR %	ICD CRT %
Akademiska sjukhuset	45	28.9	35.6	35.6
Blekingesjukhuset	51	45.1	13.7	41.2
Centrallasarettet Växjö	26	57.7	11.5	30.8
Centralsjukhuset Karlstad	38	23.7	31.6	44.7
Centralsjukhuset Västerås	30	26.7	36.7	36.7
Danderyds sjukhus	70	51.4	14.3	34.3
Falu lasarett	47	25.5	34.0	40.4
Gävle sjukhus	52	34.6	17.3	48.1
Helsingborgs lasarett	12	50.0	50.0	0.0
Hudiksvalls sjukhus	9	77.8	22.2	0.0
Karolinska Universitetssjukhuset	144	43.8	25.0	31.3
Linköpings Universitetssjukhus	84	36.9	13.1	50.0
Länssjukhuset Halmstad	2	50.0	50.0	0.0
Länssjukhuset Kalmar	44	15.9	52.3	31.8
Länssjukhuset Ryhov	32	78.1	21.9	0.0
Mälarsjukhuset	34	14.7	38.2	47.1
Norrlands Universitetssjukhus	36	19.4	27.8	52.8
Sahlgrenska Universitetssjukhuset	82	53.7	19.5	26.8
Skaraborgs sjukhus Skövde	25	40.0	20.0	40.0
Skellefteå lasarett	2	100.0	0.0	0.0
Skånes universitetssjukhus, Lund	219	32.0	34.2	33.8
Skånes universitetssjukhus, Malmö	12	66.7	33.3	0.0
St Görans sjukhus	35	37.1	34.3	28.6
Sunderby sjukhus	49	46.9	12.2	40.8
Sundsvalls sjukhus	44	50.0	18.2	31.8
Södersjukhuset	58	25.9	56.9	17.2
Södra Älvsborgs sjukhus	20	65.0	5.0	30.0
Trollhättan, NÄL	38	39.5	13.2	47.4
Universitetssjukhuset Örebro	53	15.1	47.2	37.7
Varbergs sjukhus	70	28.6	35.7	35.7
Visby lasarett	3	66.7	33.3	0.0
Örnsköldsviks sjukhus	5	40.0	60.0	0.0
Östersunds sjukhus	17	52.9	11.8	35.3

Reason for generator explant. Elective used for changes performed before reached ERI/EOL

Reason	All hospitals %	(large) %	(medium) %	(small) %
Preventive	3.2	2.8	4.5	0.0
Elective	9.3	9.2	10.1	0.0
System change hemodynamic	0.5	0.3	1.0	0.0
Recall/Alert	0.5	0.4	0.7	0.0
Erosion/Infection, local	4.6	6.0	1.4	6.7
Erosion/Infection, systemic	5.3	7.4	0.7	0.0
Patient's wish	0.6	0.7	0.3	0.0
CRT-D to CRT-P	1.1	1.5	0.3	0.0
CRT-D to ICD because of ceased CRT-indication	0.1	0.1	0.0	0.0
ERI	58.1	54.9	63.9	93.3
Premature EOL	2.0	1.9	2.4	0.0
Heart transplant	1.0	1.5	0.0	0.0
Ceased indication for ICD therapy	1.9	2.2	1.4	0.0
ICD to CRT-D	9.8	9.4	11.1	0.0
ICD to PM because of ceased indication	0.6	0.4	1.0	0.0
ICD to CRT-P because of heart failure	0.2	0.3	0.0	0.0
Technical failure	1.0	1.0	1.0	0.0

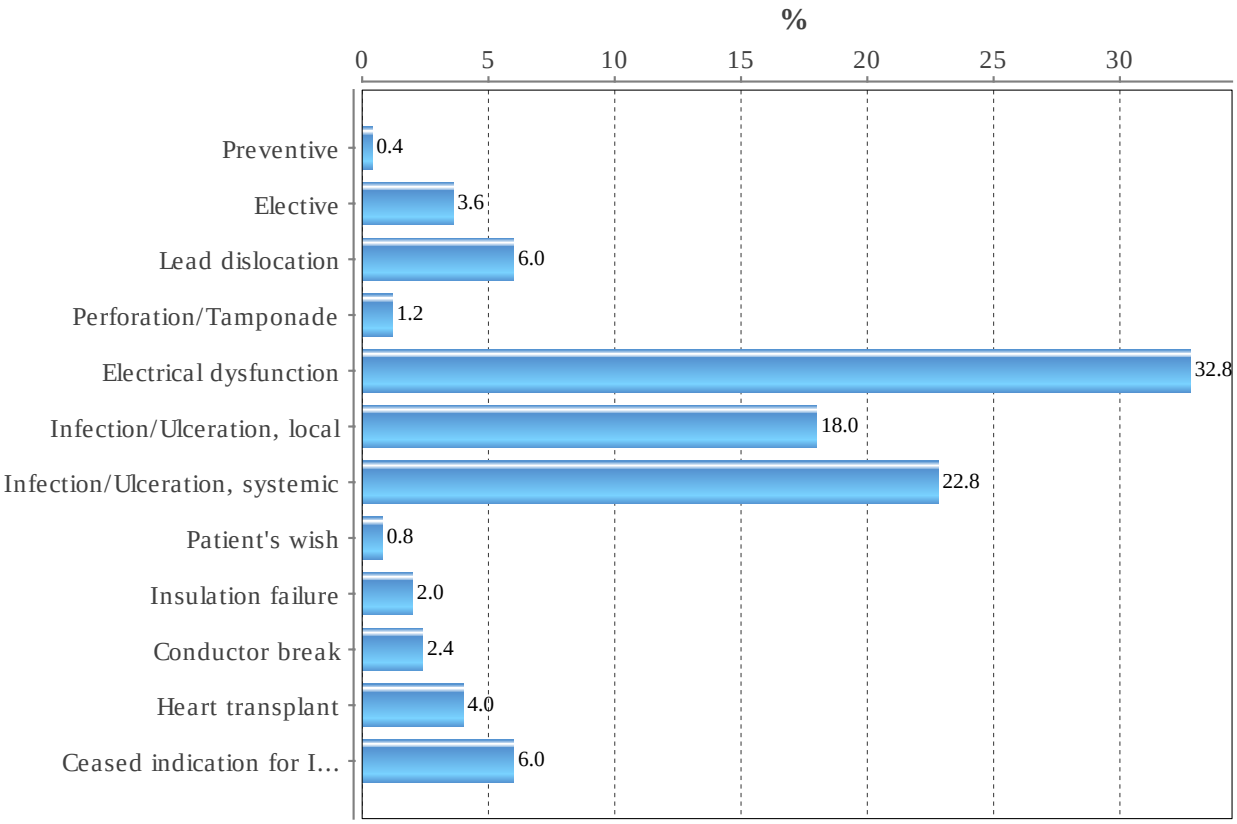

0
10
20
30
40
50
60
Preventive
3.2
Elective
9.3
System chan...
0.5
Recall/Alert
0.5
Erosion/Infectio...
4.6
Erosion/Infectio...
5.3
Patient's wish
0.6
CRT-D to CRT-P
1.1
CRT-D to I...
0.1
ERI
58
Premature EOL
2.0
Heart transplant
1.0
Ceased indication f...
1.9
ICD to CRT-D
9.8
ICD to PM becau...
0.6
ICD to CRT...
0.2
Technical failure
1.0

Historical explants indications

Reason	2017 %	2018 %	2019 %
Preventive	5.6	2.4	3.2
Elective	5.8	10.2	9.3
System change hemodynamic	1.1	0.9	0.5
Recall/Alert	3.3	1.2	0.5
Erosion/Infection, local	5.0	4.1	4.6
Erosion/Infection, systemic	3.9	4.5	5.3
Patient's wish	0.5	0.4	0.6
CRT-D to CRT-P	0.9	0.2	1.1
CRT-D to ICD because of ceased CRT-indication	0.1	0.0	0.1
ERI	60.8	62.4	58.1
Premature EOL	2.1	3.4	2.0
Heart transplant	1.0	0.3	1.0
Ceased indication for ICD therapy	0.8	1.1	1.9
ICD to CRT-D	7.8	6.7	9.8
ICD to PM because of ceased indication	0.2	0.9	0.6
Technical failure	1.2	1.1	1.0
ICD to CRT-P because of heart failure	0.0	0.2	0.2

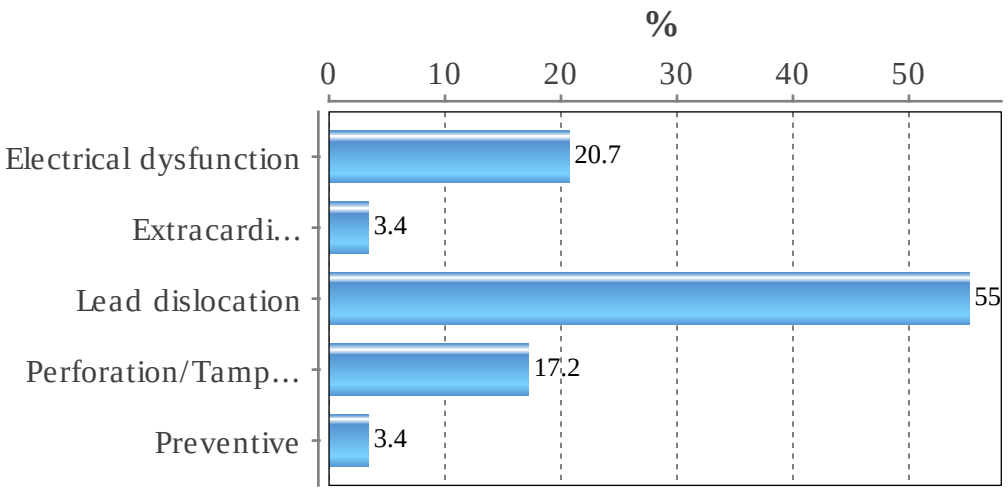
Historical lead explants indications

Reason	2017 %	2018 %	2019 %
Preventive	0.4	0.4	0.4
Elective	3.7	3.4	3.6
Lead dislocation	4.6	6.4	6.0
Extracardial stimulation	0.8	0.0	0.0
Perforation/Tamponade	0.8	1.7	1.2
Electrical dysfunction	30.3	38.0	32.8
Infection/Ulceration, local	21.6	16.7	18.0
Infection/Ulceration, systemic	18.7	18.8	22.8
Patient's wish	2.1	1.3	0.8
Connector failure	0.4	0.0	0.0
Insulation failure	2.5	2.1	2.0
Conductor break	4.1	5.6	2.4
Heart transplant	4.1	1.3	4.0
Ceased indication for ICD therapy	5.8	3.8	6.0
Recall/Alert	0.0	0.4	0.0


%
0
5
10
15
20
25
30
Preventive
0.4
Elective
3.6
Lead dislocation
6.0
Perforation/Tamponade
1.2
Electrical dysfunction
32.8
Infection/Ulceration, local
18.0
Infection/Ulceration, systemic
22.8
Patient's wish
0.8
Insulation failure
2.0
Conductor break
2.4
Heart transplant
4.0
Ceased indication for I...
6.0

Lead correction indications

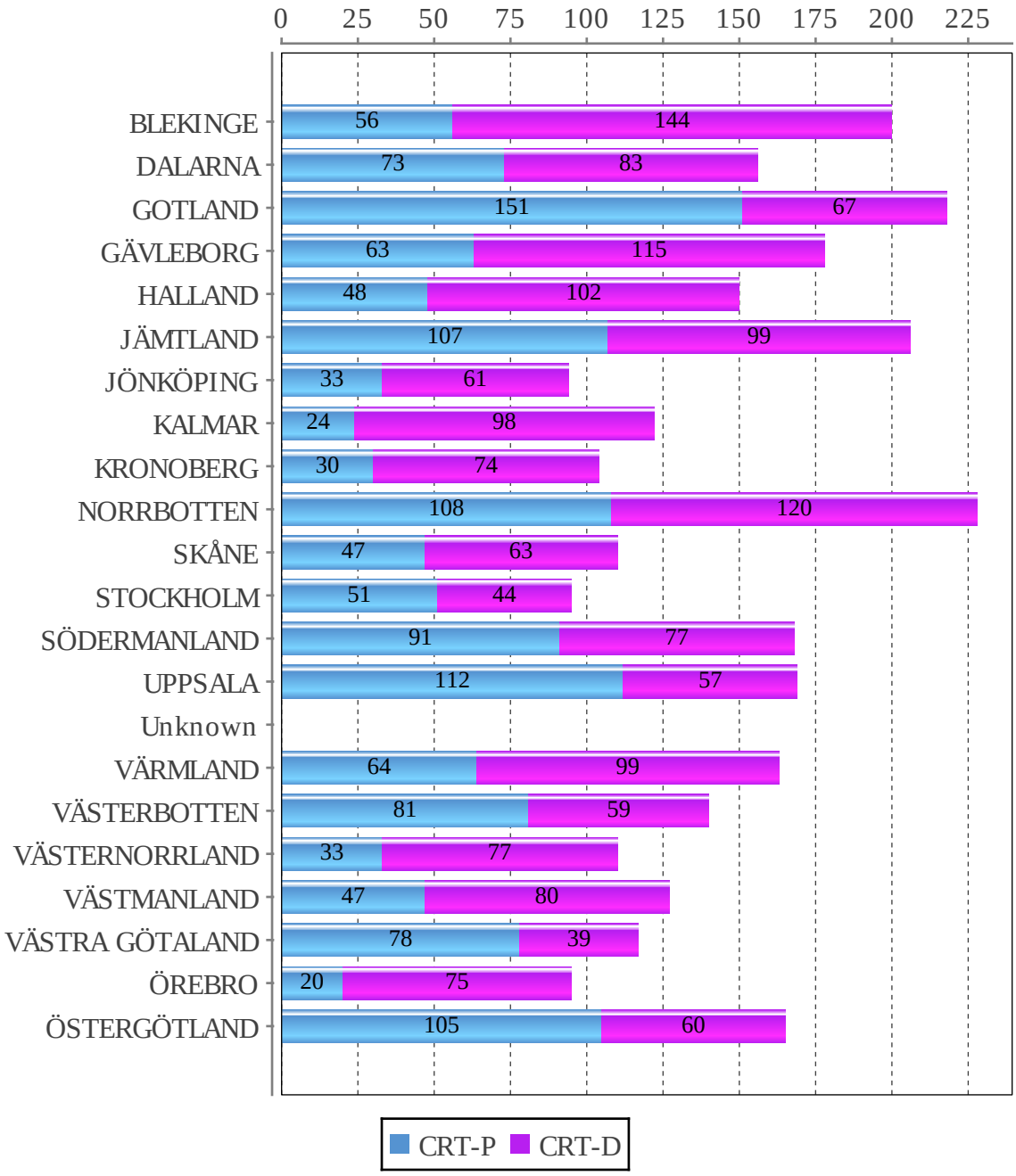
Reason	%
Electrical dysfunction	20.7
Extracardial stimulation	3.4
Lead dislocation	55.2
Perforation/Tamponade	17.2
Preventive	3.4
	Total no 29



Procedures per operator (exclusive CRT)

Hospital	Operator	No
Akademiska sjukhuset	Arvanitis	8
	Ciubine	8
	Ostrowska	6
	Sciaraffia	19
	Teder	19
Ålands centralsjukhus	Slotte	2
Blekingesjukhuset	Anders Ericsson	3
	Genadi Kaninski	7
	Jan-Olov Borg	9
	Martin Stefanik	7
	Michael Ringborn	7
	Nicoleta Sora	7
Centrallasarettet Växjö	Annan	2
	Carin Påhlman	6
	Johansson P	3
	Jonasson	9
	Rosén Helena	3
	Strandberg	3
	Strandberg-Jonasson	2
Centralsjukhuset Karlstad	Khalili	16
	Niklas Aldergård	14
	Saidi	4
Centralsjukhuset Västerås	Amra Kåregren	2
	Johanna Sandström	1
	SkoglundAndersson	15
	Wiberg	14
Danderyds sjukhus	1	11
	2	18
	3	13
	4	20
	6	6
Falu lasarett	Monheim	7
	Svedberg	1
	Berglund	9
	Forsgren	25
	Guggi	5
Gävle sjukhus	Johansson Staffan	7
	Kastberg	14
	Magnusson Peter	5
	Mati Jalakas	9
Helsingborgs lasarett	Jacobsson	8
	Rorsman	2
	Utter	7
Hudiksvalls sjukhus	Roussinne	10
Karolinska Universitetssjukhus	Annan	6
	Gadler	66
	Hörnsten	48
	Reistam	31
	Reistam/Gadler	1
Länssjukhuset Halmstad	Rorsman-Söderström	2
Länssjukhuset Kalmar	David Olsson	17
	Hendrik Schreyer	30
Länssjukhuset Ryhov	Lagerberg	13
	Stumpf	19
	Walid El-Saadi	12
Linköpings universitetssjukhus	Pinna C	10
	Säfström K	17
	Sonesson L	27
	Svenson A	4
	Szymanowski A	12
Mälarsjukhuset	Carl Westholm	14
	Georgios Matthaiou	8
	Kave Keshavarz	5
	Linda Ärlehag	1
Norrlands Universitetssjukhus	Andersson	11
	Höglund	6
	Jensen	6
	Kesek	3
	Landström	5
	Rönn	1
Örnsköldsviks sjukhus	Ehlin	7
	Meidell	4
Östersunds sjukhus	Björklund	5
	Christian Gjessing	1
	Friberg	1
	Friberg/Gjessing	4
	Hansson	6
	Hansson/ Björklund	1
	Hansson/ Gjessing	1
Sahlgrenska universitetssjukhuset	Ammar Taha	2
	Anders Holmdahl	1
	Gäbel/ Szamlewski	1
	Jakob Gäbel	4
	Johansson B	2
	Konstantinos Liakatsidas	30

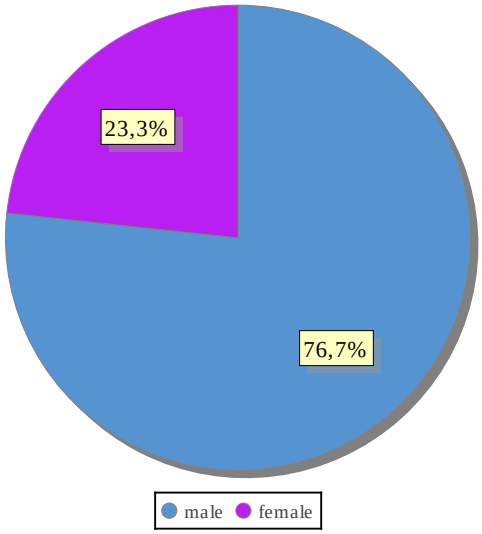
Hospital	Operator	No
	Piotr Szamlewski	22
	Shabbar Jamaly	11
	Stefan Jakobsson	20
Skaraborgs sjukhus Skövde	Anna Widunder	5
	Falmer	1
	Lorentzen	12
	Paulsson	5
	Winterfeldt	1
Skånes universitetssjukhus, Lund	Annan	21
	David Mörtsell	25
	Fredrik Utter	2
	Jesper van der Pals	2
	Johan Brandt	74
	LingWei Wang	46
	Maiwand Farouq	15
	Patrycja Näsgaard	7
	Pyotr Platonov	1
	Steen Jensen	8
	Tina Tanha	9
	Uzma Chaudry	23
Skånes universitetssjukhus, Malmö	Annan	8
	Johan Brandt	1
	Torbjörn Persson	3
Skellefteå lasarett	Annan	1
	Christina Nilzon	1
Södersjukhuset	Jonsson J-E	11
	Kjellman B	16
	Olson J	15
	Rydlund K	24
Södra Älvsborgs sjukhus	Lodin	9
	Riemer	13
St Görans sjukhus	1	21
	2	12
	3	10
Sunderby sjukhus	Agneta Johansson	12
	Annica Wennberg	8
	Marcus Baas	10
	Peter Johansson	11
	Peter Rangson	8
Sundsvalls sjukhus	Annan	1
	Ciubine Alessio	11
	Haupt Jan	2
	Khadhim Negham	9
	Sundelin Torbjörn	11
	Teder Priit	4
Trollhättan, NÄL	Alice David	2
	Jabbar	2
	Javid	13
	Orsolya Bene	11
Universitetssjukhuset Örebro	Anna Björkenheim	13
	Áron Sztanislav	3
	Barbara Kurt	2
	Lindell	24
Varbergs sjukhus	Emma Sandgren	24
	Rorsman	36
Visby lasarett	Jacobsson L	5


0
25
50
75
100
125
150
175
200
225
BLEKINGE
56
144
DALARNA
73
83
GOTLAND
151
67
GÄVLEBORG
63
115
HALLAND
48
102
JÄMTLAND
107
99
JÖNKÖPING
33
61
KALMAR
24
98
KRONOBERG
30
74
NORRBOTTEN
108
120
SKÅNE
47
63
STOCKHOLM
51
44
SÖDERMANLAND
91
77
UPPSALA
112
57
Unknown
VÄRMLAND
64
99
VÄSTERBOTTEN
81
59
VÄSTERNORRLAND
33
77
VÄSTMANLAND
47
80
VÄSTRA GÖTALAND
78
39
ÖREBRO
20
75
ÖSTERGÖTLAND
105
60
CRT-P
CRT-D

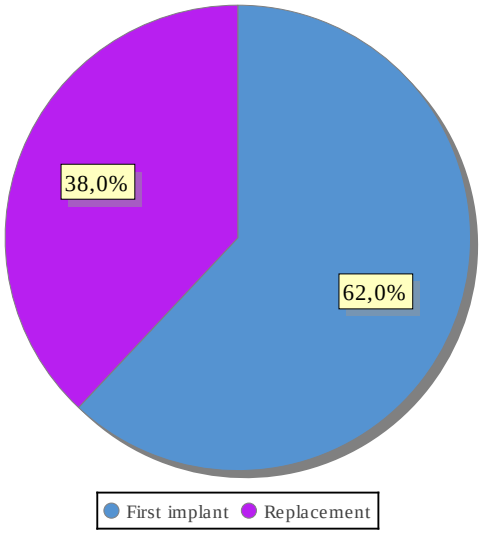
Based on both CRT-P and CRT-D

	Total		Male		Female	
	no	%	no	%	no	%
First implant	1309	62.0	1004	76.7	305	23.3
Replacement	802	38.0	610	76.1	192	23.9
Total	2111	100.0	1614	76.5	497	23.5

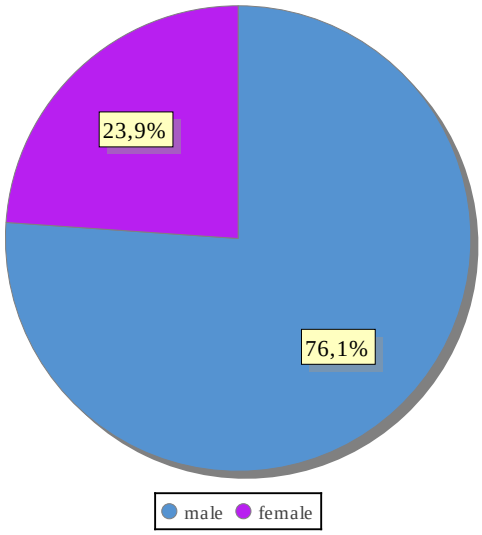
First implant



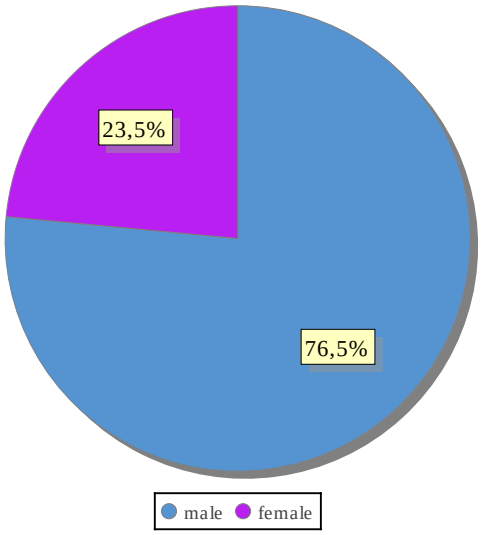
Replacement ratio



Replacement



All implant



CRT Historical implant rates per hundred thousand residents

			CRT-P		CRT-D	
Year	**Population**	**No First Impl**	**No**	**Rate**	**No**	**Rate**
2015	9851017	1059	448	4.5	611	6.2
2016	9995153	1138	479	4.8	659	6.6
2017	10120242	1191	549	5.4	642	6.3
2018	10230185	1209	611	6.0	598	5.8
2019	10327589	1312	650	6.3	662	6.4

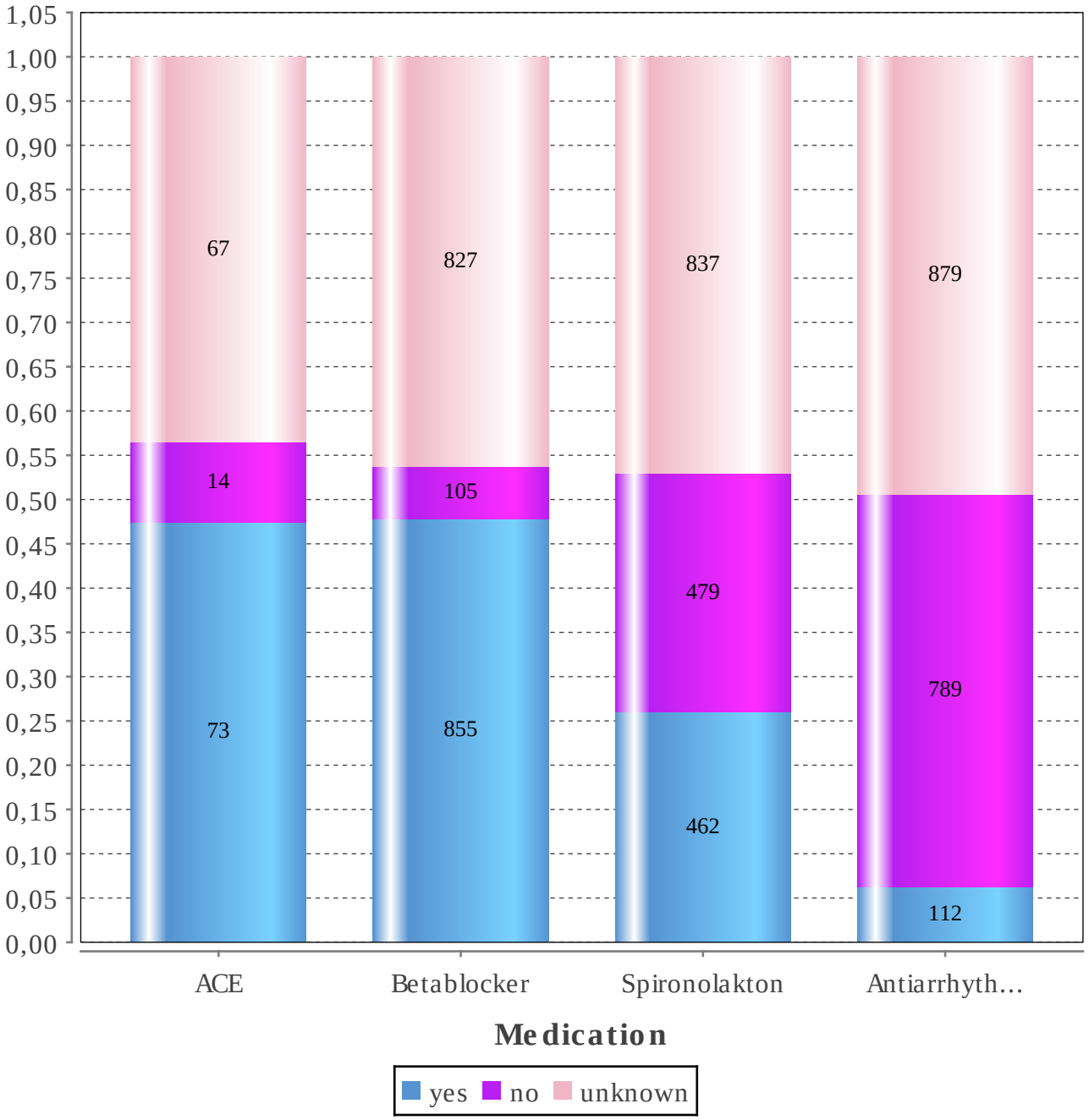
CRT-P (generator)

Status	First implant	Replacement
SC-lead plugged	8	4
SC-lead failed implant	14	3
SC-lead active system	659	374

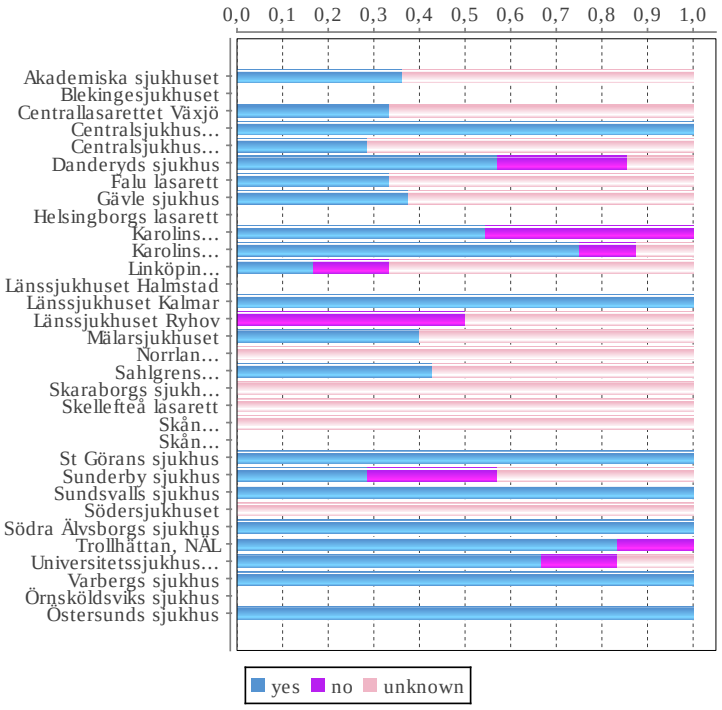
CRT-D (generator)

Status	First implant	Replacement
SC-lead plugged	17	4
SC-lead failed implant	13	2
SC-lead active system	662	433

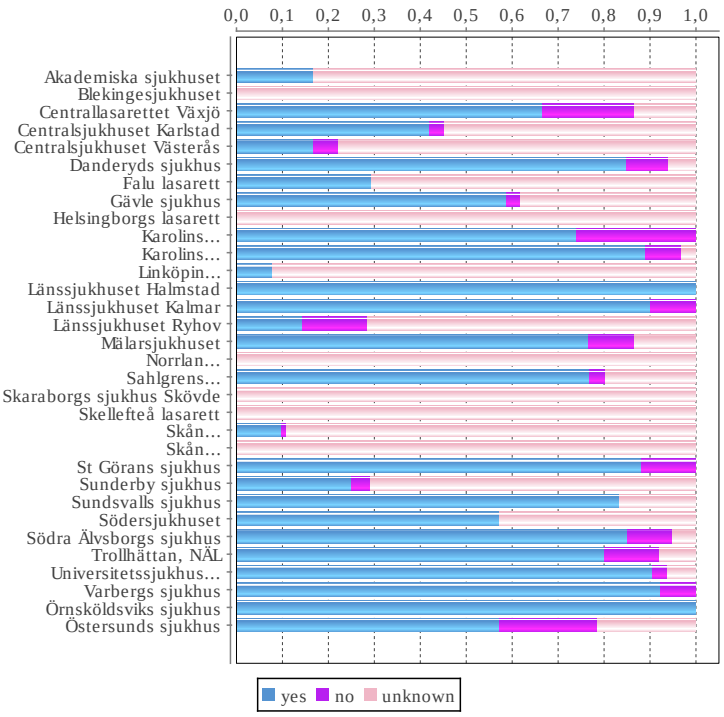
Previous medication for patients having CRT implant



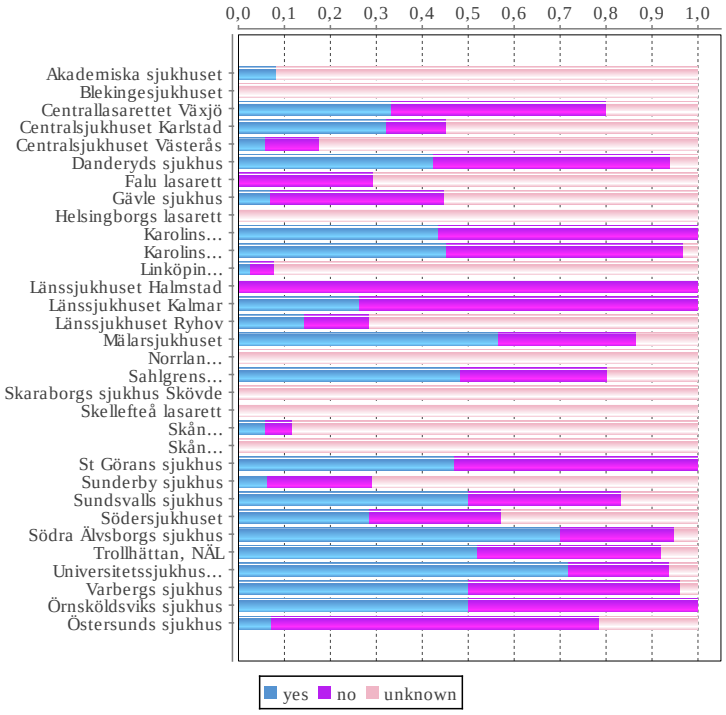
ACE



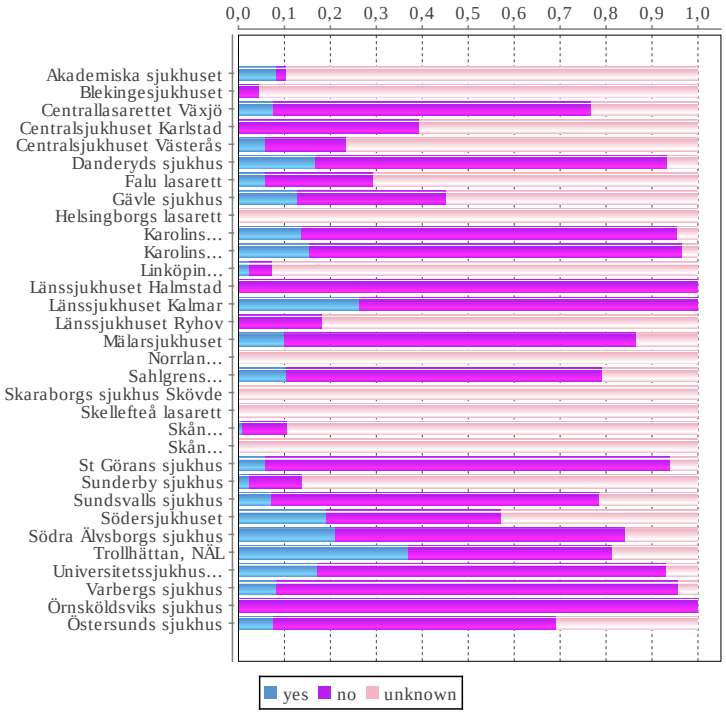
Betablocker



Spironolakton



Antiarrhythmica



Procedures per operator

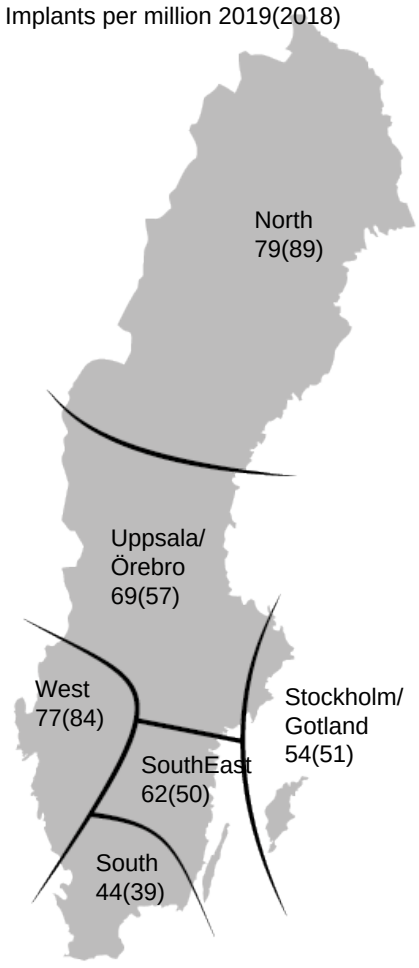
Hospital	Operator	No
Akademiska sjukhuset	Arvanitis	23
	Ciubine	1
	Teder	20
Ålands centralsjukhus	Slotte	1
Blekingesjukhuset	Genadi Kaninski	4
	Jan-Olov Borg	8
Centrallasarettet Växjö	Johansson P	2
	Jonasson	2
	Strandberg-Jonasson	1
Centralsjukhuset Karlstad	Niklas Aldergård	16
Centralsjukhuset Västerås	SkoglundAndersson	4
	Wiberg	4
Danderyds sjukhus	2	1
	3	10
	4	26
Falu lasarett	Forsgren	20
	Guggi	1
Gävle sjukhus	Falck	2
	Kastberg	16
Karolinska Universitetssjukhus	Gadler	35
	Hörnsten	19
	Reistam	7
	Reistam/Gadler	1
	Reistam/ Hörnsten	4
Länssjukhuset Kalmar	David Olsson	2
	Hendrik Schreyer	1
Linköpings universitetssjukhus	Annan	1
	Säfström K	29
	Sonesson L	21
	Svenson A	1
	Szymanowski A	16
Mälarsjukhuset	Carl Westholm	28
Norrlands Universitetssjukhus	Andersson	3
	Höglund	6
	Jensen	4
	Landström	10
	Rönn	2
Östersunds sjukhus	Björklund	1
	Björklund Friberg	1
	Friberg	1
	Friberg/Hansson	2
	Hansson	5
	Hansson/ Björklund	3
Sahlgrenska universitetssjukhuset	Annan	3
	Konstantinos Liakatsidas	20
	Piotr Szamlewski	31
	Shabbar Jamaly	2
	Stefan Jakobsson	14
Skaraborgs sjukhus Skövde	Anna Widunder	4
	Lorentzen	30
	Paulsson	9
Skånes universitetssjukhus, Lund	David Mörtsell	9
	Johan Brandt	20
	LingWei Wang	25
	Maiwand Farouq	7
	Steen Jensen	1
Södersjukhuset	Jonsson J-E	4
	Kjellman B	11
	Olson J	8
Södra Älvsborgs sjukhus	Riemer	15
St Görans sjukhus	1	5
	1+2	1
	2	2
Sunderby sjukhus	Marcus Baas	15
	Peter Johansson	14
Sundsvalls sjukhus	Ciubine Alessio	1
	Haupt Jan	1
	Teder Priit	6
Trollhättan, NÄL	Javid	10
	Orsolya Bene	6
Universitetssjukhuset Örebro	Anna Björkenheim	2
	Áron Sztanislav	1
	Lindell	3
Varbergs sjukhus	Emma Sandgren	5
	Rorsman	9

Procedures per operator

Hospital	Operator	No
Akademiska sjukhuset	Arvanitis	7
	Ciubine	1
	Grinnemo	1
	Teder	14
Ålands centralsjukhus	Slotte	5
Blekingesjukhuset	Genadi Kaninski	9
	Jan-Olov Borg	12
Centrallasarettet Växjö	Johansson P	4
	Jonasson	5
	Strandberg	2
	Strandberg-Jonasson	2
Centralsjukhuset Karlstad	Khalili	1
	Niklas Aldergård	24
Centralsjukhuset Västerås	SkoglundAndersson	4
	Wiberg	10
Danderyds sjukhus	1	1
	3	8
	4	20
Falu lasarett	Forsgren	21
	Guggi	2
Gävle sjukhus	Falck	15
	Kastberg	19
Karolinska Universitetssjukhus	Gadler	32
	Hörnsten	15
	Reistam	5
	Reistam/Gadler	3
	Reistam/ Hörnsten	2
Länssjukhuset Kalmar	David Olsson	10
	Hendrik Schreyer	11
	Ove Carlström	2
Linköpings universitetssjukhus	Annan	1
	Säfström K	24
	Sonesson L	16
	Szymanowski A	11
Mälarsjukhuset	Carl Westholm	22
Norrlands Universitetssjukhus	Andersson	3
	Höglund	5
	Jensen	2
	Kesek	1
	Landström	7
	Rönn	2
Östersunds sjukhus	Björklund	1
	Björklund Friberg	1
	Friberg/Hansson	2
	Hansson	4
	Hansson/ Björklund	3
Sahlgrenska universitetssjukhuset	Annan	1
	Konstantinos Liakatsidas	5
	Piotr Szamlewski	23
	Stefan Jakobsson	6
Skaraborgs sjukhus Skövde	Anna Widunder	1
	Lorentzen	8
	Paulsson	3
Skånes universitetssjukhus, Lund	Annan	1
	David Mörtsell	28
	Jesper van der Pals	1
	Johan Brandt	29
	LingWei Wang	28
	Maiwand Farouq	15
	Steen Jensen	1
Södersjukhuset	Jonsson J-E	4
	Kjellman B	5
	Olson J	7
Södra Älvsborgs sjukhus	Riemer	5
St Görans sjukhus	1	8
	1+2	2
	2	5
Sunderby sjukhus	Marcus Baas	14
	Peter Johansson	15
Sundsvalls sjukhus	Ciubine Alessio	9
	Haupt Jan	3
	Teder Priit	8
Trollhättan, NÄL	Javid	12
	Orsolya Bene	9
Universitetssjukhuset Örebro	Anna Björkenheim	7
	Áron Sztanislav	4
	Lindell	18
	Örjan Friberg	1
Varbergs sjukhus	Emma Sandgren	10
	Rorsman	23

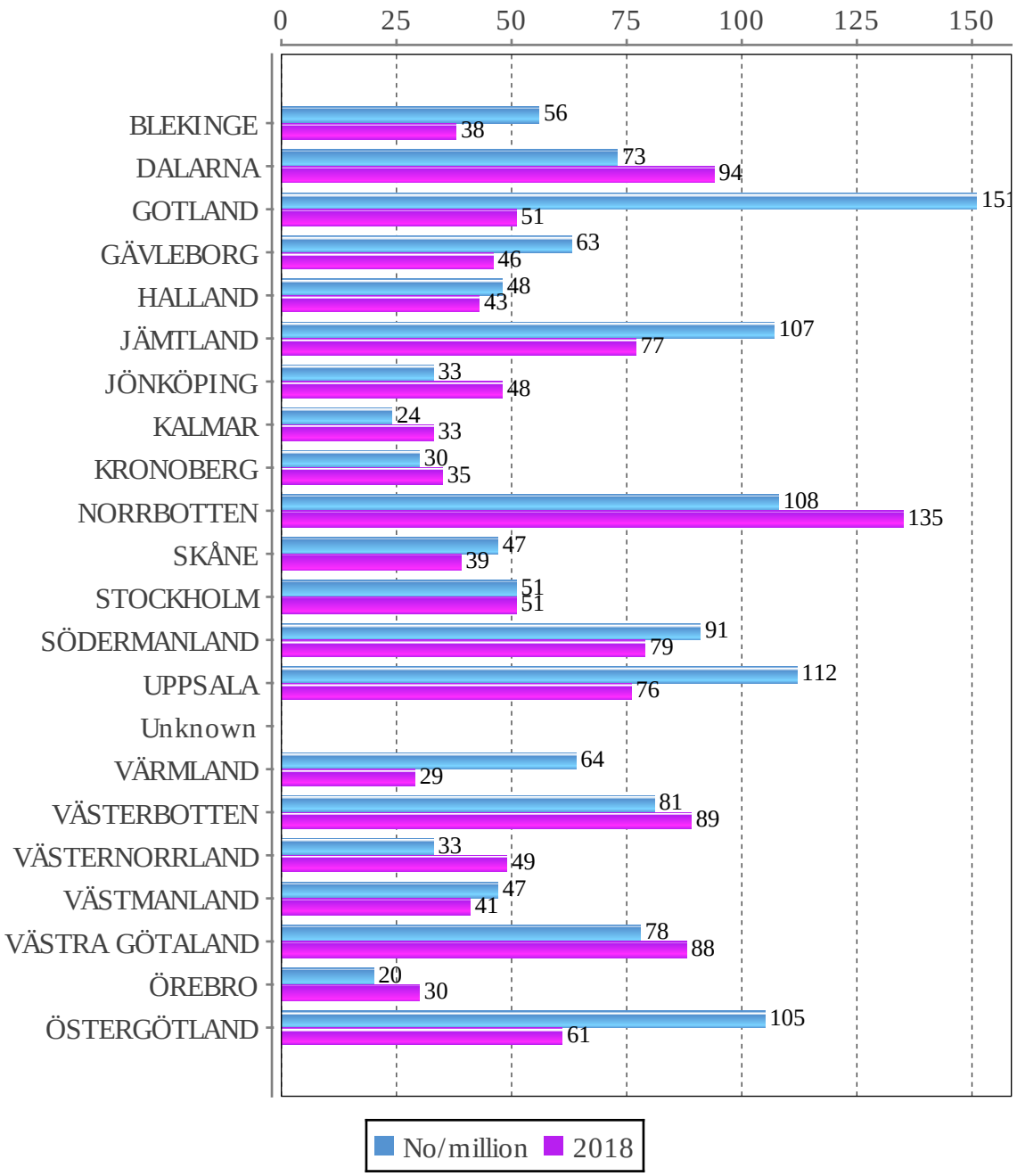
The regions are based on where the patients live, not where they are treated

Region	Population	No of first impl	No per million
Stockholm/Gotland	2436767	131	54
Uppsala/Örebro	2119665	146	69
South-East Sweden	1074540	67	62
Southern Sweden	1878387	83	44
Western Sweden	1920244	148	77
Northern Sweden	897986	71	79
Total	10327589	646	63



The regions are based on where the patients live, not where they are treated

	Population	No first impl	No/million
BLEKINGE	159606	9	56
DALARNA	287966	21	73
GOTLAND	59686	9	151
GÄVLEBORG	287382	18	63
HALLAND	333848	16	48
JÄMTLAND	130810	14	107
JÖNKÖPING	363599	12	33
KALMAR	245446	6	24
KRONOBERG	201469	6	30
NORRBOTTEN	250093	27	108
SKÅNE	1377827	65	47
STOCKHOLM	2377081	122	51
SÖDERMANLAND	297540	27	91
UPPSALA	383713	43	112
Unknown	0	9	0
VÄRMLAND	282414	18	64
VÄSTERBOTTEN	271736	22	81
VÄSTERNORRLAND	245347	8	33
VÄSTMANLAND	275845	13	47
VÄSTRA GÖTALAND	1725881	134	78
ÖREBRO	304805	6	20
ÖSTERGÖTLAND	465495	49	105
Total	10327589	654	63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25
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75
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BLEKINGE
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DALARNA
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94
GOTLAND
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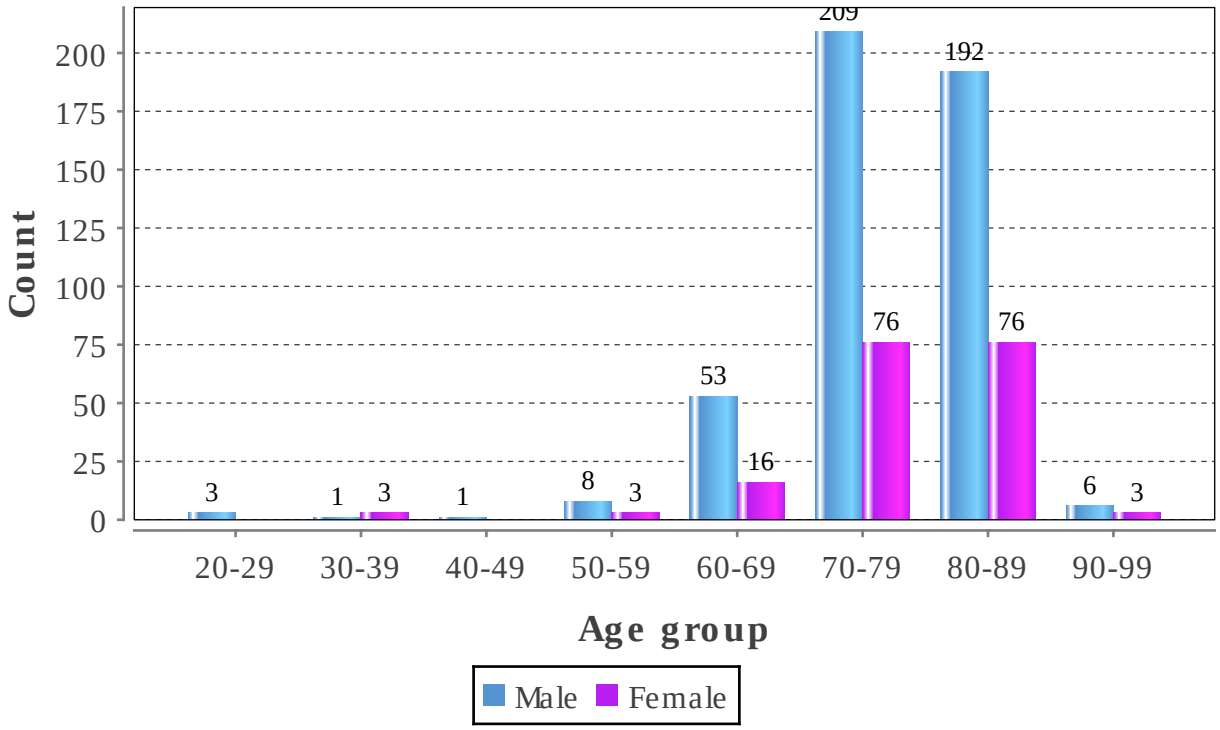
GÄVLEBORG
63
46
HALLAND
48
43
JÄMTLAND
107
77
JÖNKÖPING
33
48
KALMAR
24
33
KRONOBERG
30
35
NORRBOTTEN
108
135
SKÅNE
47
39
STOCKHOLM
51
51
SÖDERMANLAND
91
79
UPPSALA
112
76
Unknown
VÄRMLAND
64
29
VÄSTERBOTTEN
81
89
VÄSTERNORRLAND
33
49
VÄSTMANLAND
47
41
VÄSTRA GÖTALAND
78
88
ÖREBRO
20
30
ÖSTERGÖTLAND
105
61
No/million
2018

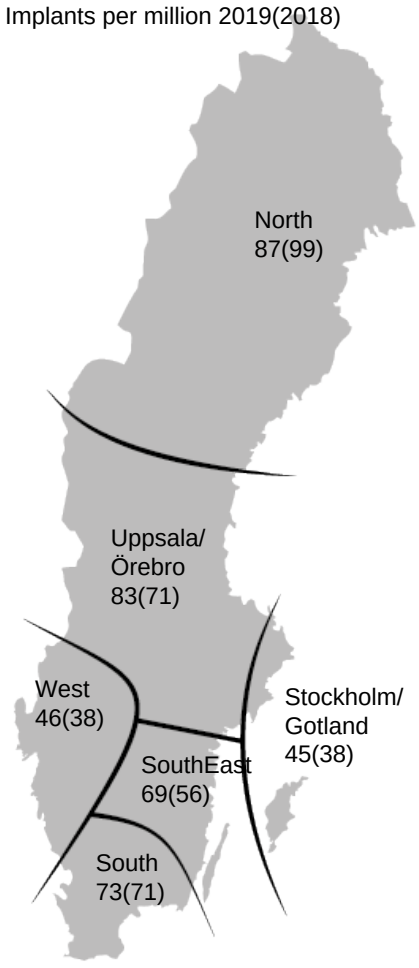
Age and gender distribution for new implants, total numbers

Age (years)	Total no	%	Male	Female
20-29	3	0.5	3	0
30-39	4	0.6	1	3
40-49	1	0.2	1	0
50-59	11	1.7	8	3
60-69	69	10.6	53	16
70-79	285	43.8	209	76
80-89	268	41.2	192	76
90-99	9	1.4	6	3
Average age	77	0.0	77	77
			Total number of implants: 650	



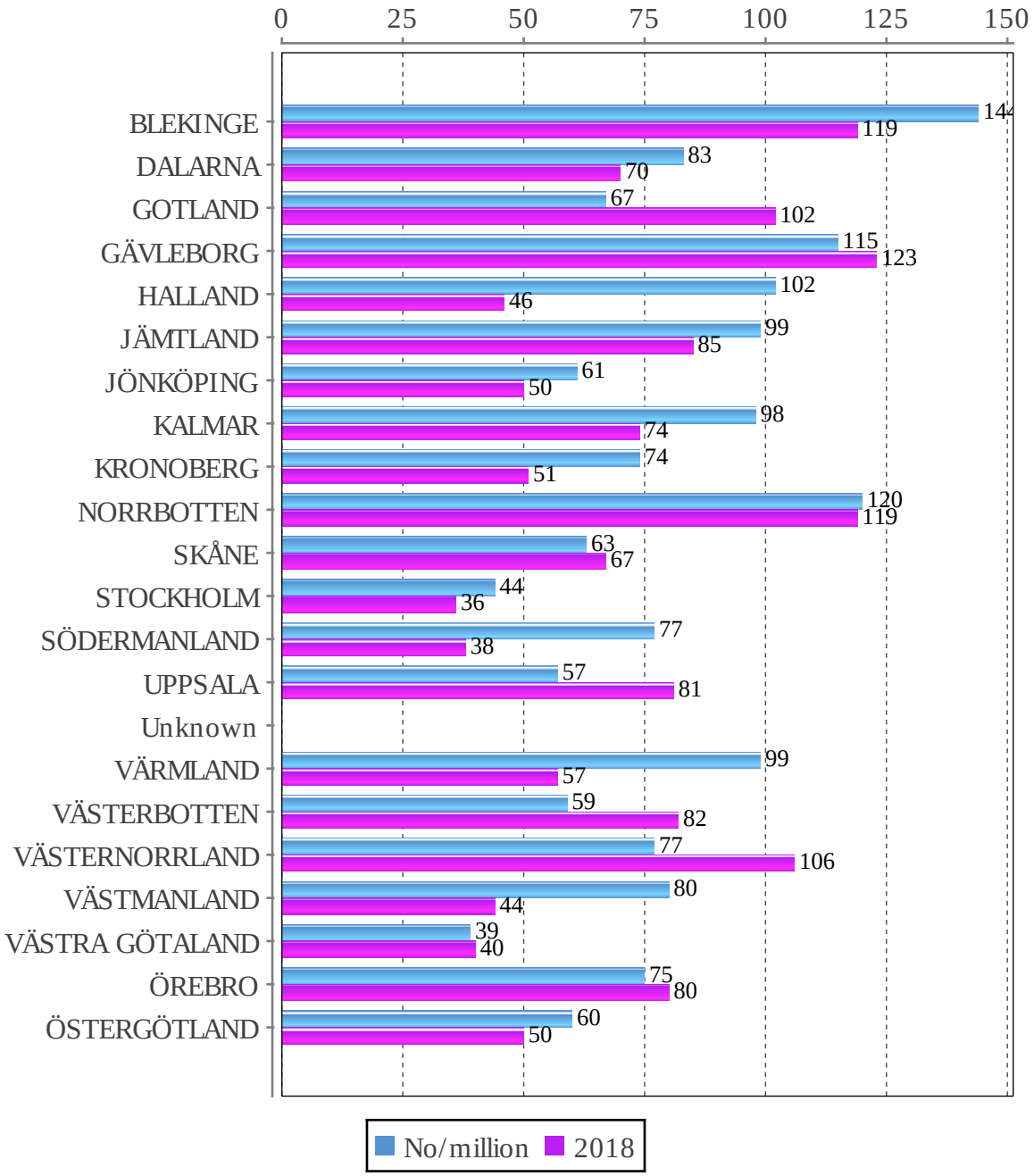
The regions are based on where the patients live, not where they are treated

Region	Population	No of first impl	No per million
Stockholm/Gotland	2436767	109	45
Uppsala/Örebro	2119665	175	83
South-East Sweden	1074540	74	69
Southern Sweden	1878387	138	73
Western Sweden	1920244	88	46
Northern Sweden	897986	78	87
Total	10327589	662	64



The regions are based on where the patients live, not where they are treated

	Population	No first impl	No/million
BLEKINGE	159606	23	144
DALARNA	287966	24	83
GOTLAND	59686	4	67
GÄVLEBORG	287382	33	115
HALLAND	333848	34	102
JÄMTLAND	130810	13	99
JÖNKÖPING	363599	22	61
KALMAR	245446	24	98
KRONOBERG	201469	15	74
NORRBOTTEN	250093	30	120
SKÅNE	1377827	87	63
STOCKHOLM	2377081	105	44
SÖDERMANLAND	297540	23	77
UPPSALA	383713	22	57
Unknown	0	3	0
VÄRMLAND	282414	28	99
VÄSTERBOTTEN	271736	16	59
VÄSTERNORRLAND	245347	19	77
VÄSTMANLAND	275845	22	80
VÄSTRA GÖTALAND	1725881	67	39
ÖREBRO	304805	23	75
ÖSTERGÖTLAND	465495	28	60
Total	10327589	665	64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125
150
BLEKINGE
DALARNA
GOTLAND
GÄVLEBORG
HALLAND
JÄMTLAND
JÖNKÖPING
KALMAR
KRONOBERG
NORRBOTTEN
SKÅNE
STOCKHOLM
SÖDERMANLAND
UPPSALA
Unknown
VÄRMLAND
VÄSTERBOTTEN
VÄSTERNORRLAND
VÄSTMANLAND
VÄSTRA GÖTALAND
ÖREBRO
ÖSTERGÖTLAND
119
83
70
67
102
115
123
102
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85
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63
67
44
36
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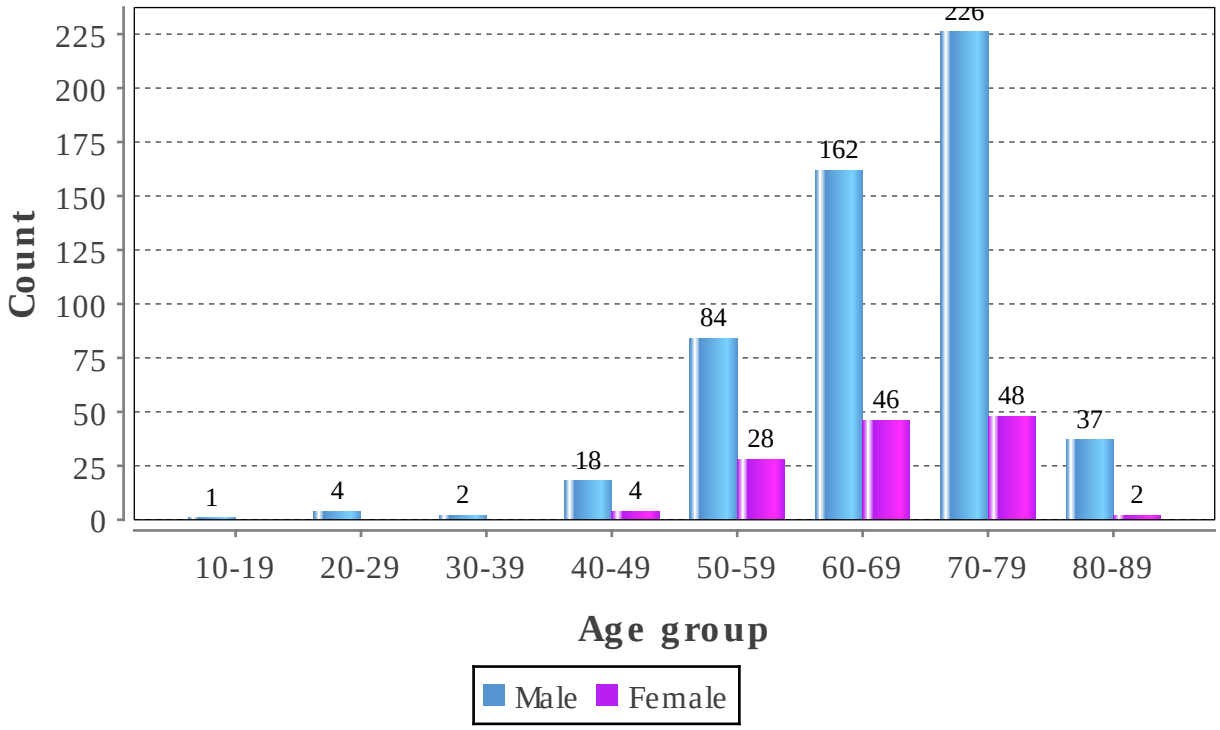
81
99
57
59
82
77
106
80
44
39
40
75
80
60
50
No/million
2018

Age and gender distribution for new implants, total numbers

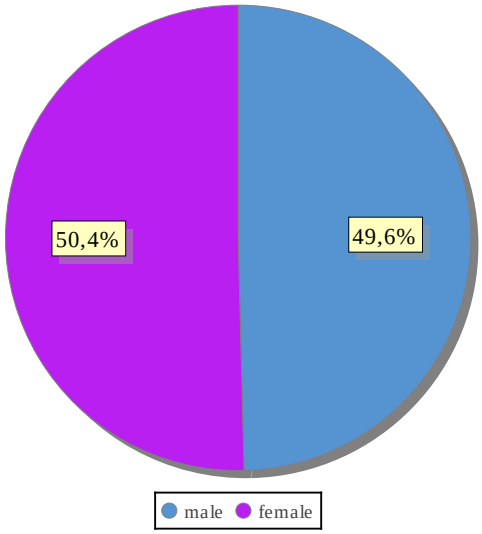
Age (years)	Total no	%	Male	Female
10-19	1	0.2	1	0
20-29	4	0.6	4	0
30-39	2	0.3	2	0
40-49	22	3.3	18	4
50-59	112	16.9	84	28
60-69	208	31.4	162	46
70-79	274	41.4	226	48
80-89	39	5.9	37	2
Average age	67	0.0	67	66
				Total number of implants: 662



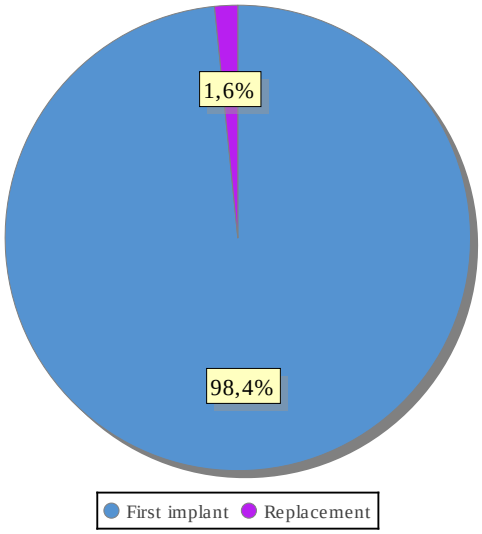
Ratio of new implants versus generator changes

	Total		Male		Female	
	no	%	no	%	no	%
First implant	1021	98.4	506	49.6	515	50.4
Replacement	17	1.6	8	47.1	9	52.9
Total	1038	100.0	514	49.5	524	50.5

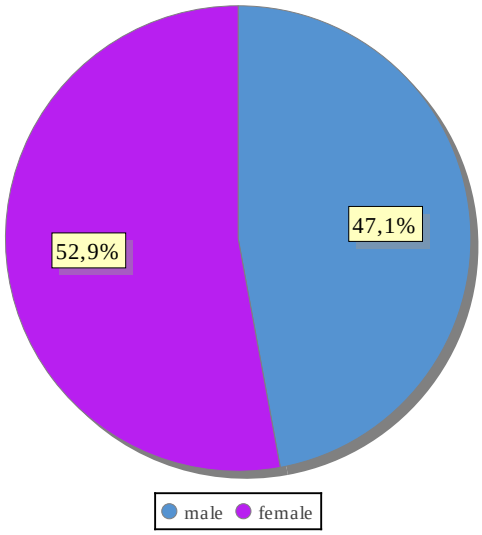
First implant



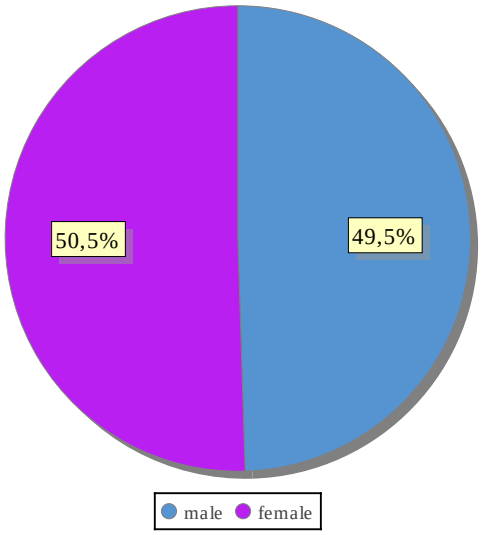
Replacement ratio



Replacement

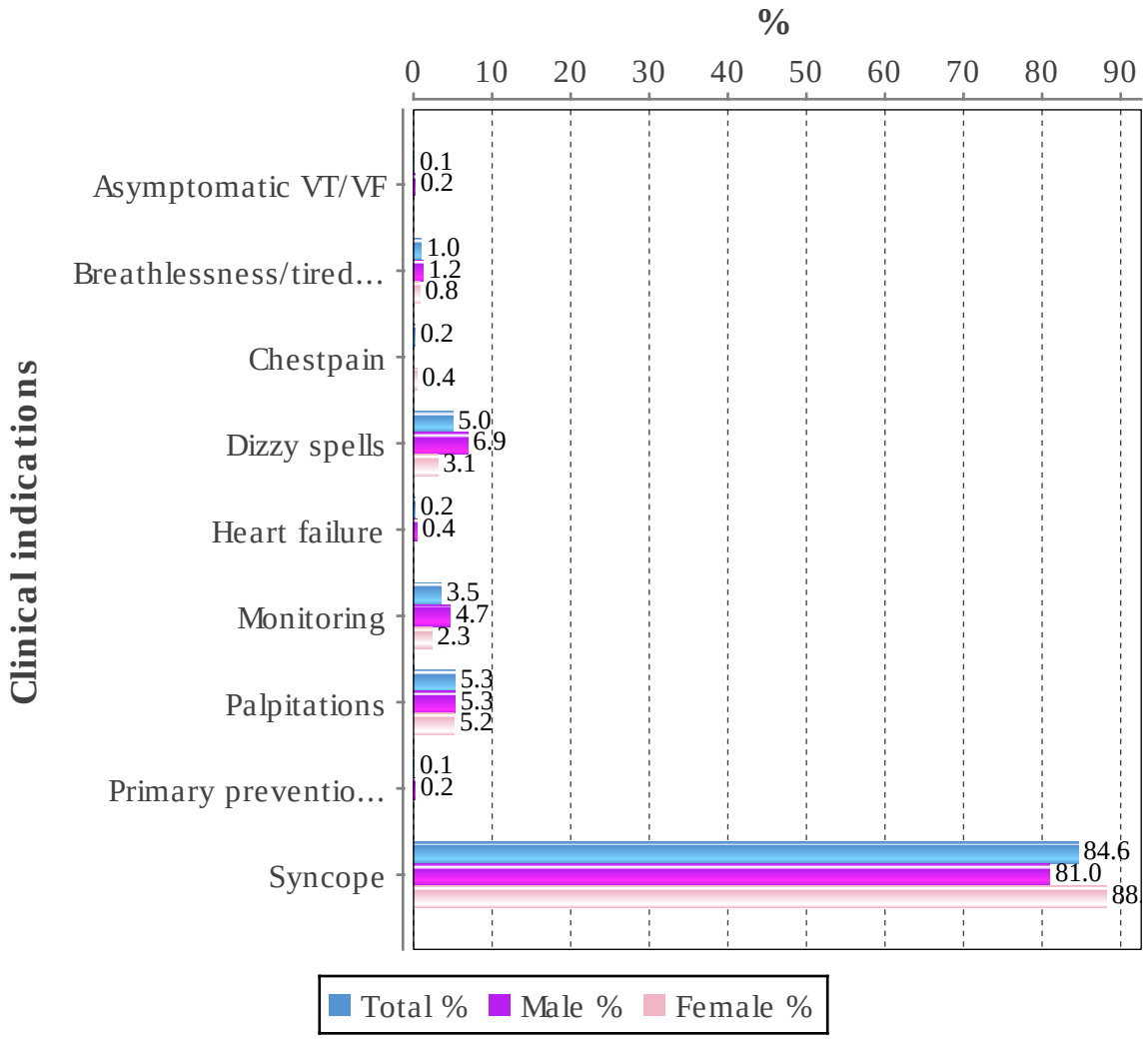


All implant



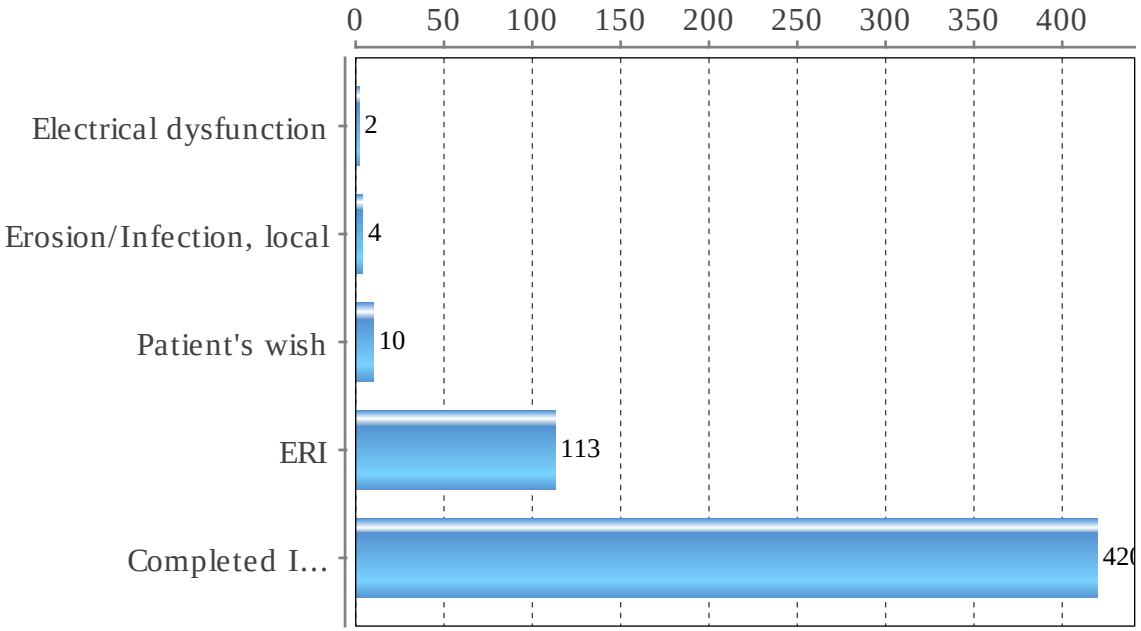
Main symptom for implanting ILR

Indication	Total %	Male %	Female %
Asymptomatic VT/VF	0.1	0.2	0.0
Breathlessness/tiredness	1.0	1.2	0.8
Chestpain	0.2	0.0	0.4
Dizzy spells	5.0	6.9	3.1
Heart failure	0.2	0.4	0.0
Monitoring	3.5	4.7	2.3
Palpitations	5.3	5.3	5.2
Primary prevention, asymptomatic	0.1	0.2	0.0
Syncope	84.6	81.0	88.2



Reason for generator removal

Reason	No	%
Electrical dysfunction	2	0.4
Erosion/Infection, local	4	0.7
Patient's wish	10	1.8
ERI	113	20.6
Completed ILR investigation	420	76.5

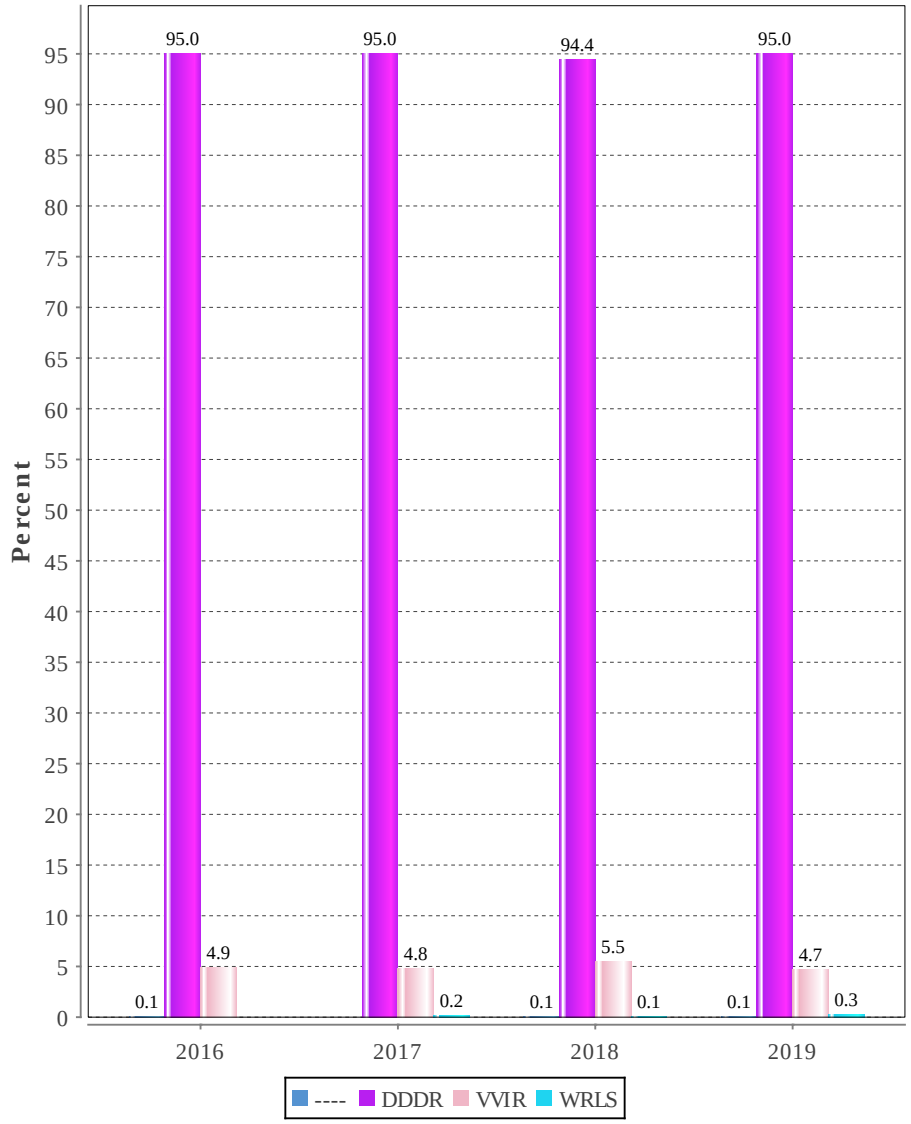


Investigation after first ILR implant in % of completed ILR investigation

Action	No	%
Pacemaker implant	259	61.7
ICD implant	36	8.6
New ILR implant	18	4.3

Use of pacing mode for total AV block indication, historical data

Mode %	2016	2017	2018	2019
----	0.1	0.0	0.1	0.1
DDDR	95.0	95.0	94.4	95.0
VVIR	4.9	4.8	5.5	4.7
WRLS	0.0	0.2	0.1	0.3



Use of pacing mode for total AV block indication per hospital (number of new implants / year)

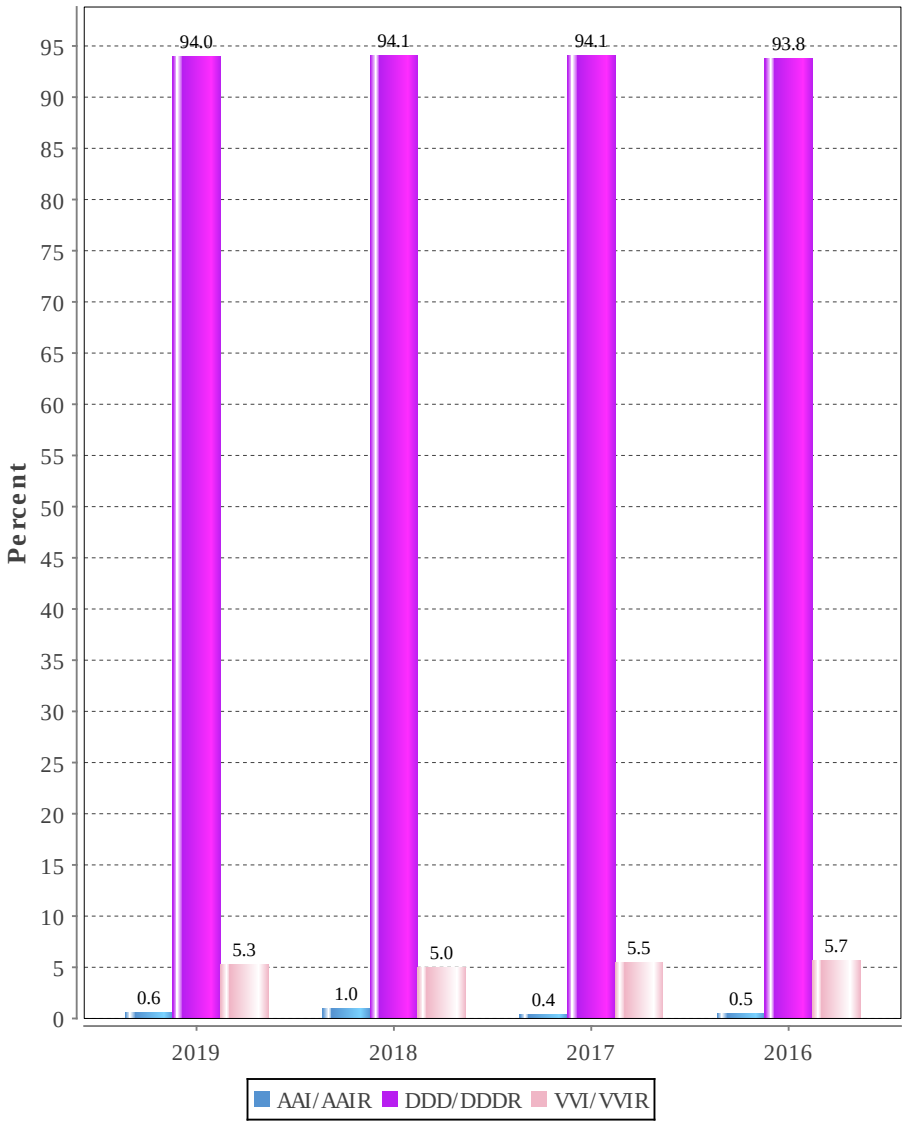
Hospital (%)	DDD	VVI
Akademiska sjukhuset	89.1	10.9
Alingsås lasarett	100.0	-
Blekingesjukhuset	96.8	3.2
Centrallasarettet Växjö	93.8	6.2
Centralsjukhuset Karlstad	100.0	-
Centralsjukhuset Kristianstad	100.0	-
Centralsjukhuset Västerås	95.1	4.9
Danderyds sjukhus	97.8	2.2
Drottning Silvias Bus	100.0	-
Falu lasarett	98.8	1.3
Gävle sjukhus	96.0	4.0
Helsingborgs lasarett	87.7	12.3
Hudiksvalls sjukhus	94.4	5.6
Karolinska Universitetssjukhuset	97.9	2.1
Kungälvs sjukhus	93.5	6.5
Linköpings Universitetssjukhus	97.9	2.1
Länssjukhuset Halmstad	100.0	-
Länssjukhuset Kalmar	85.1	14.9
Länssjukhuset Ryhov	95.4	4.6
Mälarsjukhuset	98.7	1.3
Norrlands Universitetssjukhus	95.5	4.5
Oskarshamns sjukhus	100.0	-
Sahlgrenska Universitetssjukhuset	92.1	7.9
Sahlgrenska Universitetssjukhuset /Östra	96.7	3.3
Skaraborgs sjukhus Skövde	98.9	1.1
Skellefteå lasarett	96.0	4.0
Skånes universitetssjukhus, Lund	96.1	3.9
Skånes universitetssjukhus, Malmö	96.5	3.5
Sollefteå sjukhus	100.0	-
St Görans sjukhus	94.1	5.9
Sunderby sjukhus	98.9	1.1
Sundsvalls sjukhus	92.9	7.1
Södersjukhuset	93.3	6.7
Södra Älvsborgs sjukhus	97.4	2.6
Torsby sjukhus	96.2	3.8
Trollhättan, NÄL	78.1	21.9
Universitetssjukhuset Örebro	100.0	-
Varbergs sjukhus	93.8	6.3
Visby lasarett	100.0	-
Västerviks sjukhus	100.0	-
Örnsköldsviks sjukhus	100.0	-
Östersunds sjukhus	100.0	-

Use of pacing mode for total AV block indication per hospital size

Year	Mode	All hospitals (%)	Large (%)	Medium (%)	Small (%)
2019	DDD	95.3	94.4	96.7	97.8
	VVI	4.7	5.6	3.3	2.2
2018	DDD	94.5	94.8	95.3	91.3
	VVI	5.5	5.2	4.7	8.7
2017	DDD	95.2	95.0	97.5	89.7
	VVI	4.8	5.0	2.5	10.3
2016	DDD	95.1	95.9	95.4	88.8
	VVI	4.9	4.1	4.6	11.2
2015	DDD	95.2	95.9	96.0	85.7
	VVI	4.8	4.1	4.0	14.3
2014	DDDR	95.7	97.0	94.2	89.3
	DDDC	-	-	-	-
	VVIC	-	0.1	-	-
	VVIR	4.3	2.9	5.8	10.7
2013	DDDR	94.4	95.8	92.9	90.1
	DDDC	-	0.1	-	-
	VVIC	-	-	-	-

Use of pacing mode for Sinus Node Disease, historical data

Mode (%)	2019	2018	2017	2016
AAI/AAIR	0.6	1.0	0.4	0.5
DDD/DDDR	94.0	94.1	94.1	93.8
VVI/VVIR	5.3	5.0	5.5	5.7



QUALITY – PACEMAKER – FIRST IMPLANT
SINUS NODE DYSFUNCTION PER HOSPITAL

Use of pacing mode for Sinus Node Dysfunction indication per hospital size (number of new implants / year)

Year	Mode	All hospitals	Small %	Medium %	Large %
2019	AAI	0.6	0.7	0.8	0.6
	VVI	5.3	6.7	5.9	5.0
	DDD	94.0	92.7	93.3	94.5
2018	AAI	1.0	1.6	1.5	0.6
	VVI	5.0	10.5	3.1	4.7
	DDD	94.1	87.9	95.4	94.7
2017	AAI	0.4	2.8	0.2	0.2
	VVI	5.5	17.9	2.4	5.1
	DDD	94.1	79.3	97.4	94.7
2016	AAI	0.5	2.4	0.3	0.3
	VVI	5.7	17.1	6.5	3.8
	DDD	93.8	80.6	93.2	95.9
2015	AAI	0.4	1.9	0.3	0.3
	VVI	5.1	12.3	6.5	3.8
	DDD	94.5	85.8	93.2	95.9
2014	AAIR	0.8	1.1	0.9	0.8
	VVIR	5.9	16.1	7.7	4.1
	DDDR	93.3	82.8	91.4	95.1
2013	AAIR	1.1	0.9	1.0	1.2
	VVIR	6.6	12.8	8.7	4.7
	DDDR	92.2	86.3	90.0	94.2
	DDDC	-	-	0.1	-
	VVIC	-	-	0.1	-
2012	AAIC	-	-	-	-
	DDDC	-	-	-	-
	AAIR	1.2	0.6	1.3	1.2
	VVIC	-	0.6	-	-
	VVIR	7.8	13.4	8.6	6.1
	DDDR	91.0	85.4	90.2	92.6
2011	AAIC	-	-	-	-
	AAIR	1.4	0.4	1.0	2.3
	VVIC	0.1	0.4	0.1	-
	VVIR	7.5	19.6	8.3	2.8
	DDDR	91.0	79.6	90.6	95.0
2010	AAIR	3.4	2.5	2.9	4.2
	VVIC	0.1	1.2	-	-
	VVIR	9.2	20.1	10.3	6.1
	DDDR	87.3	76.2	86.8	89.7
2009	AAIR	5.1	6.3	4.8	5.2
	VVIC	0.2	-	0.1	-
	VVIR	9.3	17.6	11.9	5.6
	DDDR	85.4	73.9	83.2	89.2

QUALITY – PACEMAKER – FIRST IMPLANT
SINUS NODE DYSFUNCTION PER HOSPITAL

Use of pacing mode for Sinus Node Dysfunction indication per hospital (number of new implants / year)

Hospital (%)	DDD	VVI	AAI
Akademiska sjukhuset	93.0	4.7	2.3
Alingsås lasarett	100.0	-	-
Arvika sjukhus	50.0	50.0	-
Blekingesjukhuset	100.0	-	-
Centrallasarettet Växjö	90.0	10.0	-
Centralsjukhuset Karlstad	87.5	12.5	-
Centralsjukhuset Kristianstad	95.6	4.4	-
Centralsjukhuset Västerås	100.0	-	-
Danderyds sjukhus	98.5	1.5	-
Drottning Silvias Bus	-	-	100.0
Falu lasarett	98.6	1.4	-
Gävle sjukhus	88.1	11.9	-
Helsingborgs lasarett	88.0	10.8	1.2
Hudiksvalls sjukhus	100.0	-	-
Karolinska Universitetssjukhuset	91.8	7.4	0.8
Kungälvs sjukhus	90.9	-	9.1
Linköpings Universitetssjukhus	99.3	0.7	-
Länssjukhuset Halmstad	80.0	20.0	-
Länssjukhuset Kalmar	86.5	10.8	2.7
Länssjukhuset Ryhov	84.4	15.6	-
Mälarsjukhuset	100.0	-	-
Norrlands Universitetssjukhus	81.8	13.6	4.5
Oskarshamns sjukhus	40.0	60.0	-
Sahlgrenska Universitetssjukhuset	95.3	2.4	2.4
Sahlgrenska Universitetssjukhuset /Östra	94.4	5.6	-
Skaraborgs sjukhus Skövde	95.6	4.4	-
Skellefteå lasarett	76.9	23.1	-
Skånes universitetssjukhus, Lund	96.5	2.3	1.2
Skånes universitetssjukhus, Malmö	96.2	3.8	-
Sollefteå sjukhus	85.7	14.3	-
St Görans sjukhus	96.8	3.2	-
Sunderby sjukhus	93.1	6.9	-
Sundsvalls sjukhus	86.6	13.4	-
Södersjukhuset	95.6	3.3	1.1
Södra Älvsborgs sjukhus	98.4	1.6	-
Torsby sjukhus	100.0	-	-
Trollhättan, NÄL	93.7	6.3	-
Universitetssjukhuset Örebro	100.0	-	-
Varbergs sjukhus	93.9	6.1	-
Visby lasarett	100.0	-	-
Västerviks sjukhus	95.0	5.0	-
Örnsköldsviks sjukhus	100.0	-	-
Östersunds sjukhus	100.0	-	-

Dislocation rate for different lead types in atrial or ventricular placement. Based on all implants implanted 2007 and later and explanted/corrected 2019 or earlier

Type	Right atrium %	Right ventricle %	Left ventricle %	Total %
Fixed screw	1.5	1.0	0.7	1.3
Retractable screw	1.5	1.0	0.7	1.3
Passive	3.3	1.7	2.0	1.3
All	1.6	1.1	1.7	1.3

Extractions per hospital

Hospital	No of leads
Akademiska sjukhuset	68
Karolinska Solna	205
Linköpings universitetssjukhus	14
Sahlgrenska universitetssjukhuset	124
Skånes universitetssjukhus, Lund	108
Universitetssjukhuset Örebro	9

Extractions per type

Type	Extractions
ICD lead	107
Pacemaker lead	459

Extractions per model (more then 5 extractions)

Manfacturer	Model	Extractions
Biotronik	Linox Smart S75	7
Biotronik	Solia S53 MRI	10
Boston Scientific	4457 Fineline II Sterox EZ MRI	6
Boston Scientific	4470 Fineline II Sterox EZ MRI	12
Boston Scientific	4471 Fineline II Sterox EZ MRI	6
Boston Scientific	7741 Ingevity MRI	7
Medtronic	4076 CapSureFix Novus MRI	53
Medtronic	5076 CapSureFix MRI	10
Medtronic	6935M Sprint Quattro S MRI DF4	8
St Jude Medical/ Abbott	1258T QuickFlex	11
St Jude Medical/ Abbott	1458Q Quartet MRI	18
St Jude Medical/ Abbott	1646T Isoflex	8
St Jude Medical/ Abbott	1688T Tendril SDX	14
St Jude Medical/ Abbott	1699TC OptiSense	7
St Jude Medical/ Abbott	1888TC Tendril ST	8
St Jude Medical/ Abbott	1948 Isoflex MRI	11
St Jude Medical/ Abbott	1999 Optisense	37
St Jude Medical/ Abbott	2088TC Tendril STS MRI	97
St Jude Medical/ Abbott	7120 Durata	6

Manfacturer	Model	Extractions
St Jude Medical/ Abbott	7122 Durata	9
St Jude Medical/ Abbott	7122Q Durata	22
St Jude Medical/ Abbott	LDA210Q Optisure DF4	6
St Jude Medical/ Abbott	LPA1200M52cm TendrilMRI	7
Vitatron	ICQ09B Crystalline	8

Extractions per reason

Reason	Extractions
Ceased indication for ICD therapy	9
Conductor break	16
Elective	28
Electrical dysfunction	54
Heart transplant	20
Infection/Ulceration, local	133
Infection/Ulceration, systemic	266
Insulation failure	6
Lead dislocation	12
Patient's wish	7
Preventive	10

*Extraction positions**

Hospital	Femoral	Left superior	N/A	Right superior
Akademiska sjukhuset	3	63	0	2
Karolinska Solna	1	195	0	9
Linköpings universitetssjukhus	0	14	0	0
Skånes universitetssjukhus, Lund	0	105	0	3
Universitetssjukhuset Örebro	0	6	0	3

*Hospital Sahlgrenska and Sunderby excluded

*Extraction problems**

Hospital	I	E	O	P	X	D
Akademiska sjukhuset	0	0	0	0	0	0
Karolinska Solna	0	0	0	1	0	0
Linköpings universitetssjukhus	0	0	0	0	0	0
Skånes universitetssjukhus, Lund	0	0	0	0	0	0
Universitetssjukhuset Örebro	0	0	0	0	0	0

(*Hospital Sahlgrenska and Sunderby excluded), I: Insulation break, E: Conductor break, O: Unintentional extraction of another lead, P: Perforation/Tamponade, X: Pneumothorax, D: Death

*Extraction results**

Hospital	Failed	Partially successfull	Successfull
Akademiska sjukhuset	0	1	67
Karolinska Solna	0	7	198
Linköpings universitetssjukhus	0	0	14
Skånes universitetssjukhus, Lund	0	4	104
Universitetssjukhuset Örebro	0	0	9

*Hospital Sahlgrenska and Sunderby excluded

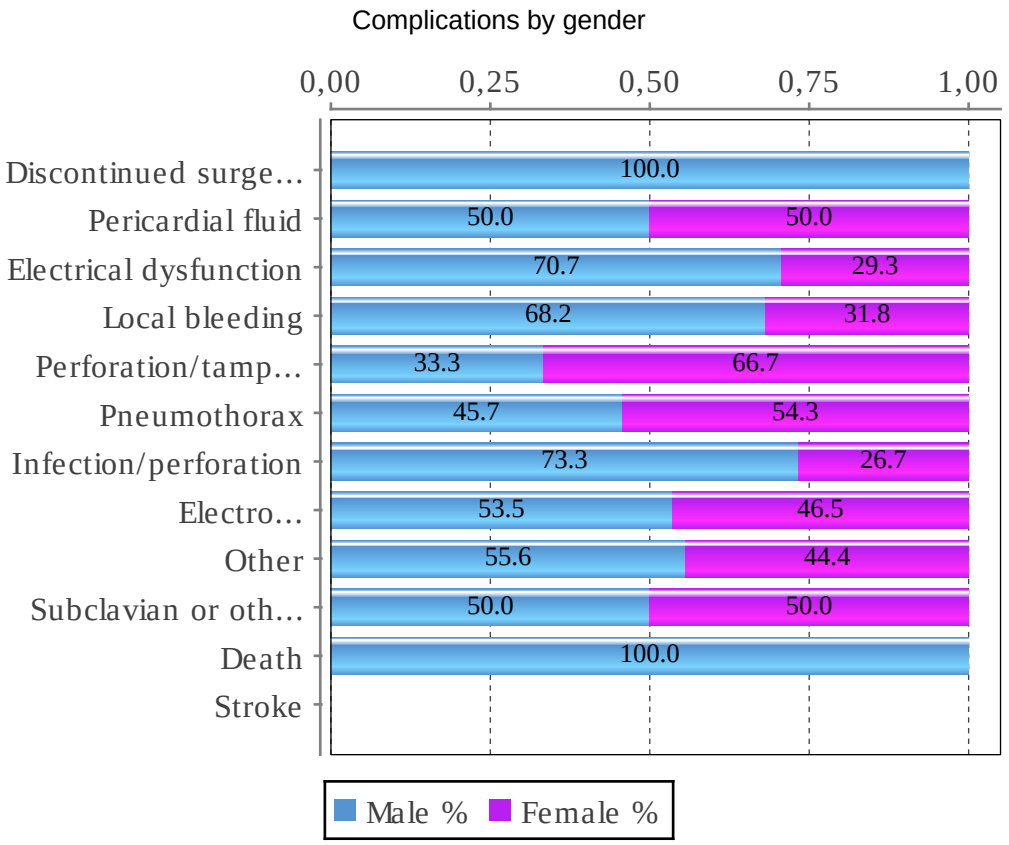
*Extraction tools**

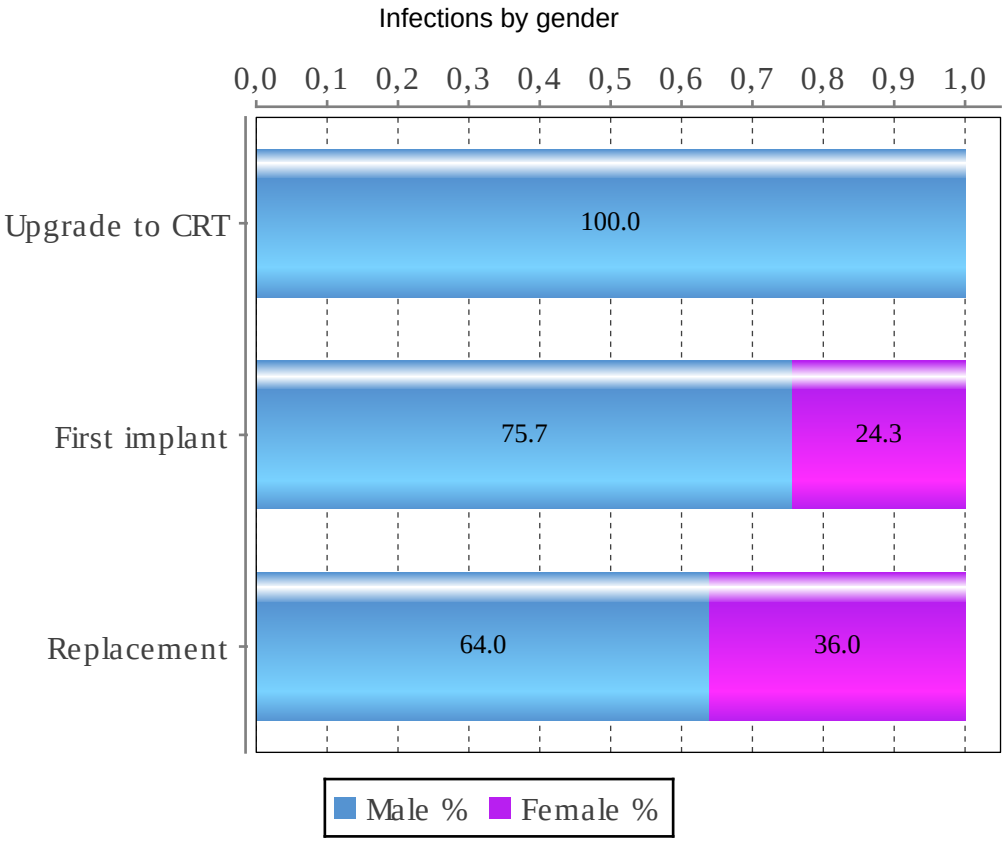
Hospital	SS	LS	PS	AM	L	S	PK	EK	AL
Akademiska sjukhuset	21	43	14	28	0	0	0	0	3
Karolinska Solna	20	96	55	81	1	0	0	0	0
Linköpings universitetssjukhus	7	0	0	0	0	0	0	0	0
Skånes universitetssjukhus, Lund	14	10	2	65	0	0	0	0	0
Universitetssjukhuset Örebro	8	0	0	0	0	0	0	0	0

(*Hospital Sahlgrenska and Sunderby excluded), SS: Standard stylet, LS: Locking stylet, PS: Passive sheath, AM: Active mechanical sheath, L: Lasso, S: Snare, PK: Pigtail catheter, EP: EP catheter, AL: Active laser sheath

Registered complications for new implants and for bleeding, infection and other also including replacements

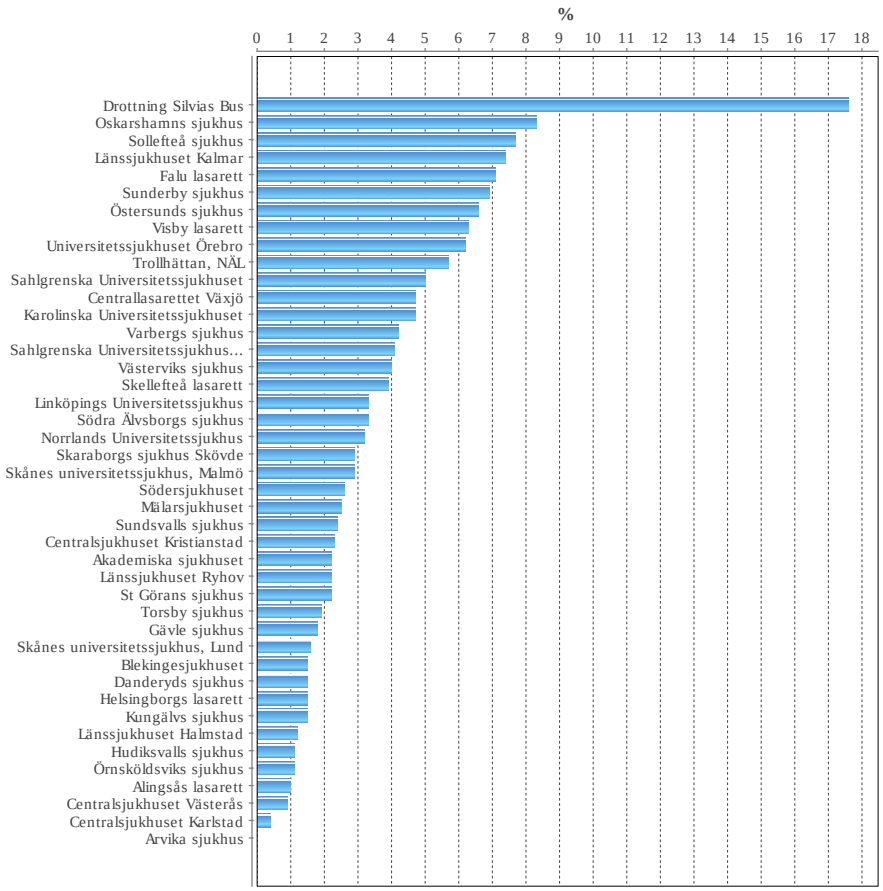
Complication	2018 %	2019 %	Based on
Discontinued surgery due to hemodynamic reasons	0.0	0.0	A
Pericardial fluid	0.1	0.1	A
Electrical dysfunction	0.4	0.5	B
Local bleeding	0.4	0.4	A
Perforation/tamponade	0.4	0.4	B
Pneumothorax	0.5	0.4	B
Infection/perforation	0.5	0.4	A
Electrode displacement	1.6	1.2	B
Other	0.4	0.3	A
Subclavian or other related thrombosis	0.1	0.0	B
Death	0.0	0.0	A
Stroke	0.0	0.0	A
Discontinued surgery due to lack of venous access	0.0	0.0	A
Discontinued surgery due to LV-lead impl. failure	0.0	0.1	A
Total	4.4	3.8	
Based on A=10678 (all implants) alternatively B=8057 (first implants + lead replacement) validated events			





Infections related to all interventions by gender

Reason	Male %	Female %
First implant	*0.6*	*0.3*
Replacement	*0.8*	*0.7*
Upgrade to CRT	*1.7*	*0.0*


%
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
Drottning Silvias Bus
Oskarshamns sjukhus
Sollefteå sjukhus
Länssjukhuset Kalmar
Falu lasarett
Sunderby sjukhus
Östersunds sjukhus
Visby lasarett
Universitetssjukhuset Örebro
Trollhättan, NÄL
Sahlgrenska Universitetssjukhuset
Centrallasarettet Växjö
Karolinska Universitetssjukhuset
Varbergs sjukhus
Sahlgrenska Universitetssjukhus...
Västerviks sjukhus
Skellefteå lasarett
Linköpings Universitetssjukhus
Södra Älvsborgs sjukhus
Norrlands Universitetssjukhus
Skaraborgs sjukhus Skövde
Skånes universitetssjukhus, Malmö
Södersjukhuset
Mälarsjukhuset
Sundsvalls sjukhus
Centralsjukhuset Kristianstad
Akademiska sjukhuset
Länssjukhuset Ryhov
St Görans sjukhus
Torsby sjukhus
Gävle sjukhus
Skånes universitetssjukhus, Lund
Blekingesjukhuset
Danderyds sjukhus
Helsingborgs lasarett
Kungälvs sjukhus
Länssjukhuset Halmstad
Hudiksvalls sjukhus
Örnsköldsviks sjukhus
Alingsås lasarett
Centralsjukhuset Västerås
Centralsjukhuset Karlstad
Arvika sjukhus

De.: Death, **Dc.**: Discontinued surgery, **Df.**: Electrical dysfunction, **Dp.**: Lead dislocation, **In.**: Infection/Perforation, **Tr.**: Subclavian or other related thrombosis

Hospital	No	De. %	Dc. %	Df. %	Dp. %	In. %	Tr. %
Akademiska sjukhuset	448	-	-	0.4	-	0.2	-
Alingsås lasarett	99	-	-	-	-	-	-
Arvika sjukhus	9	-	-	-	-	-	-
Blekingesjukhuset	195	-	-	0.5	0.5	-	-
Centrallasarettet Växjö	171	-	-	-	1.8	-	0.6
Centralsjukhuset Karlstad	246	-	-	-	-	-	-
Centralsjukhuset Kristianstad	352	-	-	0.3	0.9	0.3	-
Centralsjukhuset Västerås	211	-	-	-	-	-	-
Danderyds sjukhus	660	-	-	0.2	0.6	0.2	-
Drottning Silvias Bus	17	-	-	11.8	5.9	-	-
Falu lasarett	323	-	-	0.3	2.5	0.9	-
Gävle sjukhus	327	-	-	0.3	0.6	-	-
Helsingborgs lasarett	338	-	-	0.3	-	-	-
Hudiksvalls sjukhus	94	-	-	1.1	-	-	-
Karolinska Universitetssjukhuset	687	-	-	1.0	1.7	0.4	-
Kungälvs sjukhus	132	-	-	-	-	-	-
Linköpings Universitetssjukhus	546	-	-	0.5	1.1	0.4	0.2
Länssjukhuset Halmstad	163	-	-	-	0.6	-	-
Länssjukhuset Kalmar	121	-	-	0.8	2.5	1.7	-
Länssjukhuset Ryhov	316	-	-	-	0.9	-	-
Mälarsjukhuset	236	-	-	-	0.4	1.3	-
Norrlands Universitetssjukhus	251	-	-	0.8	-	0.8	-
Oskarshamns sjukhus	12	-	-	-	-	-	-
Sahlgrenska Universitetssjukhuset	664	-	-	0.2	1.5	0.3	-
Sahlgrenska Universitetssjukhuset /Östra	122	-	-	0.8	0.8	-	-
Skaraborgs sjukhus Skövde	274	-	-	0.4	0.7	-	-
Skellefteå lasarett	77	-	-	-	-	2.6	-
Skånes universitetssjukhus, Lund	493	-	-	0.2	0.4	0.2	-
Skånes universitetssjukhus, Malmö	279	0.4	-	1.1	-	0.4	-
Sollefteå sjukhus	26	-	-	3.8	3.8	-	-
St Görans sjukhus	415	-	-	-	0.7	0.2	0.5
Sunderby sjukhus	303	-	0.3	0.7	2.6	1.3	-
Sundsvalls sjukhus	292	-	-	-	0.3	0.7	-
Södersjukhuset	422	-	-	0.2	0.2	0.5	-
Södra Älvsborgs sjukhus	243	-	-	-	1.6	0.4	-
Torsby sjukhus	52	-	-	-	-	-	-
Trollhättan, NÄL	371	-	-	0.8	1.6	1.1	-
Universitetssjukhuset Örebro	276	-	-	-	3.3	2.2	-
Varbergs sjukhus	190	-	-	0.5	0.5	-	-
Visby lasarett	48	-	-	2.1	-	-	-
Västerviks sjukhus	75	-	-	-	2.7	-	-
Örnsköldsviks sjukhus	91	-	-	-	1.1	-	-
Östersunds sjukhus	183	-	-	1.6	0.5	0.5	-

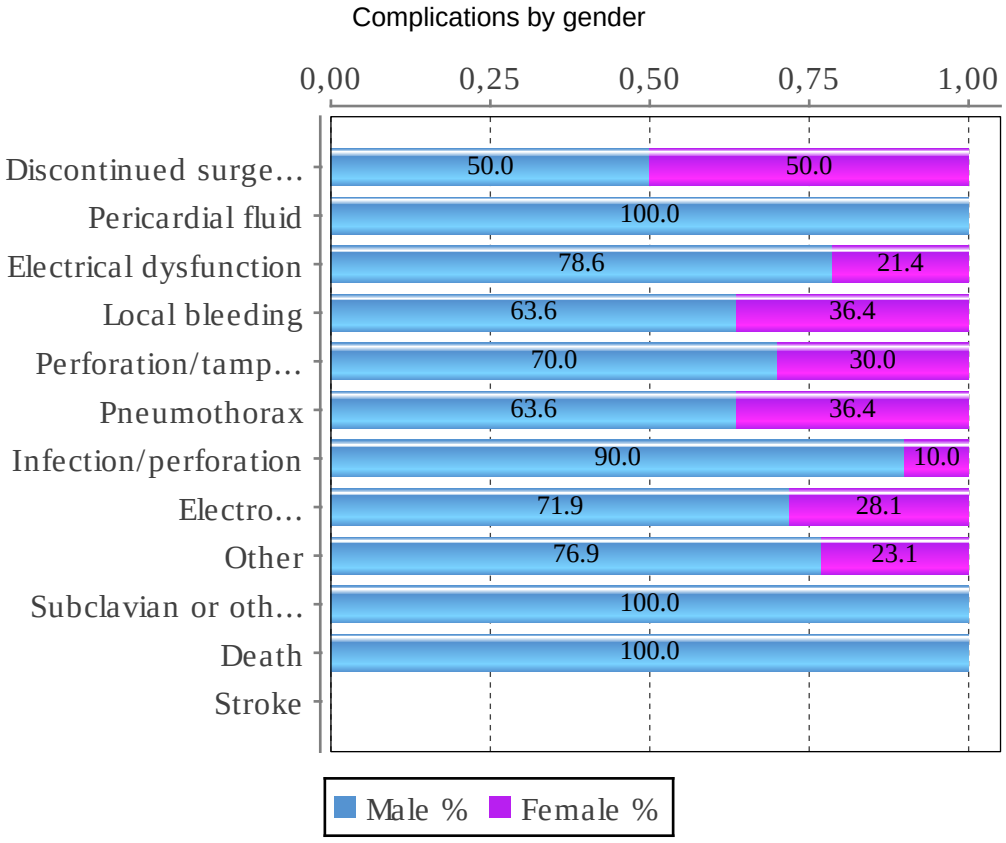
QUALITY – PACEMAKER – COMPLICATIONS PER HOSPITAL

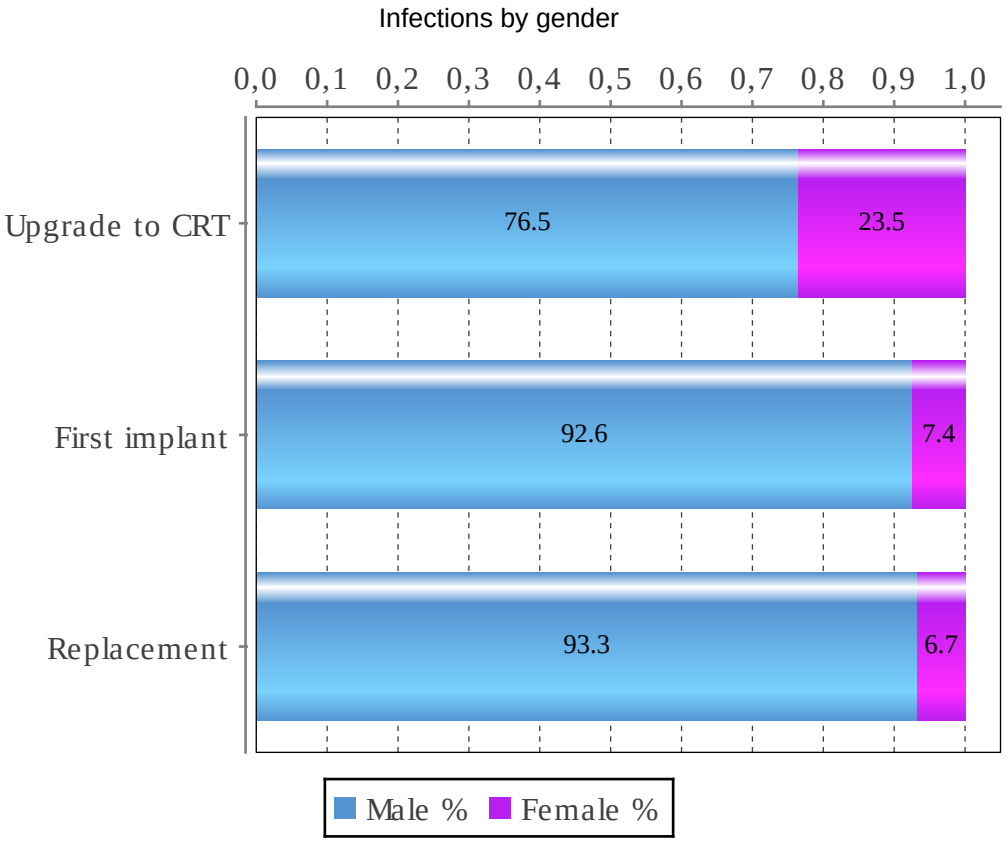
Bl.: Bleeding, **Ot.**: Other, **Tm.**: Perforation/Tamponade, **Pn.**: Pneumothorax, **Pf.**: Pericardial fluid, **St.**: Stroke

Hospital	No	Bl. %	Ot. %	Tm. %	Pn. %	Pf. %	St. %	All %
Akademiska sjukhuset	448	-	0.4	0.2	0.9	-	-	2.2
Alingsås lasarett	99	-	-	1.0	-	-	-	1.0
Arvika sjukhus	9	-	-	-	-	-	-	-
Blekingesjukhuset	195	-	0.5	-	-	-	-	1.5
Centrallasarettet Växjö	171	0.6	1.8	-	-	-	-	4.7
Centralsjukhuset Karlstad	246	-	-	-	0.4	-	-	0.4
Centralsjukhuset Kristianstad	352	0.3	0.3	-	-	0.3	-	2.3
Centralsjukhuset Västerås	211	0.5	-	0.5	-	-	-	0.9
Danderyds sjukhus	660	0.2	0.3	0.2	-	-	-	1.5
Drottning Silvias Bus	17	-	-	-	-	-	-	17.6
Falu lasarett	323	1.5	0.9	0.3	0.3	0.3	-	7.1
Gävle sjukhus	327	-	-	0.3	0.6	-	-	1.8
Helsingborgs lasarett	338	1.2	-	-	-	-	-	1.5
Hudiksvalls sjukhus	94	-	-	-	-	-	-	1.1
Karolinska Universitetssjukhuset	687	0.9	0.1	0.1	0.3	-	-	4.7
Kungälvs sjukhus	132	-	-	0.8	0.8	-	-	1.5
Linköpings Universitetssjukhus	546	0.5	-	0.4	0.2	-	-	3.3
Länssjukhuset Halmstad	163	-	-	0.6	-	-	-	1.2
Länssjukhuset Kalmar	121	0.8	-	-	0.8	0.8	-	7.4
Länssjukhuset Ryhov	316	-	0.9	0.3	-	-	-	2.2
Mälarsjukhuset	236	-	0.4	-	0.4	-	-	2.5
Norrlands Universitetssjukhus	251	-	0.4	-	1.2	-	-	3.2
Oskarshamns sjukhus	12	8.3	-	-	-	-	-	8.3
Sahlgrenska Universitetssjukhuset	664	1.7	0.3	0.5	0.3	0.3	-	5.0
Sahlgrenska Universitetssjukhuset /Östra	122	0.8	1.6	-	-	-	-	4.1
Skaraborgs sjukhus Skövde	274	0.4	0.4	0.7	0.4	-	-	2.9
Skellefteå lasarett	77	-	1.3	-	-	-	-	3.9
Skånes universitetssjukhus, Lund	493	-	0.6	-	0.2	-	-	1.6
Skånes universitetssjukhus, Malmö	279	-	-	0.4	0.7	-	-	2.9
Sollefteå sjukhus	26	-	-	-	-	-	-	7.7
St Görans sjukhus	415	-	0.2	0.5	-	-	-	2.2
Sunderby sjukhus	303	-	0.3	1.0	0.3	0.3	-	6.9
Sundsvalls sjukhus	292	0.3	0.3	0.3	0.3	-	-	2.4
Södersjukhuset	422	-	0.2	1.2	-	0.2	-	2.6
Södra Älvsborgs sjukhus	243	0.4	-	-	0.8	-	-	3.3
Torsby sjukhus	52	-	-	-	-	-	1.9	1.9
Trollhättan, NÄL	371	0.3	-	0.8	1.1	-	-	5.7
Universitetssjukhuset Örebro	276	-	-	-	0.7	-	-	6.2
Varbergs sjukhus	190	1.1	1.6	-	0.5	-	-	4.2
Visby lasarett	48	2.1	-	-	2.1	-	-	6.3
Västerviks sjukhus	75	-	-	-	-	1.3	-	4.0
Örnsköldsviks sjukhus	91	-	-	-	-	-	-	1.1
Östersunds sjukhus	183	0.5	1.1	1.1	1.1	-	-	6.6

Registered complications for new implants and for bleeding, infection and other also including replacements

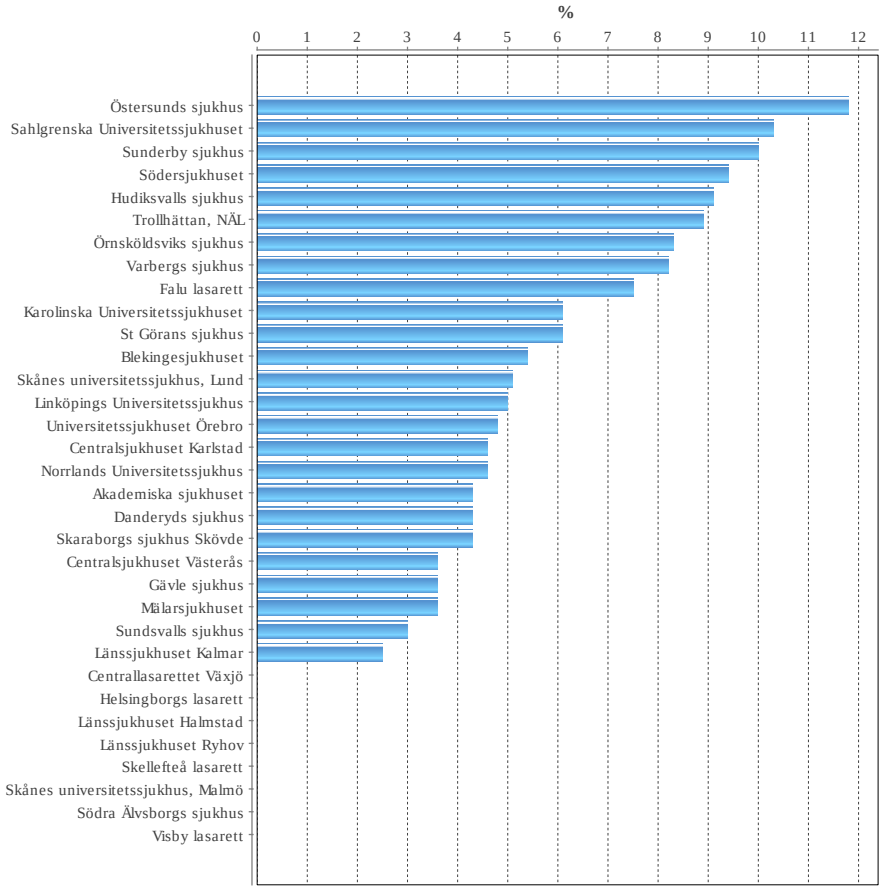
Complication	2018 %	2019 %
Discontinued surgery due to hemodynamic reasons	0.0	0.1
Electrical dysfunction	1.3	0.8
Local bleeding	0.7	0.5
Perforation/tamponade	0.4	0.6
Pneumothorax	0.4	0.7
Infection/perforation	1.5	1.3
Electrode displacement	2.6	1.9
Other	0.3	0.5
Subclavian or other related thrombosis	0.1	0.1
Death	0.0	0.0
Pericardial fluid	0.0	0.0
Stroke	0.0	0.0
Discontinued surgery due to lack of venous access	0.0	0.0
Discontinued surgery due to LV-lead impl. failure	0.0	0.3
Total	7.3	6.8
Based on 2398 (all implants) alternatively 1666 (first implants + lead replacements) validated events		





Infections related to all interventions by gender

Reason	Male %	Female %
First implant	*2.1*	*0.6*
Replacement	*2.0*	*0.5*
Upgrade to CRT	*2.0*	*2.6*


%
0
1
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9
10
11
12
Östersunds sjukhus
Sahlgrenska Universitetssjukhuset
Sunderby sjukhus
Södersjukhuset
Hudiksvalls sjukhus
Trollhättan, NÄL
Örnsköldsviks sjukhus
Varbergs sjukhus
Falu lasarett
Karolinska Universitetssjukhuset
St Görans sjukhus
Blekingesjukhuset
Skånes universitetssjukhus, Lund
Linköpings Universitetssjukhus
Universitetssjukhuset Örebro
Centralsjukhuset Karlstad
Norrlands Universitetssjukhus
Akademiska sjukhuset
Danderyds sjukhus
Skaraborgs sjukhus Skövde
Centralsjukhuset Västerås
Gävle sjukhus
Mälarsjukhuset
Sundsvalls sjukhus
Länssjukhuset Kalmar
Centrallasarettet Växjö
Helsingborgs lasarett
Länssjukhuset Halmstad
Länssjukhuset Ryhov
Skellefteå lasarett
Skånes universitetssjukhus, Malmö
Södra Älvsborgs sjukhus
Visby lasarett

QUALITY – ICD – COMPLICATIONS PER HOSPITAL

De.: Death, **Dc.**: Discontinued surgery, **Df.**: Electrical dysfunction, **Dp.**: Lead dislocation, **In.**: Infection/Perforation, **Tr.**: Subclavian and other related trombosis, **Bl.**: Bleeding

Hospital	No	De. %	Dc. %	Df. %	Dp. %	In. %	Tr. %	Bl. %
Akademiska sjukhuset	94	-	1.1	-	2.1	-	-	-
Blekingesjukhuset	74	-	-	-	1.4	-	-	-
Centrallasarettet Växjö	42	-	-	-	-	-	-	-
Centralsjukhuset Karlstad	65	-	-	1.5	1.5	1.5	-	-
Centralsjukhuset Västerås	55	-	-	-	-	1.8	-	-
Danderyds sjukhus	116	-	-	-	1.7	1.7	-	-
Falu lasarett	80	-	-	2.5	3.8	-	-	-
Gävle sjukhus	83	-	-	-	-	-	-	1.2
Helsingborgs lasarett	18	-	-	-	-	-	-	-
Hudiksvalls sjukhus	11	-	-	-	9.1	-	-	-
Karolinska Universitetssjukhuset	245	-	-	0.8	2.0	1.2	-	1.2
Linköpings Universitetssjukhus	139	-	-	0.7	2.2	-	1.4	-
Länssjukhuset Halmstad	3	-	-	-	-	-	-	-
Länssjukhuset Kalmar	80	-	-	-	-	-	-	1.3
Länssjukhuset Ryhov	56	-	-	-	-	-	-	-
Mälarsjukhuset	56	-	-	-	1.8	1.8	-	-
Norrlands Universitetssjukhus	65	-	-	1.5	-	1.5	-	-
Sahlgrenska Universitetssjukhuset	146	-	-	2.1	2.7	0.7	-	0.7
Skaraborgs sjukhus Skövde	46	-	-	-	-	-	-	2.2
Skellefteå lasarett	7	-	-	-	-	-	-	-
Skånes universitetssjukhus, Lund	374	-	-	1.1	0.5	1.9	-	0.3
Skånes universitetssjukhus, Malmö	12	-	-	-	-	-	-	-
St Görans sjukhus	66	-	-	-	1.5	3.0	-	1.5
Sunderby sjukhus	90	-	-	2.2	-	4.4	-	1.1
Sundsvalls sjukhus	66	-	-	-	1.5	-	-	-
Södersjukhuset	85	1.2	-	-	1.2	2.4	-	-
Södra Älvsborgs sjukhus	36	-	-	-	-	-	-	-
Trollhättan, NÄL	56	-	-	1.8	1.8	3.6	-	-
Universitetssjukhuset Örebro	84	-	-	1.2	1.2	-	-	1.2
Varbergs sjukhus	98	-	-	1.0	3.1	3.1	-	-
Visby lasarett	5	-	-	-	-	-	-	-
Örnsköldsviks sjukhus	12	-	8.3	-	-	-	-	-
Östersunds sjukhus	34	-	-	5.9	2.9	-	-	-

QUALITY – ICD – COMPLICATIONS PER HOSPITAL

Ot.: Other, **Pa.**: Perioperative arrhythmia, **Tm.**: Perforation/Tamponade, **Pn.**: Pneumothorax, **Pf.**: Pericardial fluid, **St.**: Stroke

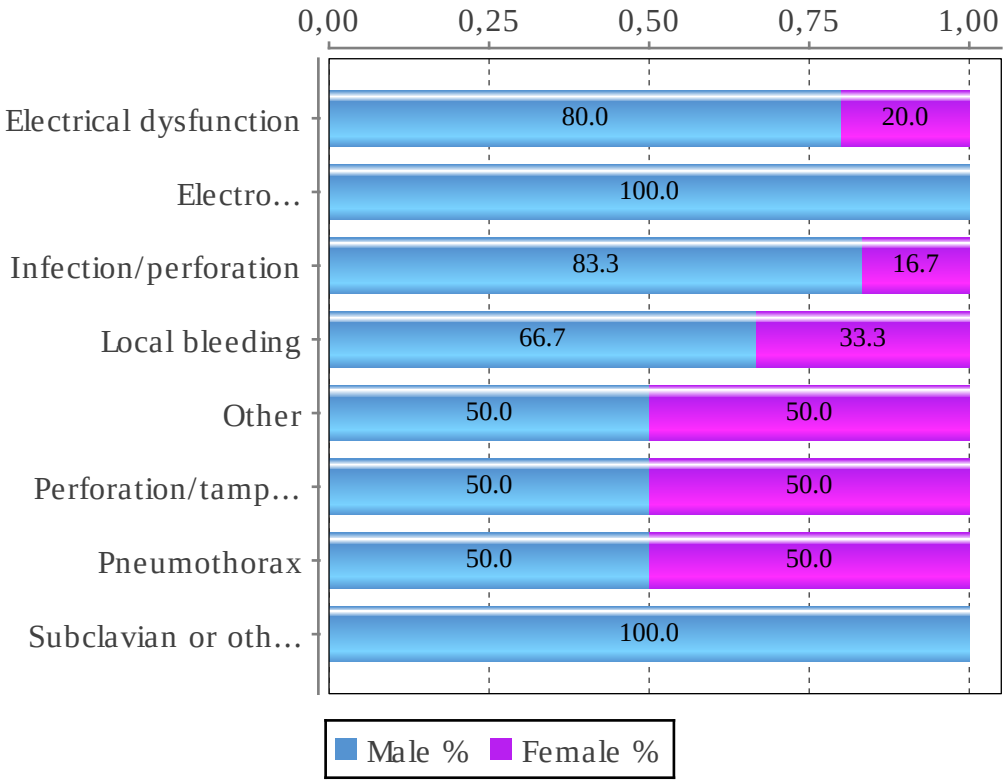
Hospital	No	Ot. %	Pa. %	Tm. %	Pn. %	Pf. %	St. %	All %
Akademiska sjukhuset	94	-	-	-	1.1	-	-	4.3
Blekingesjukhuset	74	4.1	-	-	-	-	-	5.4
Centrallasarettet Växjö	42	-	-	-	-	-	-	-
Centralsjukhuset Karlstad	65	-	-	-	-	-	-	4.6
Centralsjukhuset Västerås	55	1.8	-	-	-	-	-	3.6
Danderyds sjukhus	116	0.9	-	-	-	-	-	4.3
Falu lasarett	80	1.3	-	-	-	-	-	7.5
Gävle sjukhus	83	1.2	-	-	1.2	-	-	3.6
Helsingborgs lasarett	18	-	-	-	-	-	-	-
Hudiksvalls sjukhus	11	-	-	-	-	-	-	9.1
Karolinska Universitetssjukhuset	245	-	-	-	0.8	-	-	6.1
Linköpings Universitetssjukhus	139	-	-	0.7	-	-	-	5.0
Länssjukhuset Halmstad	3	-	-	-	-	-	-	-
Länssjukhuset Kalmar	80	-	-	-	1.3	-	-	2.5
Länssjukhuset Ryhov	56	-	-	-	-	-	-	-
Mälarsjukhuset	56	-	-	-	-	-	-	3.6
Norrlands Universitetssjukhus	65	-	-	-	1.5	-	-	4.6
Sahlgrenska Universitetssjukhuset	146	2.1	-	0.7	1.4	-	-	10.3
Skaraborgs sjukhus Skövde	46	-	-	2.2	-	-	-	4.3
Skellefteå lasarett	7	-	-	-	-	-	-	-
Skånes universitetssjukhus, Lund	374	0.5	-	0.5	0.3	-	-	5.1
Skånes universitetssjukhus, Malmö	12	-	-	-	-	-	-	-
St Görans sjukhus	66	-	-	-	-	-	-	6.1
Sunderby sjukhus	90	-	-	2.2	-	-	-	10.0
Sundsvalls sjukhus	66	-	-	-	1.5	-	-	3.0
Södersjukhuset	85	-	-	3.5	1.2	-	-	9.4
Södra Älvsborgs sjukhus	36	-	-	-	-	-	-	-
Trollhättan, NÄL	56	-	-	-	1.8	-	-	8.9
Universitetssjukhuset Örebro	84	-	-	-	-	1.2	-	4.8
Varbergs sjukhus	98	-	-	-	1.0	-	-	8.2
Visby lasarett	5	-	-	-	-	-	-	-
Örnsköldsviks sjukhus	12	-	-	-	-	-	-	8.3
Östersunds sjukhus	34	2.9	-	-	-	-	-	11.8

Registered complications for new implants and for bleeding, infection and other also including replacements.

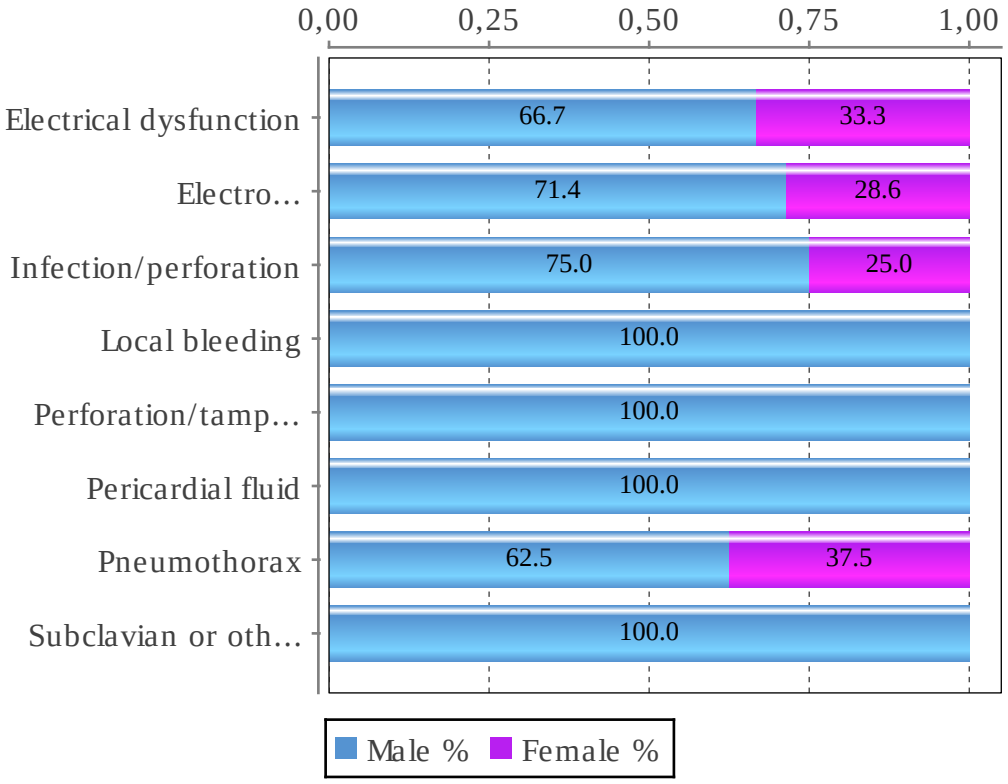
CRT-P Complication	%
Death	-
Discontinued surgery due to LV-lead impl. failure	-
Discontinued surgery due to hemodynamic reasons	-
Discontinued surgery due to lack of venous access	-
Electrical dysfunction	0.8
Electrode displacement	0.3
Infection/perforation	0.9
Local bleeding	0.9
Other	0.3
Perforation/tamponade	0.3
Pericardial fluid	-
Peroperative arrhythmia requiring acute medication	-
Pneumothorax	0.3
Stroke	-
Subclavian or other related thrombosis	0.2
Total	4.0
Total no of implants	655

CRT-D Complication	%
Death	-
Discontinued surgery due to LV-lead impl. failure	-
Discontinued surgery due to hemodynamic reasons	-
Discontinued surgery due to lack of venous access	-
Electrical dysfunction	0.9
Electrode displacement	2.1
Infection/perforation	1.8
Local bleeding	0.4
Other	-
Perforation/tamponade	0.4
Pericardial fluid	0.1
Peroperative arrhythmia requiring acute medication	-
Pneumothorax	1.2
Stroke	-
Subclavian or other related thrombosis	0.3
Total	7.3
Total no of implants	673

CRT-P complications by gender

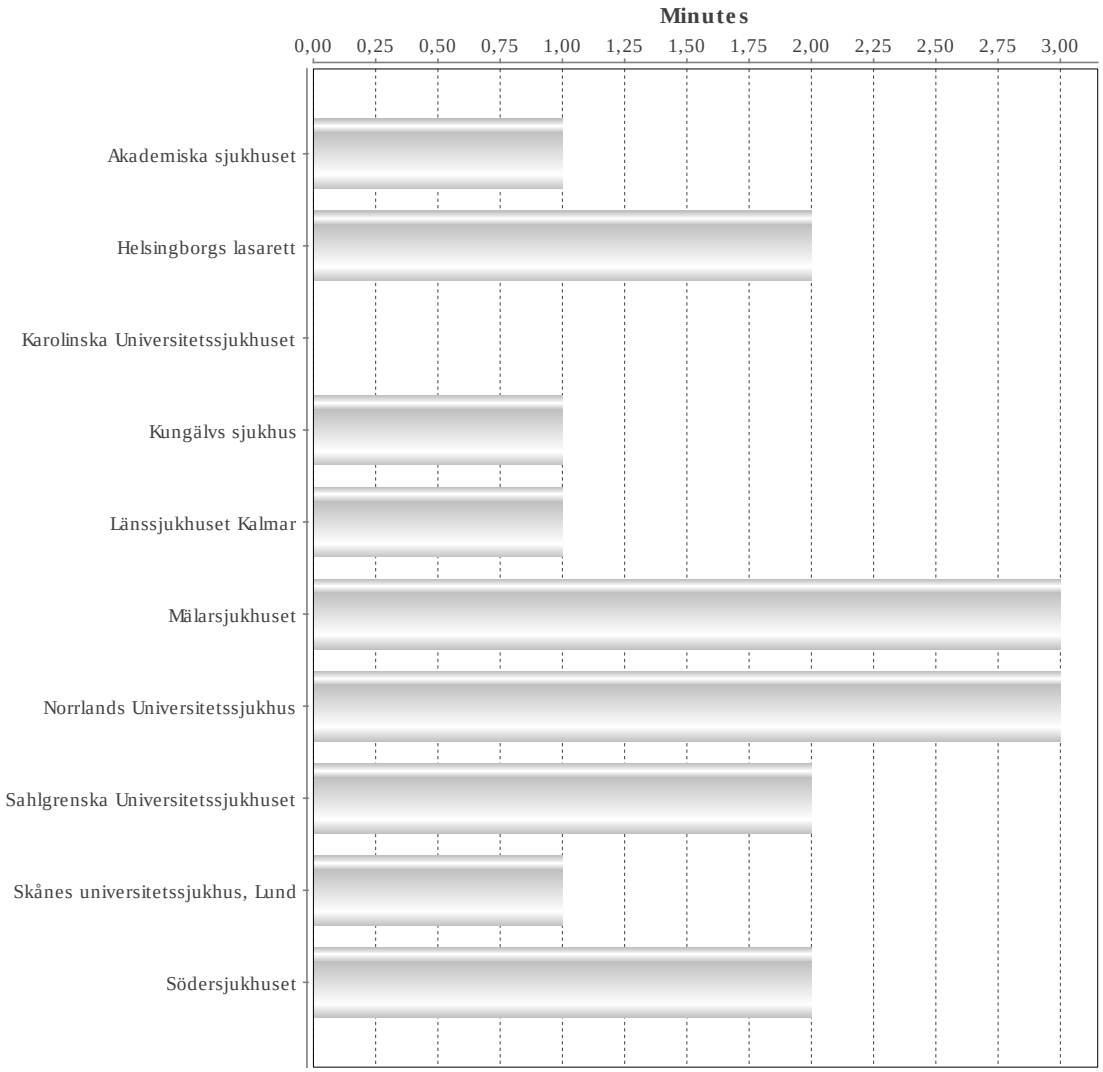


CRT-D complications by gender



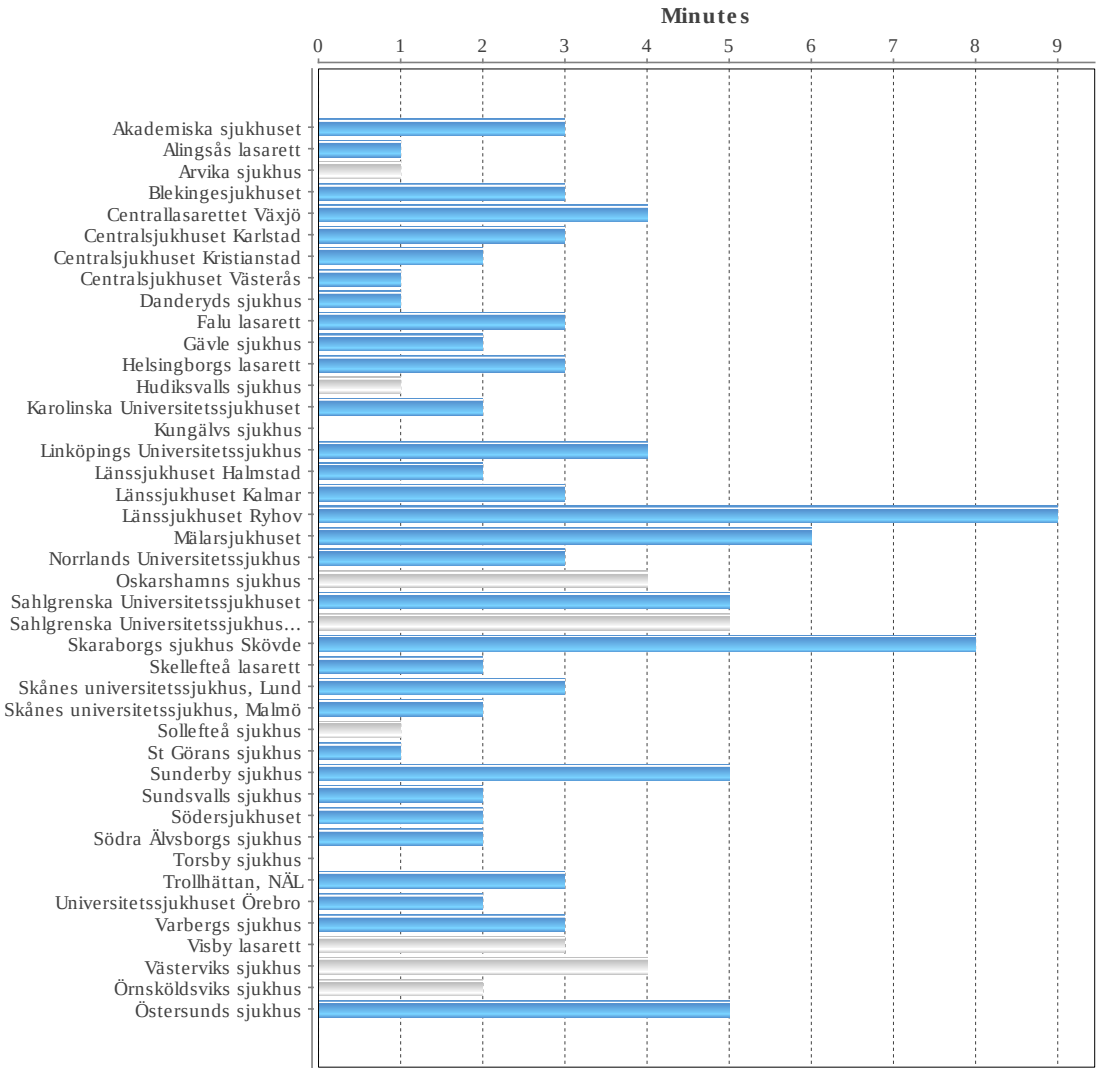
Mean fluoroscopy duration for a new implant of different subtypes per hospital. Hospitals with less than 10 implants of a specific subtype are marked in grey, blue indicates 10 or more implants of this subtype, performed yearly at this hospital.

AAI

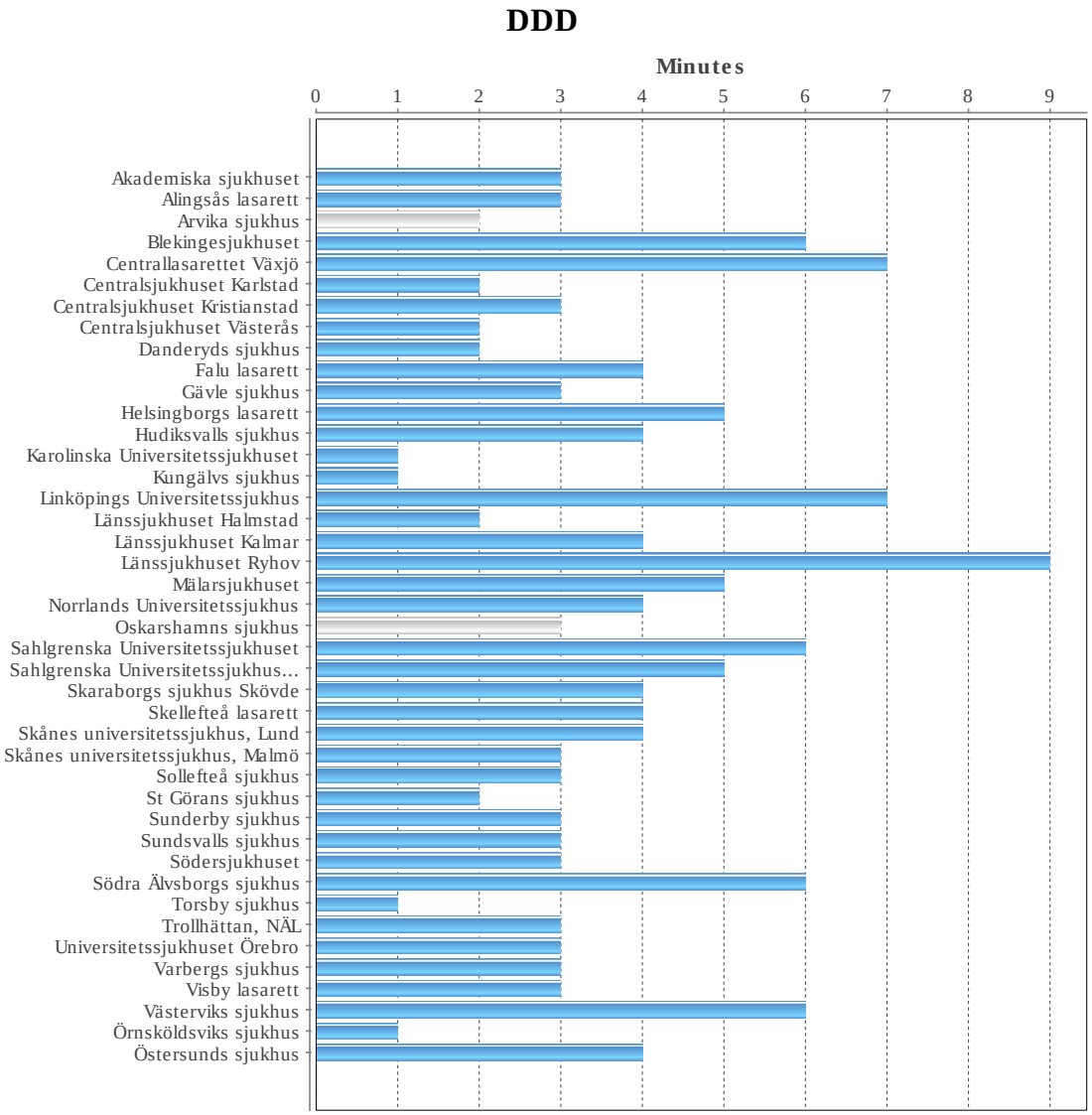


Mean fluoroscopy duration for a new implant of different subtypes per hospital. Hospitals with less than 10 implants of a specific subtype are marked in grey, blue indicates 10 or more implants of this subtype, performed yearly at this hospital.

VVI

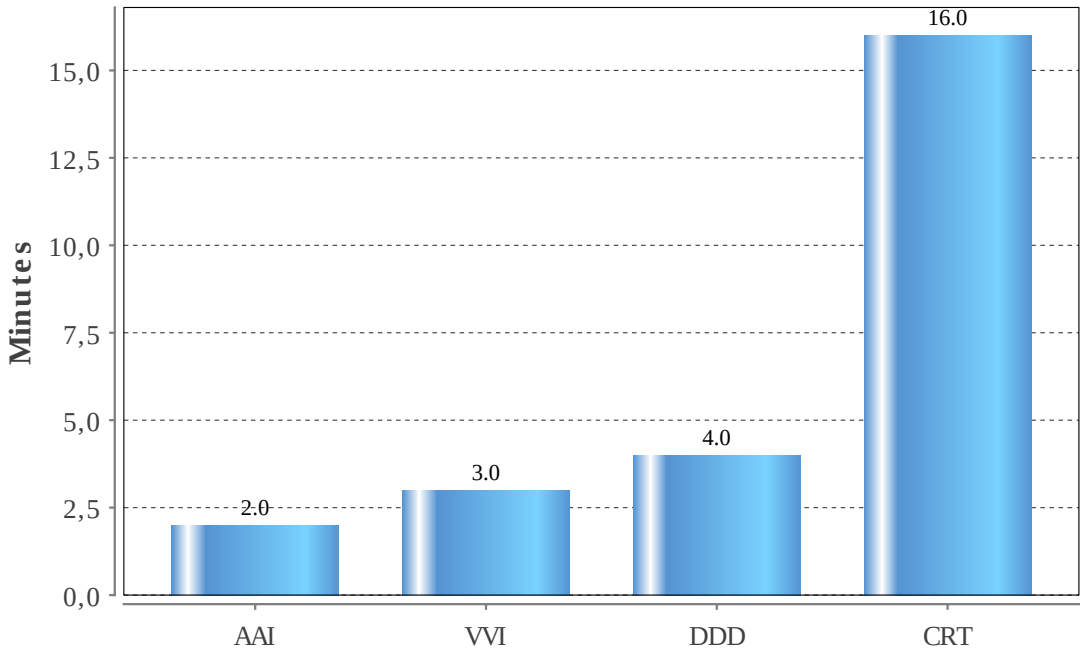


Mean fluoroscopy duration for a new implant of different subtypes per hospital. Hospitals with less than 10 implants of a specific subtype are marked in grey, blue indicates 10 or more implants of this subtype, performed yearly at this hospital.



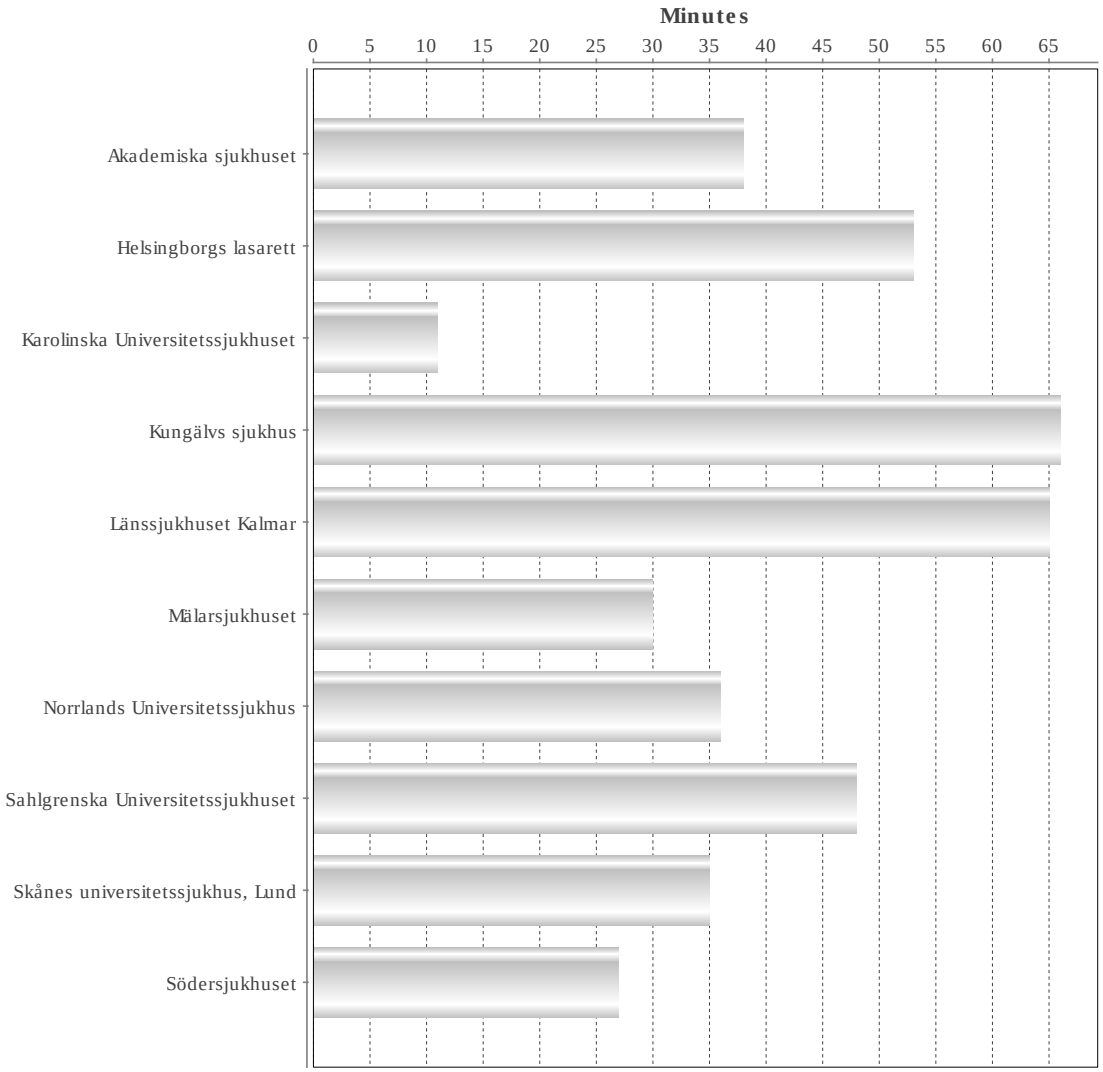
National mean fluoroscopy duration for a new implant of different subtypes

Fluoroscopy time	Average	Standard deviation
AAI	2.0	1.5
VVI	3.0	4.5
DDD	4.0	5.2
CRT	16.0	13.7



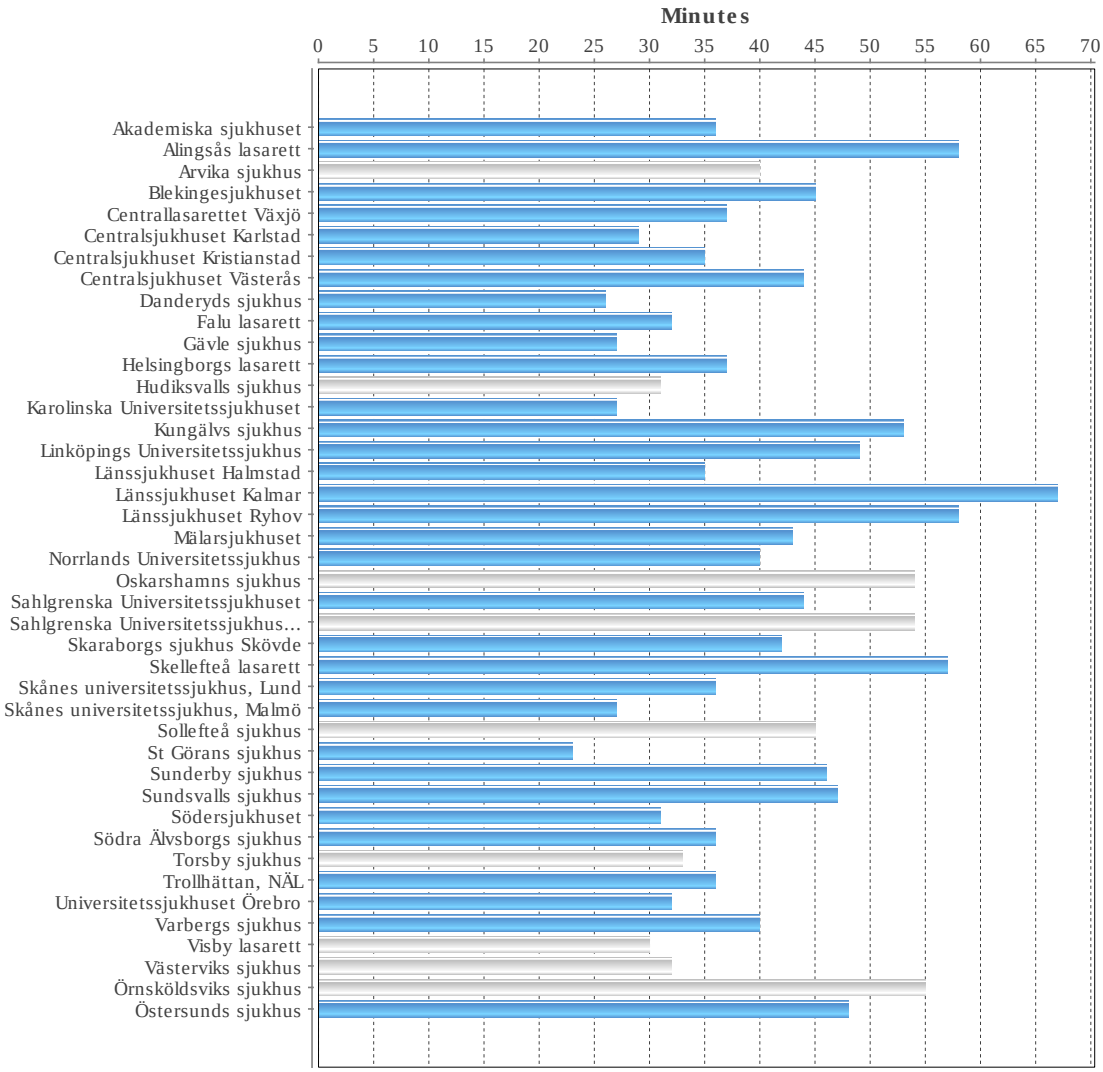
Mean duration for a new implant of different subtypes per hospital. Hospitals with less than 10 implants of a specific subtype are marked in grey, blue indicates 10 or more implants of this subtype, performed yearly at this hospital.

AAI

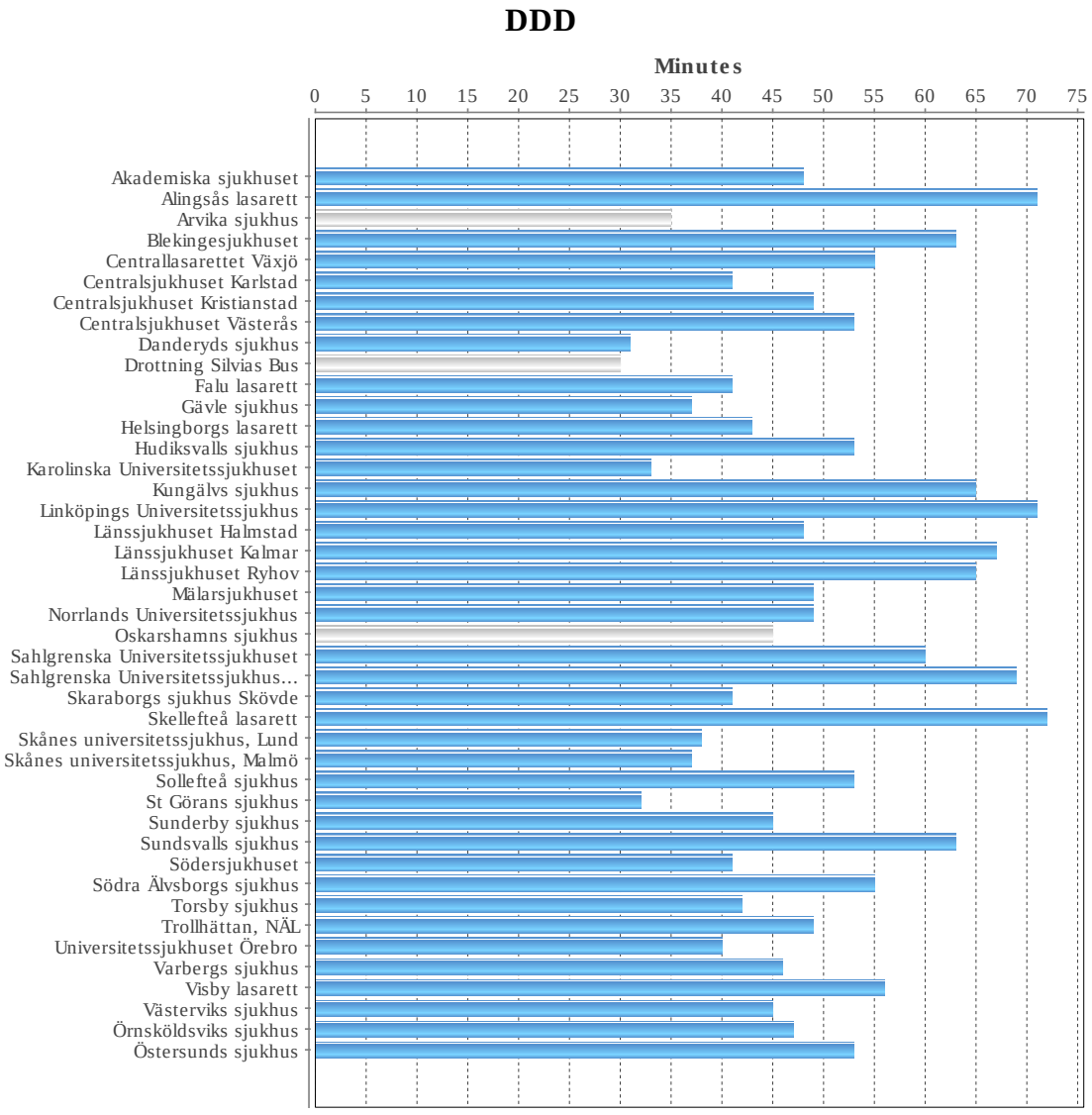


Mean duration for a new implant of different subtypes per hospital. Hospitals with less than 10 implants of a specific subtype are marked in grey, blue indicates 10 or more implants of this subtype, performed yearly at this hospital.

VVI

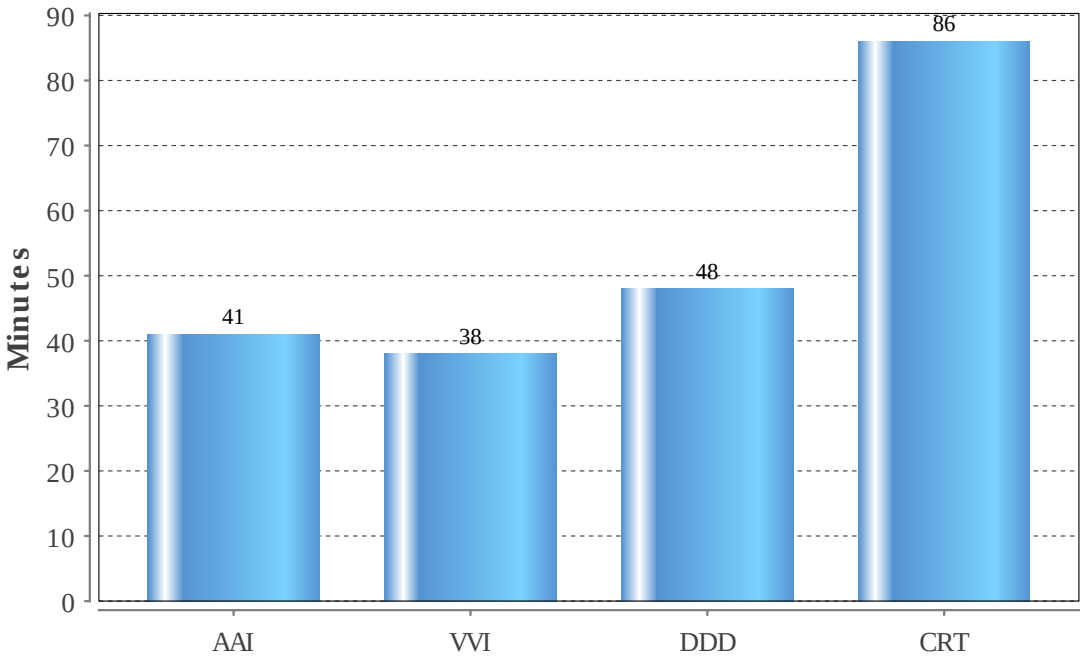


Mean duration for a new implant of different subtypes per hospital. Hospitals with less than 10 implants of a specific subtype are marked in grey, blue indicates 10 or more implants of this subtype, performed yearly at this hospital.



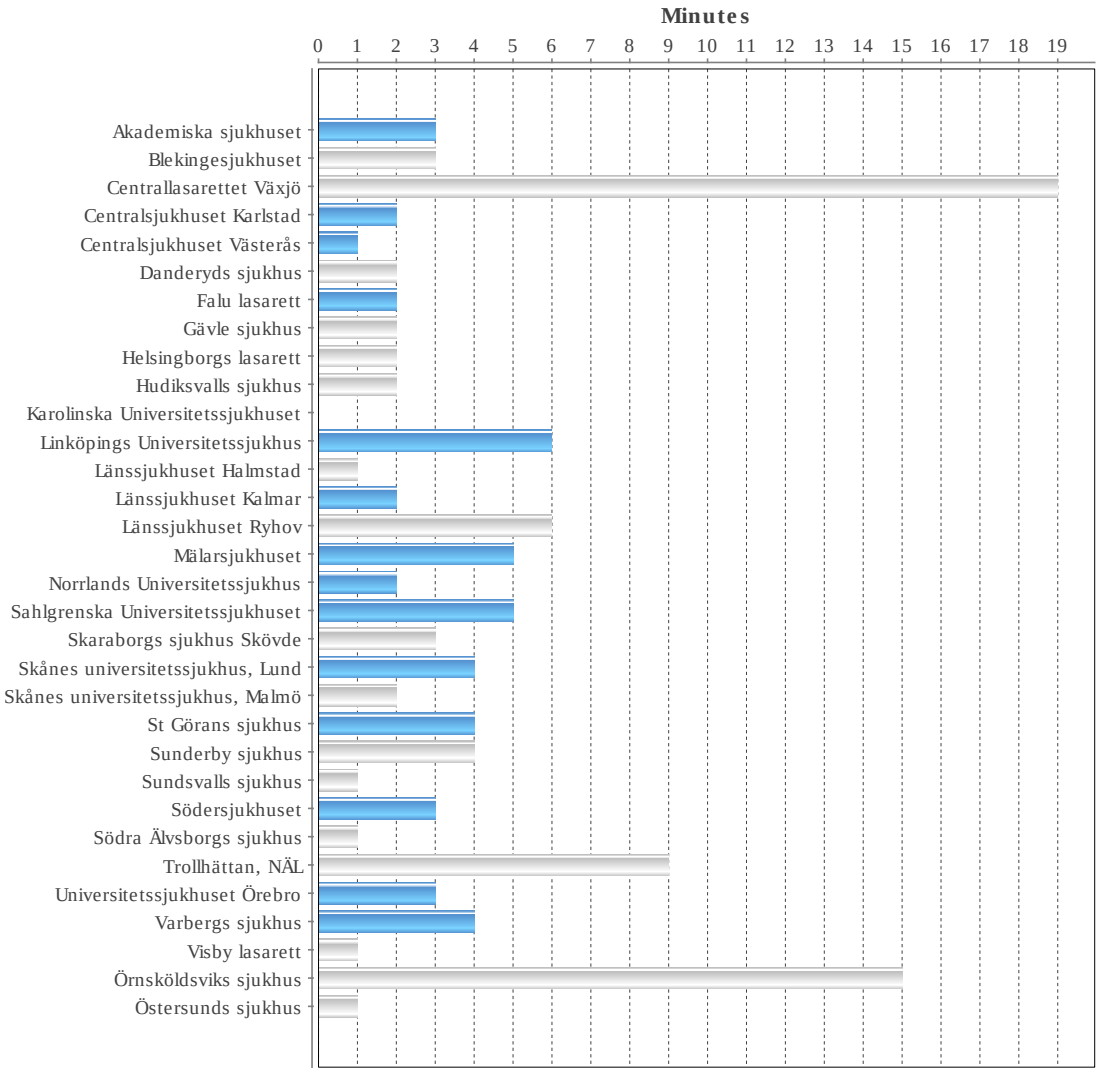
National mean skin to skin duration for a new implant of different subtypes

Knife time	Average	Standard deviation
AAI	41	17.8
VVI	38	21.6
DDD	48	21.2
CRT	86	39.7



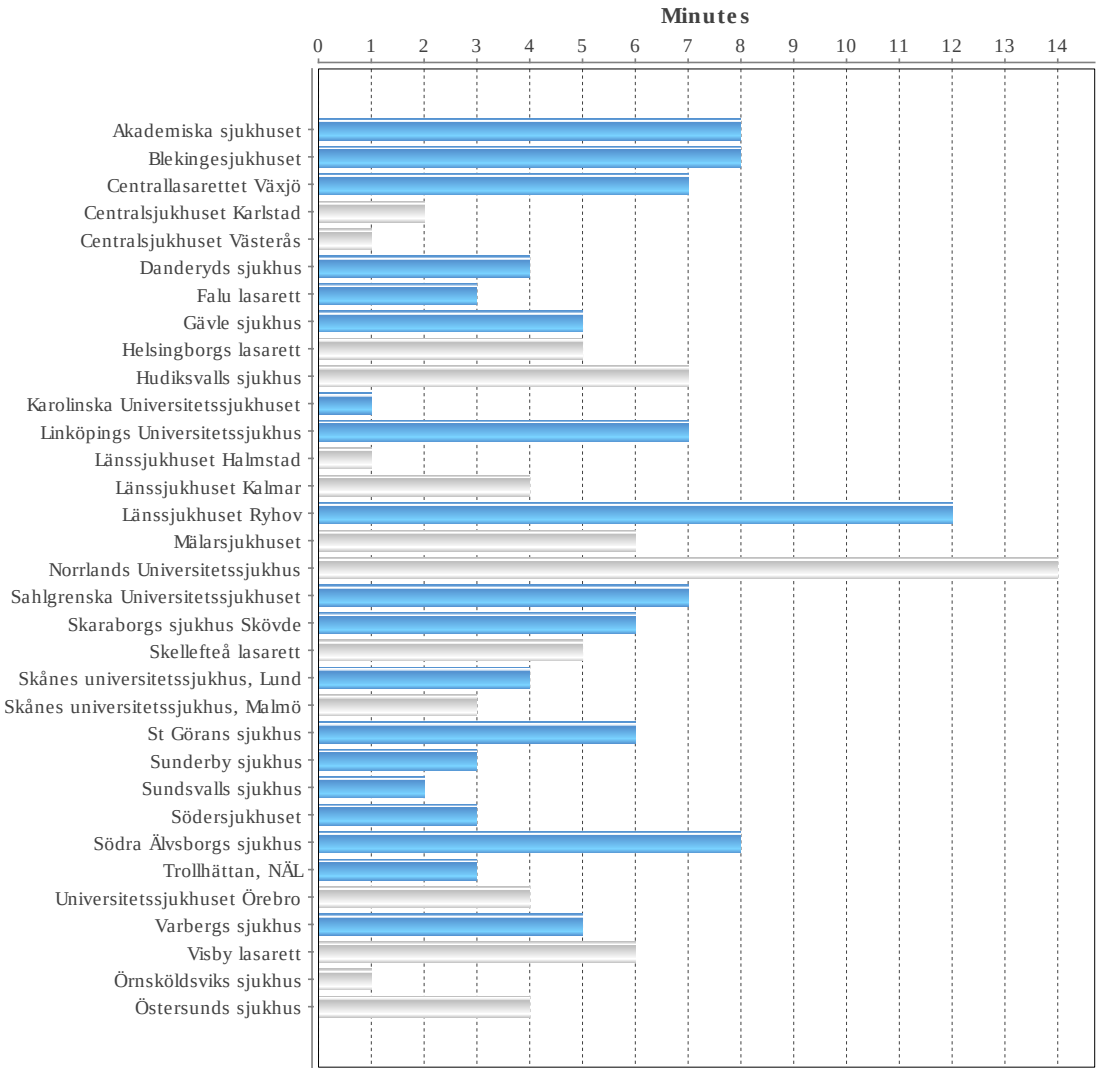
Mean fluoroscopy duration for a new implant of different subtypes per hospital. Hospitals with less than 10 implants of a specific subtype are marked in grey, blue indicates 10 or more implants of this subtype, performed yearly at this hospital.

VVI



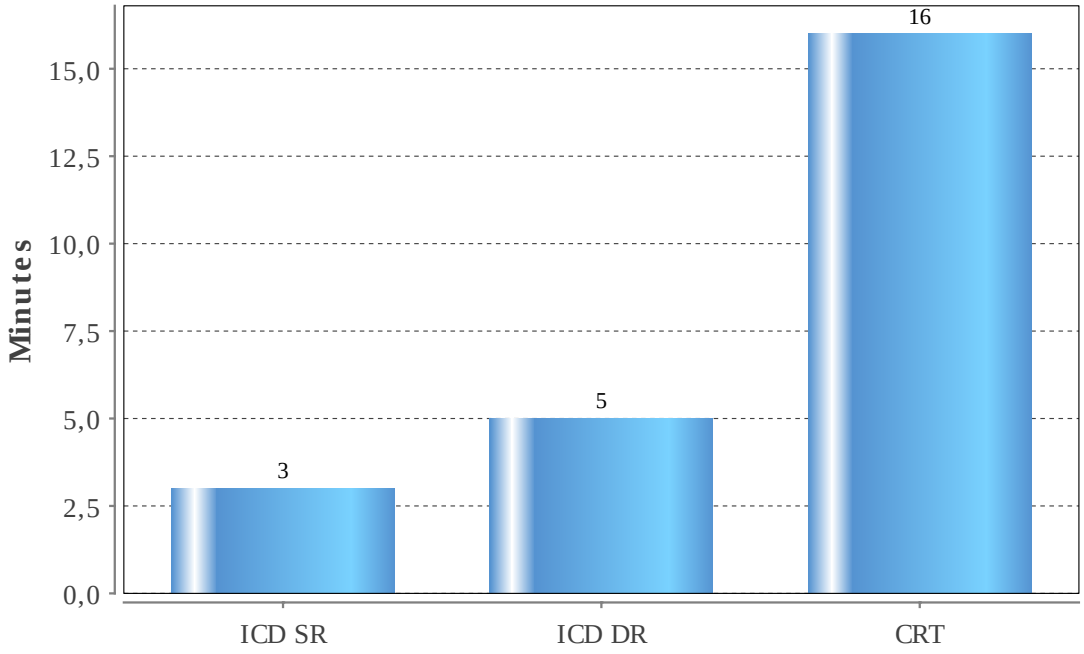
Mean fluoroscopy duration for a new implant of different subtypes per hospital. Hospitals with less than 10 implants of a specific subtype are marked in grey, blue indicates 10 or more implants of this subtype, performed yearly at this hospital.

DDD



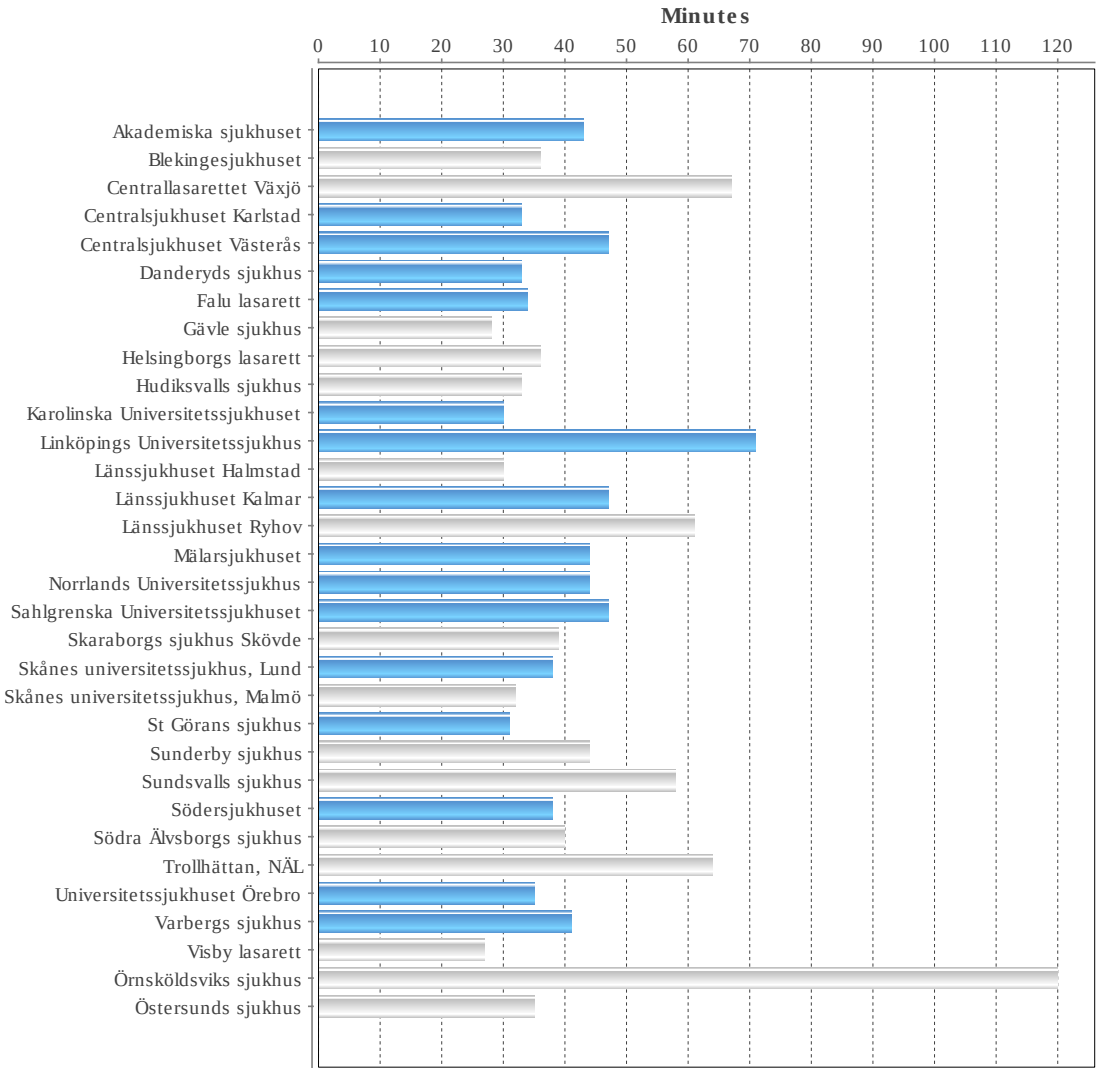
National mean fluoroscopy duration for a new implant of different subtypes

Fluoroscopy time	Average	Standard deviation
ICD SR	3	5.0
ICD DR	5	6.3
CRT	16	12.8



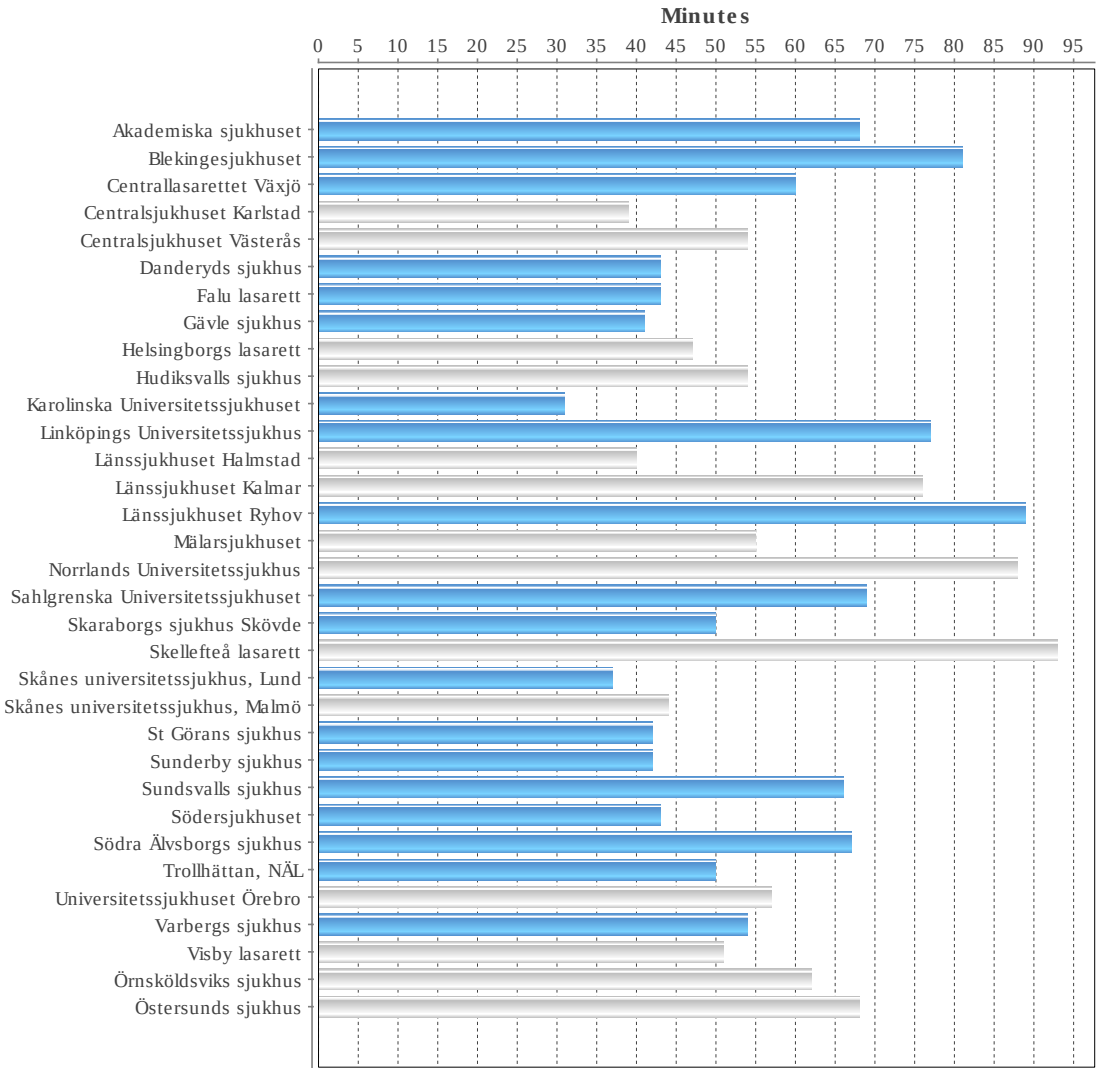
Mean duration for a new implant of different subtypes per hospital. Hospitals with less than 10 implants of a specific subtype are marked in grey, blue indicates 10 or more implants of this subtype, performed yearly at this hospital.

VVI



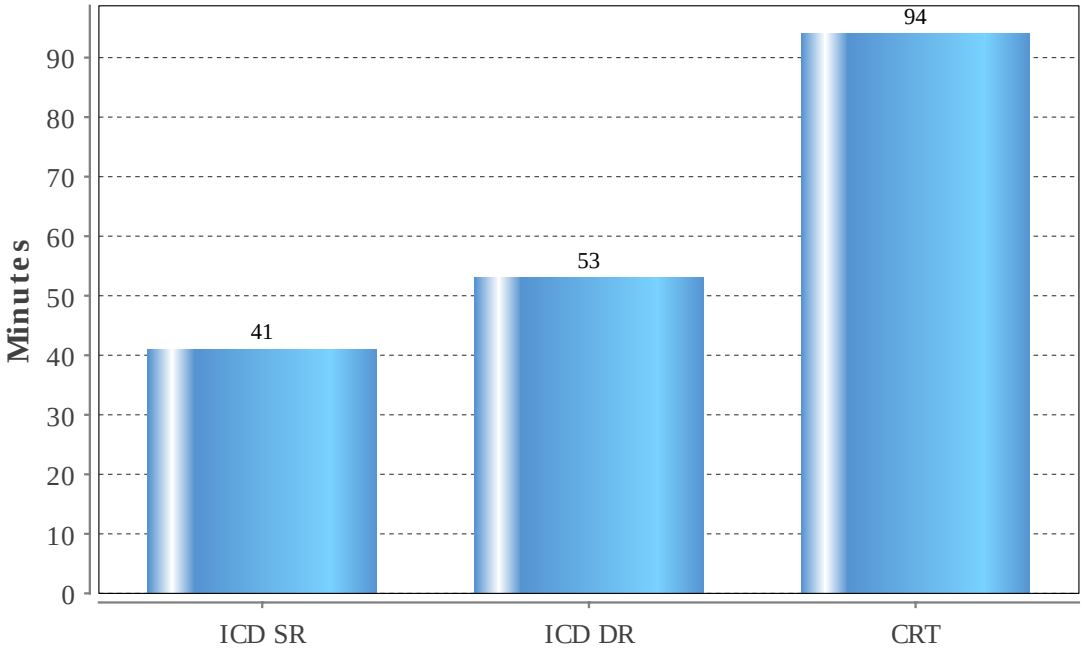
Mean duration for a new implant of different subtypes per hospital. Hospitals with less than 10 implants of a specific subtype are marked in grey, blue indicates 10 or more implants of this subtype, performed yearly at this hospital.

DDD

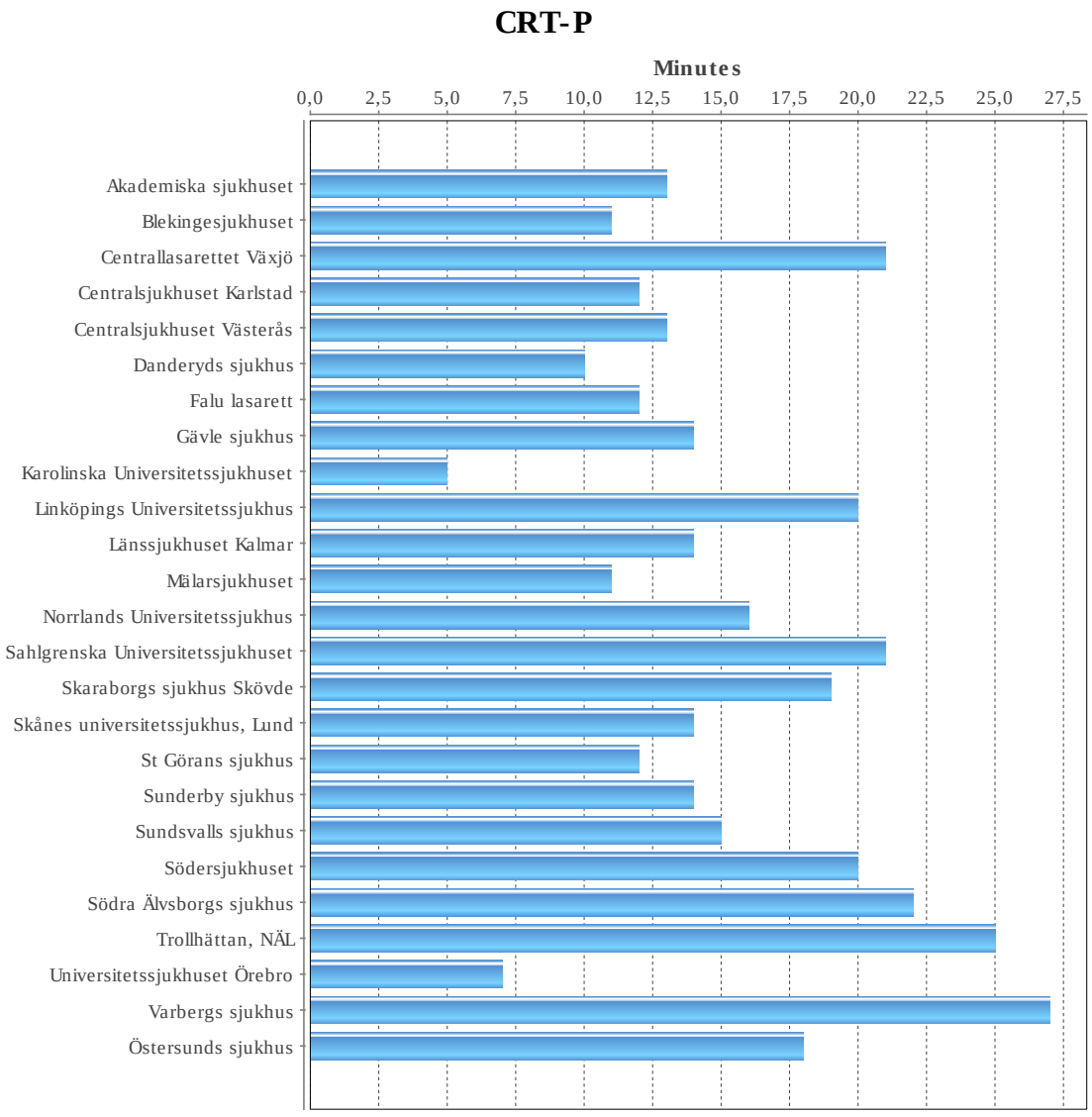


National mean skin to skin duration for a new implant of different subtypes

Knife time	Average	Standard deviation
ICD SR	41	21.1
ICD DR	53	29.6
CRT	94	40.0

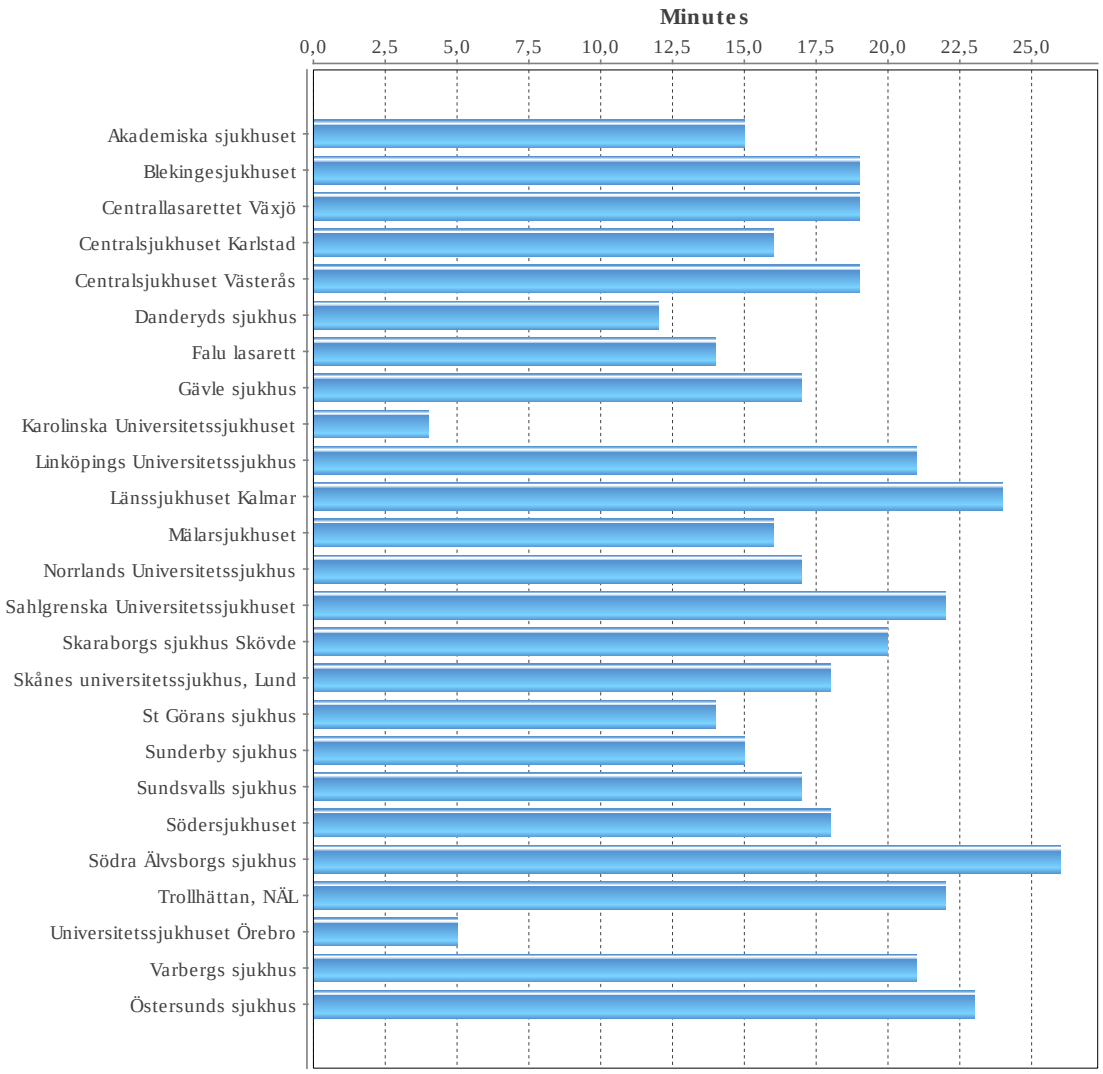


Mean fluoroscopy duration per different CRT implantation per hospital. Bars colored in grey are based on less then 10 observations

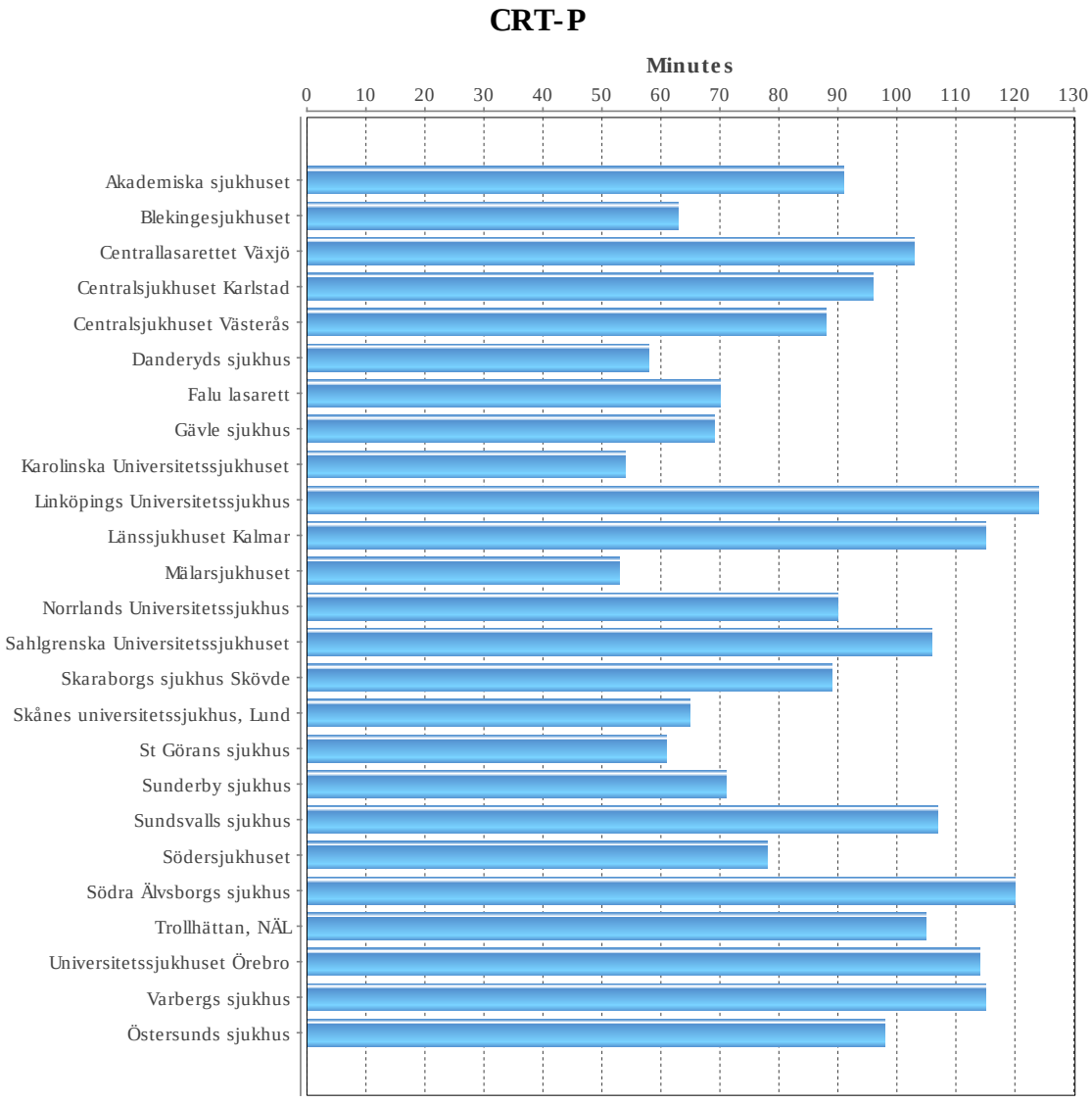


Mean fluoroscopy duration per different CRT implantation per hospital. Bars colored in grey are based on less then 10 observations

CRT-D

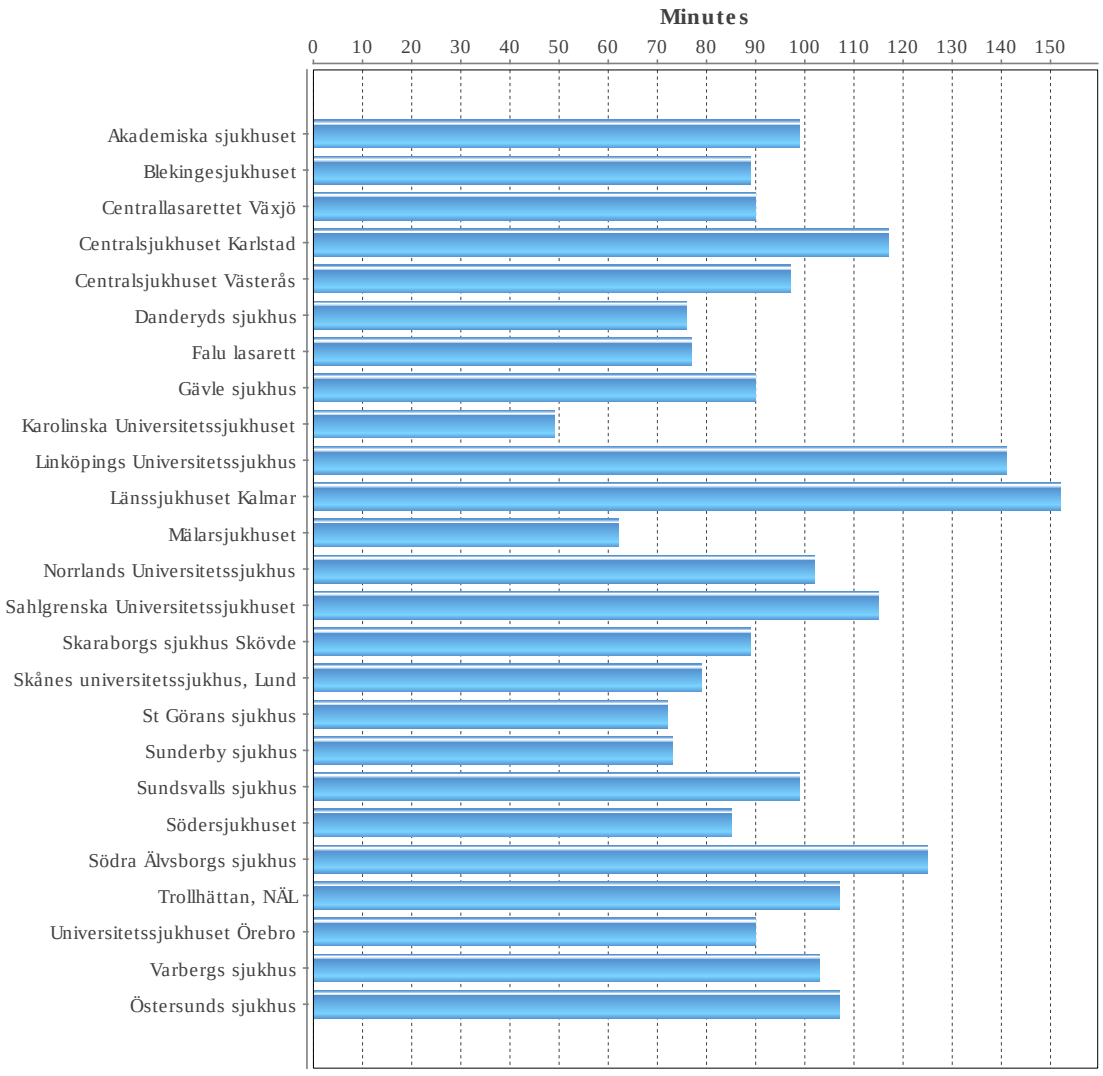


Mean skin to skin duration per subtype and hospital. Bars colored in grey are based on less then 10 observations



Mean skin to skin duration per subtype and hospital. Bars colored in grey are based on less then 10 observations

CRT-D

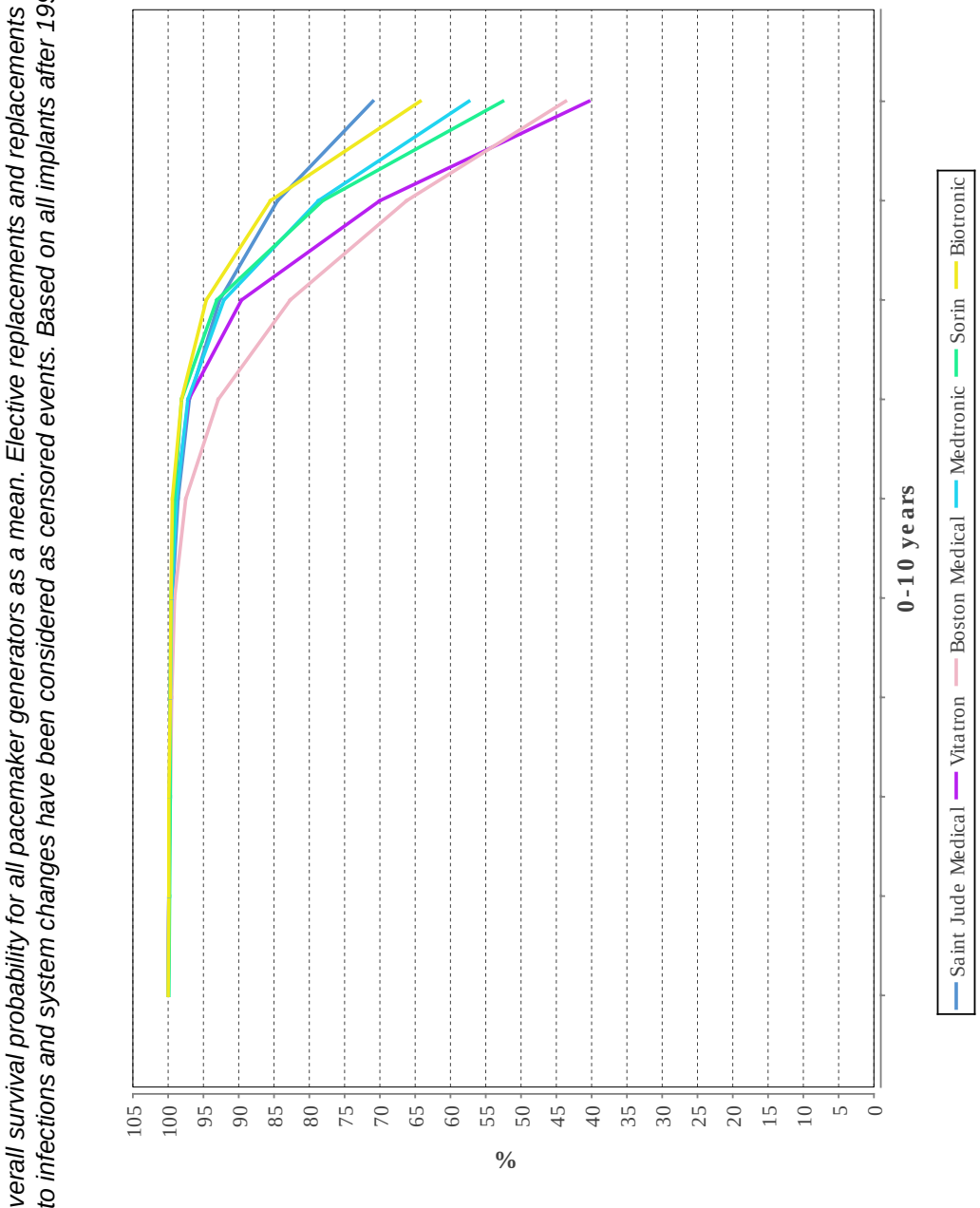


Year	At risk	Survival probability %
1	112372	100.0
2	100399	99.9
3	86368	99.8
4	70344	99.7
5	56414	99.4
6	44247	98.6
7	33447	96.7
8	22844	90.9
9	12825	77.6
10	5118	56.4

Overall survival probability for all PM generators as a mean. Elective replacements and replacements due to infections and system changes have been considered as censored events. Based on all implants after 2006

Year	Total		Biotronic		Boston Scient		Medtronic		St Jude Medical		Vitatron		Sorin	
	At risk	Surv. prob. %	At risk	Surv. prob. %	At risk	Surv. prob. %	At risk	Surv. prob. %	At risk	Surv. prob. %	At risk	Surv. prob. %	At risk	Surv. prob. %
1	112337	100.0	9113	100.0	14234	100.0	28624	100.0	38138	100.0	17935	100.0	4293	99.9
2	100369	99.9	8081	99.9	12860	99.9	25585	99.9	34137	99.9	15798	99.9	3908	99.8
3	86341	99.8	6377	99.9	11328	99.7	22596	99.8	28893	99.8	13544	99.8	3603	99.7
4	70320	99.7	4372	99.7	9369	99.5	19197	99.7	22506	99.7	11611	99.7	3265	99.7
5	56394	99.5	3137	99.6	7172	99.1	15861	99.5	17363	99.4	9958	99.5	2903	99.6
6	44230	98.7	2215	99.4	5130	97.5	12768	98.8	13119	98.6	8484	98.9	2514	99.1
7	33437	96.7	1687	98.1	3701	92.9	9950	97.2	9829	97.0	6277	97.1	1993	98.1
8	22842	90.8	1157	94.6	2411	82.7	7294	92.1	6465	92.7	4078	89.6	1437	93.1
9	12823	77.2	541	85.5	1328	66.2	4646	78.7	3638	84.5	1809	70.0	861	78.1
10	5116	54.9	140	64.3	615	43.7	2034	57.4	1382	71.0	596	40.4	349	52.6

Overall survival probability for all pacemaker generators as a mean. Elective replacements and replacements due to infections and system changes have been considered as censored events. Based on all implants after 1990



Models that have at least 100 implants and 50 explants

Manuf	Model	Year 1 %	Year 2 %	Year 3 %	Year 4 %	Year 5 %	Year 6 %	Year 7 %	Year 8 %	Year 9 %
Biotronik	Philos SR	100.0	100.0	100.0	100.0	100.0	100.0	96.0	96.0	96.0
Biotronik	Axios SR	100.0	100.0	100.0	100.0	100.0	94.7	77.3	71.3	61.1
Biotronik	Evia DR-T ProMRI	100.0	100.0	100.0	100.0	100.0	100.0	97.7	96.1	93.9
Biotronik	Ecuro DR-T	100.0	100.0	99.2	99.2	99.2	99.2	99.2	NaN	NaN
Biotronik	Estella DR-T ProMRI	100.0	100.0	100.0	100.0	100.0	100.0	99.5	99.5	99.5
Biotronik	Etrinsa 8 DR-T ProMRI	99.8	99.8	99.8	99.8	NaN	NaN	NaN	NaN	NaN
Biotronik	Enitra 6 SR-T ProMRI	100.0	100.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Biotronik	Philos II DR-T	99.7	99.7	99.3	99.3	99.3	98.4	94.1	79.6	46.6
Biotronik	Philos II DR	100.0	100.0	99.6	99.2	98.8	97.2	87.0	63.6	42.9
Biotronik	Etrinsa 6 DR-T ProMRI	99.9	99.7	99.7	99.7	99.7	NaN	NaN	NaN	NaN
Biotronik	Effecta DR	100.0	100.0	99.9	99.7	99.5	99.5	99.5	99.5	NaN
Biotronik	Talos SR	99.8	99.8	99.8	99.8	99.8	99.4	96.6	83.3	51.5
Biotronik	Effecta SR	99.9	99.9	99.9	99.9	99.7	99.7	99.7	99.7	NaN
Biotronik	Enitra 8 DR-T ProMRI	100.0	100.0	100.0	NaN	NaN	NaN	NaN	NaN	NaN
Biotronik	Enitra 6 DR-T ProMRI	100.0	100.0	100.0	NaN	NaN	NaN	NaN	NaN	NaN
Boston Scientific	1294 Insignia I	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0	58.8
Boston Scientific	1297 Insignia I	100.0	100.0	100.0	100.0	96.7	96.7	92.1	85.9	72.5
Boston Scientific	1192 Insignia	100.0	100.0	100.0	100.0	97.8	97.8	97.8	88.0	64.0
Boston Scientific	J172 Ingenio	98.7	98.7	98.7	98.7	96.7	96.7	96.7	NaN	NaN
Boston Scientific	J174 Ingenio EL	100.0	100.0	100.0	100.0	100.0	99.2	99.2	99.2	NaN
Boston Scientific	J062 Advantio	99.4	98.8	98.8	98.8	98.8	97.7	96.3	96.3	NaN
Boston Scientific	J065 Advantio	100.0	100.0	100.0	100.0	100.0	100.0	100.0	NaN	NaN
Boston Scientific	W173 Invive CRT	100.0	100.0	99.4	98.8	97.4	95.0	88.5	81.1	NaN
Boston Scientific	S601 Altrua 60	100.0	99.5	99.0	99.0	99.0	95.5	84.6	61.2	46.0
Boston Scientific	S603 Altrua 60	100.0	100.0	99.5	98.5	96.8	87.6	59.3	36.5	9.6
Boston Scientific	S402 Altrua 40	99.6	99.6	99.6	99.6	98.8	98.8	95.6	89.1	69.0
Boston Scientific	J064 Adventio EL	99.8	99.8	99.8	99.8	99.8	99.2	99.2	99.2	NaN
Boston Scientific	S606 Altrua 60	99.7	99.7	99.7	99.4	98.7	97.5	95.3	91.7	84.6
Boston Scientific	H140 Contak Renewal TR2	100.0	100.0	99.4	98.6	95.3	85.1	59.1	27.5	6.6
Boston Scientific	1291 Insignia I	99.4	99.4	99.4	99.4	98.3	95.7	92.7	80.6	52.3
Boston Scientific	S602 Altrua 60	100.0	99.4	99.4	99.0	98.1	95.5	90.5	80.7	53.3

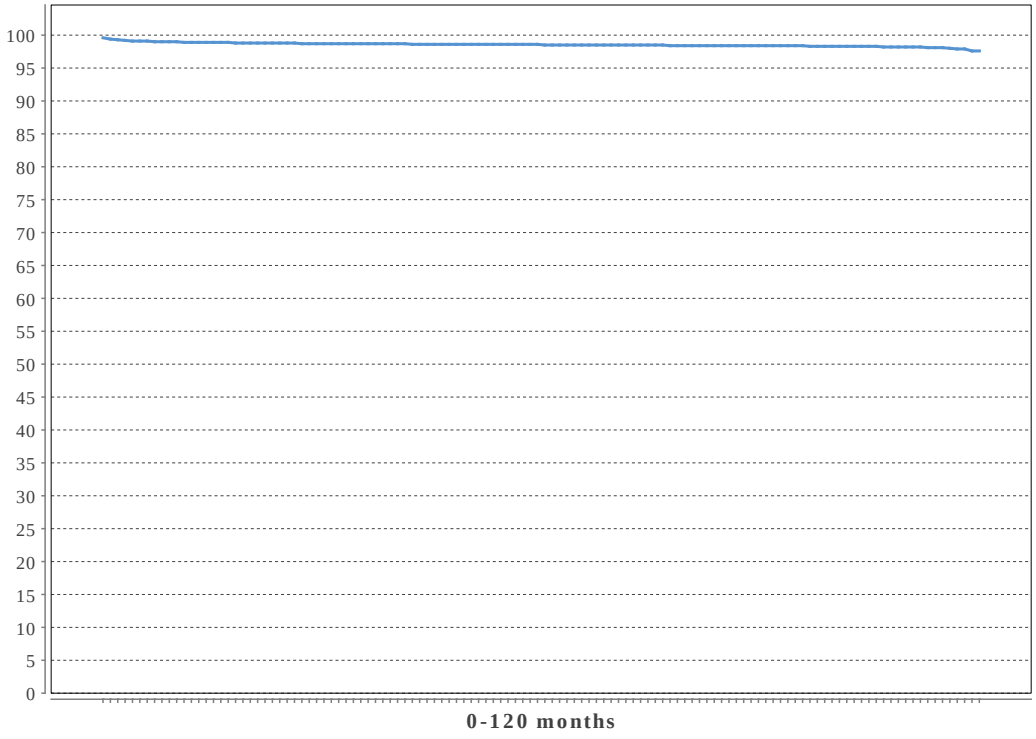
Manuf	Model	Year 1 %	Year 2 %	Year 3 %	Year 4 %	Year 5 %	Year 6 %	Year 7 %	Year 8 %	Year 9 %
Boston Scientific	S501 Altrua 50	100.0	100.0	99.2	99.2	98.7	97.3	93.1	80.4	56.9
Boston Scientific	J277 Vitalio MRI	99.5	99.2	99.2	99.2	99.2	99.2	99.2	NaN	NaN
Boston Scientific	L210 Proponent MRI SR	100.0	99.8	99.8	99.4	99.4	NaN	NaN	NaN	NaN
Boston Scientific	S404 EL Altrua 40	100.0	99.9	99.7	99.4	98.9	98.4	96.4	89.7	78.2
Boston Scientific	1190 Insignia	99.9	99.0	98.5	98.3	96.6	92.9	84.4	64.3	41.2
Boston Scientific	1290 Insignia I	99.9	99.8	99.6	98.6	92.9	79.2	57.7	32.2	8.7
Boston Scientific	L231 Proponent MRI EL DR	99.9	99.8	99.7	99.1	99.1	NaN	NaN	NaN	NaN
Medtronic	KDR931 Kappa DR	100.0	100.0	100.0	100.0	100.0	100.0	100.0	94.1	58.7
Medtronic	SS303 Sigma S	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	NaN
Medtronic	P1501DR EnRhythm	100.0	100.0	100.0	100.0	97.2	79.0	46.1	28.3	17.6
Medtronic	ADSR01 Adapta	100.0	99.1	99.1	99.1	99.1	99.1	77.1	42.2	17.1
Medtronic	KSR703 Kappa SR	100.0	100.0	100.0	97.1	93.8	79.4	49.4	29.3	10.1
Medtronic	E2DR31 EnPulse	100.0	100.0	100.0	98.8	98.8	98.8	97.2	92.0	75.9
Medtronic	E2SR01 EnPulse	100.0	100.0	100.0	99.3	96.6	91.5	53.4	13.1	4.4
Medtronic	KSR901 Kappa SR	98.6	98.6	98.6	98.6	98.6	89.5	45.0	15.6	6.8
Medtronic	EN1SR01 Ensura SR MRI	100.0	100.0	100.0	100.0	100.0	NaN	NaN	NaN	NaN
Medtronic	SEDR01 Sensia	100.0	100.0	100.0	100.0	99.6	99.1	95.8	76.8	48.1
Medtronic	ADDR01 Adapta	100.0	99.8	99.6	99.3	98.5	98.2	94.8	79.0	41.6
Medtronic	C2TR01 Syncra CRT	99.8	99.7	99.3	98.4	94.7	88.8	75.2	61.9	45.9
Medtronic	VEDR01 Versa	100.0	99.6	99.4	99.2	99.0	96.9	93.2	72.5	39.8
Medtronic	A3DR01 Advisa DR MRI	100.0	100.0	100.0	100.0	100.0	99.3	97.0	84.1	77.9
Medtronic	8042 InSync III	100.0	99.8	99.0	97.9	95.8	87.4	68.3	37.2	10.2
Medtronic	E2DR01 EnPulse	100.0	99.8	99.7	99.2	98.4	96.5	88.9	60.3	22.0
Medtronic	SESR01 Sensia	99.8	99.8	99.7	99.4	98.4	97.1	93.6	76.7	55.7

Manuf	Model	Year 1 %	Year 2 %	Year 3 %	Year 4 %	Year 5 %	Year 6 %	Year 7 %	Year 8 %	Year 9 %
Medtronic	RESR01 Relia SR	99.7	99.7	99.7	99.3	98.5	97.0	89.9	71.0	45.4
Medtronic	ADDRL1 Adapta	99.9	99.8	99.7	99.7	99.6	99.0	98.7	96.1	85.9
Medtronic	EN1DR01 Ensura DR MRI	99.9	99.8	99.7	99.6	99.1	98.4	95.0	84.8	78.0
Medtronic	SEDRL1 Sensia	99.9	99.9	99.8	99.8	99.7	99.4	98.9	97.8	93.4
Medtronic	REDR01 Relia DR	99.9	99.8	99.7	99.6	99.3	98.4	96.3	87.1	67.1
Sorin/LivaNova	2530 Rhapsody	100.0	100.0	100.0	100.0	100.0	97.4	94.6	85.6	62.4
Sorin/LivaNova	Reply 200 SR	100.0	100.0	100.0	100.0	98.8	98.8	NaN	NaN	NaN
Sorin/LivaNova	Kora 250 DR	100.0	99.4	99.4	99.4	NaN	NaN	NaN	NaN	NaN
Sorin/LivaNova	Reply SR	100.0	100.0	100.0	100.0	98.7	97.2	95.3	95.3	76.2
Sorin/LivaNova	Esprit DR	100.0	100.0	100.0	99.6	99.6	98.2	88.6	72.6	51.0
Sorin/LivaNova	2550 Symphony DR	100.0	100.0	100.0	100.0	99.4	98.9	96.7	92.4	80.1
Sorin/LivaNova	Reply 200 DR	99.9	99.6	99.5	99.5	99.1	98.2	98.2	NaN	NaN
Sorin/LivaNova	Reply DR	99.7	99.6	99.6	99.5	98.9	97.9	92.7	75.1	44.8
St Jude Medical/ Abbott	5157 M/S Verity ADx XL SR	100.0	100.0	100.0	100.0	100.0	95.7	95.7	95.7	95.7
St Jude Medical/ Abbott	5610 Victory	100.0	100.0	100.0	100.0	97.1	84.0	46.9	12.4	NaN
St Jude Medical/ Abbott	2525T Microny II	98.6	98.6	98.6	94.1	81.2	78.1	64.1	45.3	26.4
St Jude Medical/ Abbott	3112 Anthem	100.0	100.0	98.9	97.6	93.3	88.7	77.5	66.0	60.0
St Jude Medical/ Abbott	5180 Identity ADx SR	100.0	100.0	97.9	97.9	88.2	77.7	51.1	13.9	4.6
St Jude Medical/ Abbott	1110 Accent SR	100.0	100.0	100.0	100.0	100.0	100.0	98.7	98.7	98.7
St Jude Medical/ Abbott	5810 Victory DR	100.0	100.0	94.5	87.5	69.6	43.5	27.2	15.9	11.9
St Jude Medical/ Abbott	2162 Endurity DR	100.0	100.0	100.0	100.0	100.0	NaN	NaN	NaN	NaN
St Jude Medical/ Abbott	1136 Sustain XL	100.0	100.0	100.0	99.2	99.2	99.2	99.2	99.2	NaN
St Jude Medical/ Abbott	5356 Verity ADx XL DR	100.0	100.0	100.0	99.0	96.4	96.4	96.4	93.2	63.1
St Jude Medical/ Abbott	3262 Quadra Allure MP RF	100.0	100.0	100.0	100.0	NaN	NaN	NaN	NaN	NaN
St Jude Medical/ Abbott	1172 Endurity MRI SR	100.0	100.0	100.0	100.0	NaN	NaN	NaN	NaN	NaN
St Jude Medical/ Abbott	2136 Sustain XL DR	99.5	99.5	99.5	99.1	98.8	98.4	98.0	97.5	NaN
St Jude Medical/ Abbott	3242 Allure RF	99.8	99.8	99.8	99.8	99.0	96.6	96.6	NaN	NaN

Manuf	Model	Year 1 %	Year 2 %	Year 3 %	Year 4 %	Year 5 %	Year 6 %	Year 7 %	Year 8 %	Year 9 %
St Jude Medical/ Abbott	1162 Endurity SR	99.8	99.8	99.8	99.8	99.4	NaN	NaN	NaN	NaN
St Jude Medical/ Abbott	5596 Frontier II	100.0	100.0	99.3	97.3	89.7	79.0	59.0	37.3	20.3
St Jude Medical/ Abbott	2172 Endurity MRI DR	100.0	100.0	100.0	100.0	NaN	NaN	NaN	NaN	NaN
St Jude Medical/ Abbott	2160 Endurity	99.6	99.6	99.6	99.6	99.2	99.2	99.2	NaN	NaN
St Jude Medical/ Abbott	2224 Accent DR MRI	99.8	99.8	99.8	99.5	99.5	99.0	99.0	99.0	NaN
St Jude Medical/ Abbott	2212 Accent DR	99.8	99.6	99.6	98.9	98.2	97.6	94.3	85.3	73.7
St Jude Medical/ Abbott	1160 Endurity SR	99.9	99.7	99.7	99.7	99.7	99.7	99.3	NaN	NaN
St Jude Medical/ Abbott	3212 Anthem	99.6	99.1	98.3	97.1	92.7	81.0	71.5	51.7	31.4
St Jude Medical/ Abbott	3562 Quadra Allure MP RF	100.0	100.0	100.0	NaN	NaN	NaN	NaN	NaN	NaN
St Jude Medical/ Abbott	5386 Identity ADx XL DR	98.9	98.5	98.0	98.0	95.1	94.4	90.9	75.2	54.2
St Jude Medical/ Abbott	3222 Allure RF	99.7	99.6	99.6	98.3	95.3	90.8	90.8	NaN	NaN
St Jude Medical/ Abbott	5626 Zephyr XL SR	99.9	99.6	99.6	99.3	99.2	99.2	98.9	98.5	95.4
St Jude Medical/ Abbott	2112 Accent DR	99.9	99.9	99.9	99.8	99.7	99.0	98.2	95.2	92.4
St Jude Medical/ Abbott	2260 Assurity + DR	99.7	99.7	99.6	99.5	99.1	98.9	98.8	NaN	NaN
St Jude Medical/ Abbott	1272 Assurity MRI SR	99.9	99.9	99.9	99.9	99.9	99.9	99.9	NaN	NaN
St Jude Medical/ Abbott	5156 Verity ADx XL SR	99.9	99.9	99.9	99.6	99.5	98.8	98.6	97.9	95.1
St Jude Medical/ Abbott	5826 Zephyr XL DR	99.8	99.7	99.5	99.4	99.0	98.0	91.7	81.4	66.9
St Jude Medical/ Abbott	5816 Victory XL	99.8	99.7	99.6	99.4	98.9	97.5	91.5	83.0	66.6
St Jude Medical/ Abbott	2272 Assurity MRI DR	99.9	99.9	99.9	99.8	99.8	NaN	NaN	NaN	NaN
Vitatron	G20A2 SR MRI	100.0	99.4	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Vitatron	T20SR	99.8	99.8	99.8	99.1	97.6	94.6	91.1	86.5	77.8
Vitatron	C10S	99.9	99.9	99.7	99.4	99.0	98.4	96.0	93.1	90.9
Vitatron	C70DR	100.0	100.0	100.0	100.0	99.8	97.5	86.0	59.7	21.5
Vitatron	Q80A2 DR MRI	99.4	99.4	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Vitatron	T70DR	99.5	99.3	99.3	98.9	96.8	91.6	70.7	41.8	18.1
Vitatron	E60A1 DR	100.0	100.0	100.0	99.7	99.3	99.0	97.5	91.9	87.9
Vitatron	C20SR	100.0	99.9	99.9	99.9	98.9	96.7	94.3	92.0	77.3
Vitatron	T60DR	100.0	100.0	99.6	99.2	98.1	95.4	81.9	54.3	28.7
Vitatron	G20A1	99.9	99.9	99.9	99.7	99.1	97.3	90.5	81.9	78.9
Vitatron	C60DR	99.9	99.8	99.6	99.3	98.3	95.4	83.2	55.8	25.7
Vitatron	G70A1	99.9	99.9	99.8	99.7	99.5	99.0	98.5	95.6	93.6

Based on all implants after 1990

Year	At risk	Survival probabilty %
1	157906	99.6
2	143295	98.9
3	125592	98.8
4	101765	98.7
5	80579	98.6
6	61953	98.5
7	45792	98.5
8	31456	98.4
9	18859	98.3
10	8447	98.2



Models that have at least 50 implants and 10 explants

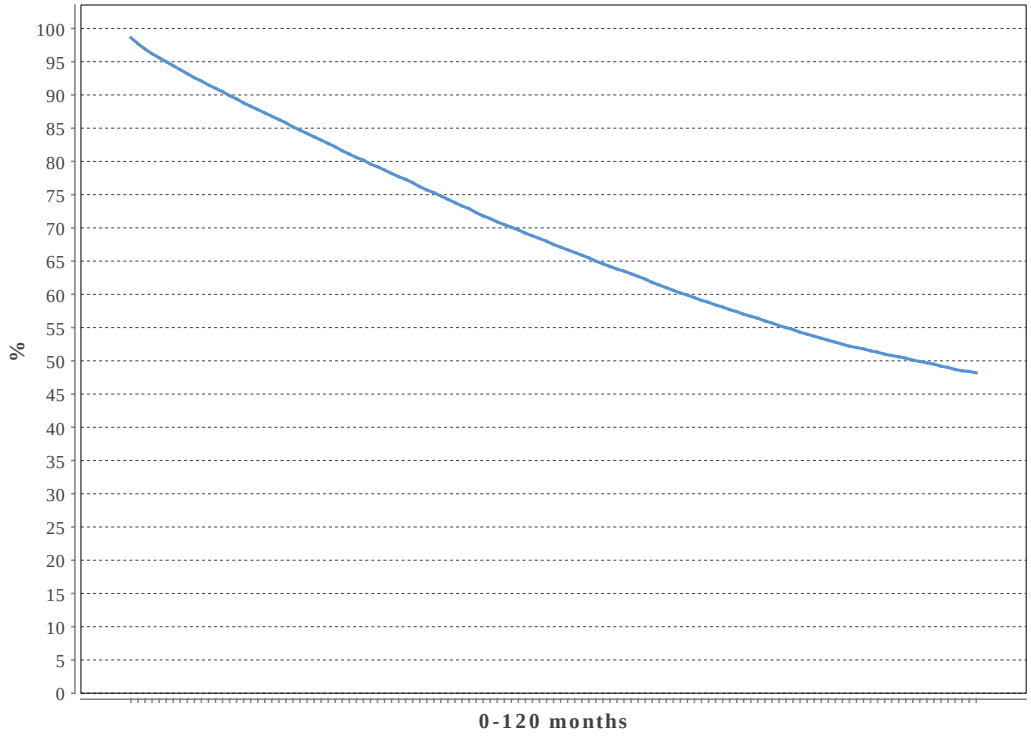
Manufacturer	Model	Years								
		1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	7 (%)	8 (%)	9 (%)
Biotronik	Y53-BP	100.0	100.0	100.0	100.0	100.0	95.0	95.0	95.0	95.0
Biotronik	Selox SR 60	97.4	97.4	95.5	95.5	95.5	95.5	95.5	95.5	95.5
Biotronik	PX60-UP	99.9	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7
Biotronik	Selox ST 60	100.0	100.0	100.0	98.9	98.9	98.9	98.9	98.9	98.9
Biotronik	Safio ProMRI S53	99.0	98.6	98.3	98.3	98.3	98.3	98.3	98.3	98.3
Biotronik	Y60-BP	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7
Biotronik	PX60-BP	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8	99.8
Biotronik	Safio ProMRI S60	99.1	99.1	99.1	99.1	99.1	99.1	99.1	99.1	99.1
Biotronik	Siello S60	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5
Biotronik	Siello S53	98.6	98.5	98.3	98.3	98.3	98.3	98.3	98.3	98.3
Biotronik	Solia S60 MRI	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2	NaN
Biotronik	Solia S53 MRI	99.1	99.1	99.0	99.0	99.0	99.0	99.0	99.0	NaN
Boston Scientific	4480 Fineline II Sterox EZ MRI	95.8	95.8	95.2	94.5	94.5	94.5	94.5	94.5	94.5
Boston Scientific	4542 Easytrak	95.7	94.4	92.9	91.2	91.2	88.3	88.3	88.3	88.3
Boston Scientific	7732 Ingevity MRI	98.6	98.6	98.6	98.6	98.6	98.6	NaN	NaN	NaN
Boston Scientific	4474 Fineline II Sterox EZ MRI	99.5	99.0	98.6	98.3	98.0	97.9	97.7	97.3	97.3
Boston Scientific	4471 Fineline II Sterox EZ MRI	97.4	97.2	97.2	97.2	97.0	96.6	96.6	96.6	94.9
Boston Scientific	4457 Fineline II Sterox EZ MRI	99.4	99.3	99.2	99.1	99.1	99.0	99.0	99.0	99.0
Boston Scientific	4473 Fineline II Sterox EZ MRI	99.1	98.9	98.8	98.8	98.7	98.7	98.7	98.5	98.5
Boston Scientific	7742 Ingevity MRI	98.8	98.7	98.7	98.7	98.7	98.7	NaN	NaN	NaN
Boston Scientific	7741 Ingevity MRI	98.5	98.5	98.4	98.4	98.4	98.4	NaN	NaN	NaN
Boston Scientific	4470 Fineline II Sterox EZ MRI	99.3	99.3	99.2	99.2	99.2	99.1	99.1	99.0	98.8
Medtronic	4195 Attain StarFix	93.9	93.9	93.9	93.9	93.9	93.9	93.9	93.9	75.2
Medtronic	3830 Secure	95.1	95.1	95.1	95.1	80.4	80.4	80.4	80.4	48.2
Medtronic	4073 CapSure Sense	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4
Medtronic	4396 Attain Ability MRI	98.7	98.7	98.7	98.7	98.7	98.7	98.7	98.7	98.7
Medtronic	4965 CapSure Epi	98.6	98.6	98.6	97.4	96.1	93.1	93.1	93.1	93.1

Manufacturer	Model	Years								
		1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	7 (%)	8 (%)	9 (%)
Medtronic	4194 Attain OTW	94.3	93.8	93.8	92.3	92.3	92.3	90.2	90.2	90.2
Medtronic	4196 Attain Ability MRI	97.2	95.3	95.3	95.3	95.3	95.3	95.3	95.3	95.3
Medtronic	4193 Attain OTW	94.4	93.5	92.9	92.6	91.7	91.0	90.2	88.7	88.7
Medtronic	4598 Attain Performa MRI	98.7	98.7	98.7	98.7	98.7	98.7	98.7	NaN	NaN
Medtronic	5092 Capsure SP Novus	98.7	98.4	98.4	98.3	98.1	98.1	97.7	97.2	97.2
Medtronic	5086 CapSureFix MRI	98.9	98.9	98.9	98.9	98.9	98.6	98.6	98.6	98.6
Medtronic	4296 Attain Ability MRI	97.0	96.2	96.2	96.2	96.2	95.9	95.9	95.9	95.9
Medtronic	4798 Attain Stability Quad MRI	97.5	97.5	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Medtronic	4796 Attain Stability MRI	99.2	98.6	98.4	98.4	98.4	98.4	98.4	98.4	NaN
Medtronic	4968 CapSure Epi	99.7	99.3	98.7	98.7	97.7	97.7	97.2	96.6	92.3
Medtronic	5054 CapSure Z Novus	99.0	98.8	98.6	98.6	98.4	98.3	98.3	98.0	98.0
Medtronic	4074 Capsure Sense MRI	99.0	99.0	98.9	98.9	98.9	98.8	98.8	98.7	98.7
Medtronic	5076 CapSureFix MRI	99.0	98.9	98.8	98.7	98.7	98.7	98.6	98.4	97.9
Medtronic	4076 CapSureFix Novus MRI	99.3	99.3	99.3	99.2	99.2	99.1	99.1	99.0	99.0
N/A	N/A	99.5	99.4	99.4	99.1	98.9	98.4	97.4	96.6	96.6
Osypka	KY-5	93.1	88.2	86.0	82.3	80.5	80.5	77.6	77.6	77.6
St Jude Medical/ Abbott	1058T	96.5	96.5	96.5	96.5	96.5	96.5	96.5	96.5	96.5
St Jude Medical/ Abbott	1699T OptiSense	97.8	96.5	96.5	96.5	96.5	96.5	96.5	96.5	96.5
St Jude Medical/ Abbott	1056K QuickSite	96.8	96.2	95.5	94.5	94.5	94.5	90.5	90.5	90.5
St Jude Medical/ Abbott	1084T Myodex	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2	99.2
St Jude Medical/ Abbott	1456Q Quartet MRI	94.8	94.8	94.8	94.8	94.8	94.8	NaN	NaN	NaN
St Jude Medical/ Abbott	1480T	98.8	98.2	98.1	98.1	97.9	97.7	97.5	97.5	97.5
St Jude Medical/ Abbott	1488T Tendril SDX	98.5	98.2	97.9	97.7	97.5	97.1	97.0	96.0	95.1
St Jude Medical/ Abbott	1156T Quickflex	96.6	95.9	95.2	95.2	94.5	94.5	94.5	94.5	93.5

Manufacturer	Model	Years								
		1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	7 (%)	8 (%)	9 (%)
St Jude Medical/ Abbott	1056T QuickSite	96.0	95.2	94.4	93.5	93.2	92.8	92.8	92.8	87.7
St Jude Medical/ Abbott	1699TC OptiSense	98.1	97.5	97.4	97.0	97.0	96.7	96.2	96.2	96.2
St Jude Medical/ Abbott	1636T Isoflex	97.5	97.3	96.9	96.8	96.6	96.2	96.2	95.6	94.5
St Jude Medical/ Abbott	LPA1200M52cm TendrilMRI	98.2	98.1	97.9	97.8	97.7	97.7	97.7	96.8	NaN
St Jude Medical/ Abbott	1788TC Tendril ST	96.2	95.9	95.9	95.8	95.5	95.5	95.5	95.5	94.6
St Jude Medical/ Abbott	LPA1200M58cm TendrilMRI	99.2	99.0	98.9	98.8	98.6	98.6	98.6	97.6	NaN
St Jude Medical/ Abbott	1788T Tendril ST	97.3	96.5	95.9	95.6	95.6	95.6	95.6	95.6	95.6
St Jude Medical/ Abbott	1888TC Tendril ST	97.9	97.8	97.7	97.7	97.7	97.6	97.2	97.2	97.2
St Jude Medical/ Abbott	1688T Tendril SDX	97.1	96.5	96.2	95.9	95.4	95.0	95.0	94.4	94.1
St Jude Medical/ Abbott	1258T QuickFlex	98.1	97.7	97.6	97.5	97.2	96.8	96.7	96.5	96.5
St Jude Medical/ Abbott	1458Q Quartet MRI	98.2	97.7	97.5	97.2	97.2	97.2	97.2	97.2	97.2
St Jude Medical/ Abbott	1646T Isoflex	98.3	98.0	97.8	97.7	97.6	97.6	97.5	97.3	97.0
St Jude Medical/ Abbott	1948 Isoflex MRI	98.8	98.8	98.7	98.6	98.5	98.5	98.4	98.4	98.4
St Jude Medical/ Abbott	1999 Optisense	99.1	98.9	98.8	98.7	98.7	98.6	98.5	98.5	98.3
St Jude Medical/ Abbott	2088TC Tendril STS MRI	99.4	99.2	99.2	99.1	99.1	99.0	99.0	99.0	99.0
Vitatron	ICM09JB Crystalline	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Vitatron	ICL08 Crystalline	97.3	96.8	96.8	96.8	96.8	95.9	94.6	94.6	94.6
Vitatron	ICF09 Crystalline	97.4	97.2	97.2	97.0	96.8	96.6	96.3	96.3	95.7
Vitatron	IHP09B	98.0	97.8	97.8	97.8	97.8	97.8	97.8	97.8	97.8
Vitatron	ICF09B Crystalline	98.2	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0
Vitatron	ICM09B Crystalline	98.7	98.6	98.6	98.5	98.4	98.2	98.2	98.2	98.0
Vitatron	ICQ09B Crystalline	99.0	98.8	98.7	98.7	98.6	98.5	98.5	98.5	98.5

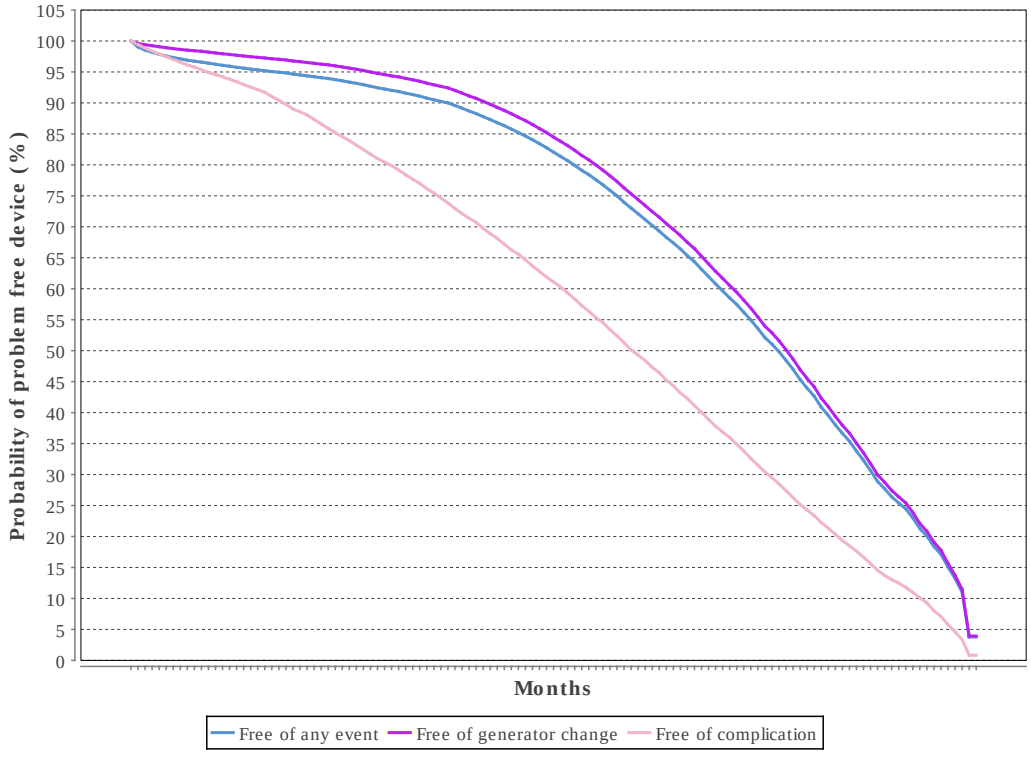
Based on all implants after 1990

Year	At risk	Survival probability %
1	119180	98.6
2	106991	91.0
3	92328	84.7
4	76343	78.7
5	62435	72.9
6	50304	67.5
7	39477	62.7
8	28857	58.1
9	18868	54.0
10	11255	50.8



Probablility of event free ICD-device

Year	At risk	Free of any event %	Free of generator change %	Free of complication %
1	31936	96.3	98.1	94.6
2	28595	94.5	96.7	88.6
3	24459	92.3	94.6	80.4
4	20140	88.7	91.1	71.4
5	15318	82.1	84.5	61.1
6	10383	72.1	74.4	49.3
7	6155	59.7	61.7	36.9
8	2888	43.9	45.5	24.3
9	903	26.4	27.4	13.1
10	35	3.8	3.9	0.8

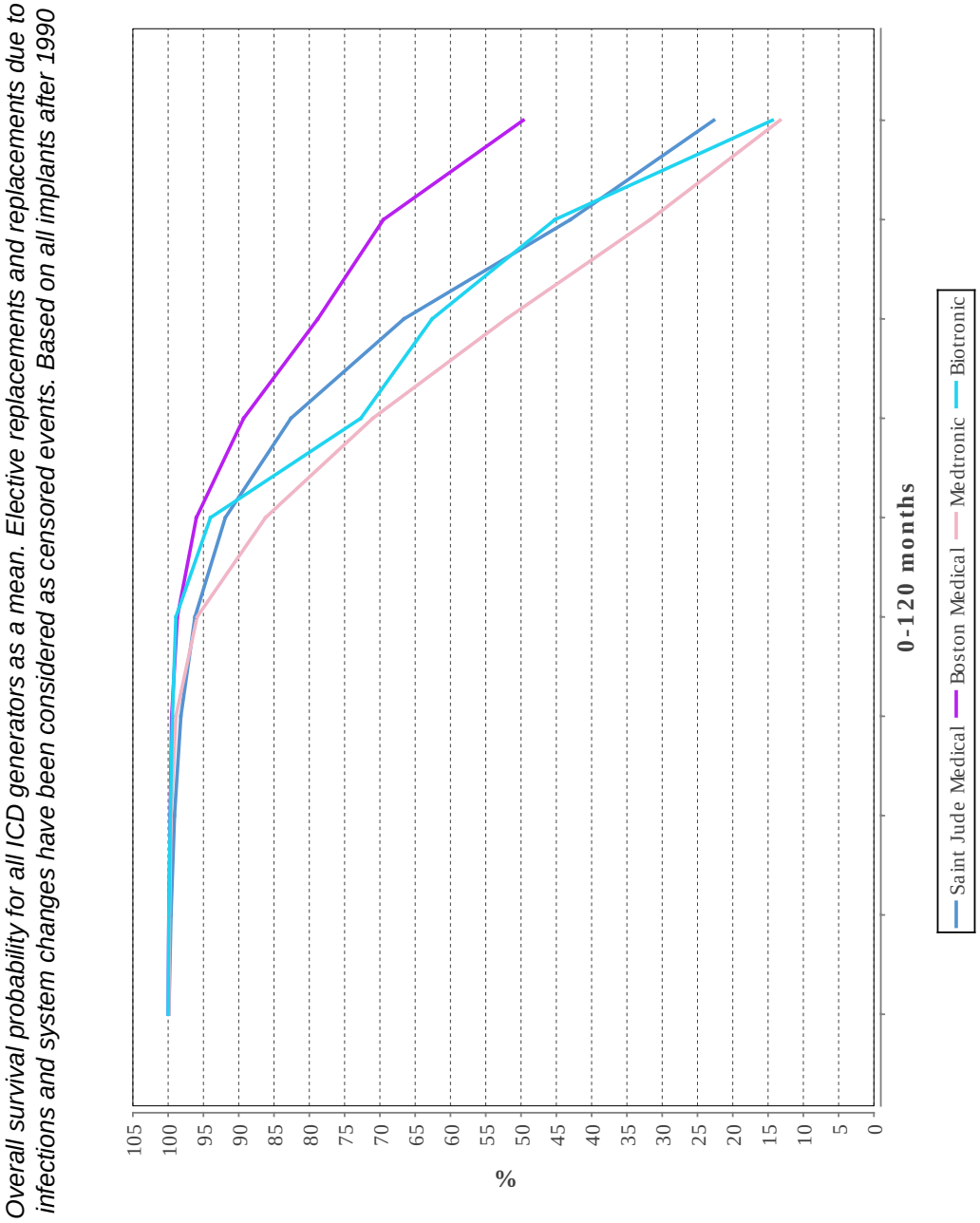


Year	At risk	Survival probability %
1	22212	99.9
2	20352	99.7
3	17717	99.4
4	14455	98.7
5	11237	96.5
6	8175	90.0
7	5277	78.0
8	2913	61.7
9	1261	41.4
10	392	21.7

Overall survival probability for all ICD generators as a mean. Elective replacements and replacements due to infections and system changes have been considered as censored events. Based on all implants after 2006

Year	Total		Biotronic		Boston Scientific		Medtronic		St Jude Medical	
	At risk	Surv. prob. %	At risk	Surv. prob. %	At risk	Surv. prob. %	At risk	Surv. prob. %	At risk	Surv. prob. %
1	22143	133.3	943	100.0	2415	100.0	9272	99.9	9513	99.9
2	20288	133.1	886	99.9	2230	99.9	8496	99.8	8676	99.6
3	17658	132.7	781	99.7	1903	99.7	7356	99.6	7618	99.1
4	14398	132.0	642	99.4	1523	99.5	6104	98.9	6129	98.2
5	11183	129.9	500	98.9	1180	98.7	4740	95.9	4763	96.2
6	8139	122.7	360	94.0	900	96.0	3339	86.2	3540	91.9
7	5265	105.2	218	72.7	686	89.3	1935	71.0	2426	82.6
8	2911	86.7	123	62.6	427	78.8	1009	52.1	1352	66.6
9	1261	63.1	52	45.2	243	69.5	423	31.7	543	43.0
10	392	33.4	9	14.4	125	49.7	111	13.3	147	22.7

Overall survival probability for all ICD generators as a mean. Elective replacements and replacements due to infections and system changes have been considered as censored events. Based on all implants after 1990



Models that have at least 50 implants and 10 explants

Manuf	Model	Year 1 %	Year 2 %	Year 3 %	Year 4 %	Year 5 %	Year 6 %	Year 7 %	Year 8 %	Year 9 %
Biotronik	Lumax 540 VR-T	100.0	100.0	100.0	100.0	97.2	97.2	97.2	93.0	35.4
Biotronik	Lumax 340 DR-T	100.0	100.0	98.3	96.6	79.7	10.3	5.1	5.1	NaN
Biotronik	Lumax 540 DR-T	100.0	98.8	98.8	97.4	97.4	95.7	90.2	42.7	0.0
Boston Scientific	F140 Energen	100.0	98.6	98.6	97.1	97.1	97.1	94.9	94.9	NaN
Boston Scientific	F142 Energen	100.0	100.0	100.0	100.0	98.5	95.0	95.0	95.0	NaN
Boston Scientific	F102 Teligen	100.0	100.0	100.0	100.0	100.0	96.6	81.7	77.8	67.0
Boston Scientific	F111 Teligen	100.0	100.0	100.0	100.0	97.0	93.7	88.4	88.4	88.4
Boston Scientific	P108 Cognis CRT	100.0	100.0	100.0	95.8	92.8	91.3	81.2	76.6	60.3
Boston Scientific	H247 Livian	100.0	100.0	100.0	100.0	93.8	71.6	34.6	28.5	0.0
Boston Scientific	P107 Cognis CRT	98.8	98.8	98.8	98.8	95.3	93.2	79.0	79.0	47.9
Boston Scientific	T167 Vitality 2	100.0	100.0	98.8	97.6	95.1	81.9	77.4	62.8	14.6
Boston Scientific	D176 Autogen EL	100.0	100.0	99.4	99.4	99.4	NaN	NaN	NaN	NaN
Boston Scientific	D174 Autogen EL	99.5	99.5	99.5	99.5	99.5	99.5	NaN	NaN	NaN
Boston Scientific	F110 Teligen	100.0	99.3	99.3	98.5	96.8	91.7	84.9	78.1	76.4
Medtronic	D354VRM Protecta	100.0	100.0	98.0	98.0	95.4	95.4	95.4	87.5	NaN
Medtronic	D354VRG Protecta	100.0	98.2	98.2	98.2	98.2	98.2	93.3	51.8	51.8
Medtronic	D264VRM Maximo II	100.0	100.0	100.0	100.0	100.0	97.0	87.3	87.3	NaN
Medtronic	DTBC2QQ Brava	100.0	98.8	97.5	96.1	92.0	88.6	44.3	NaN	NaN
Medtronic	D364DRM Protecta	100.0	100.0	100.0	100.0	98.1	92.0	45.3	0.0	NaN
Medtronic	DTBA2D1 Viva XT DF1/ IS1	100.0	98.6	96.7	94.8	88.1	75.7	75.7	NaN	NaN
Medtronic	D264TRM Maximo II	100.0	100.0	100.0	91.9	60.4	28.8	-Infinity	NaN	NaN
Medtronic	D154ATG EnTrust	100.0	100.0	100.0	98.2	86.1	56.1	18.3	1.1	NaN
Medtronic	D164VWC Virtuoso	100.0	100.0	98.0	96.0	91.4	88.8	79.8	50.8	30.1
Medtronic	DTBA2D4 Viva XT DF4/ IS1	100.0	100.0	100.0	98.8	98.8	95.9	80.3	NaN	NaN
Medtronic	7278 Maximo	100.0	100.0	100.0	94.5	85.2	66.6	10.3	Infinity	NaN
Medtronic	D354TRM Protecta	100.0	100.0	98.7	95.7	56.5	29.6	0.0	0.0	NaN
Medtronic	DTBC2D4 Brava	99.1	99.1	98.1	98.1	96.2	77.4	77.4	NaN	NaN
Medtronic	7304 Maximo	100.0	98.8	97.4	74.6	34.6	7.5	5.0	-Infinity	NaN

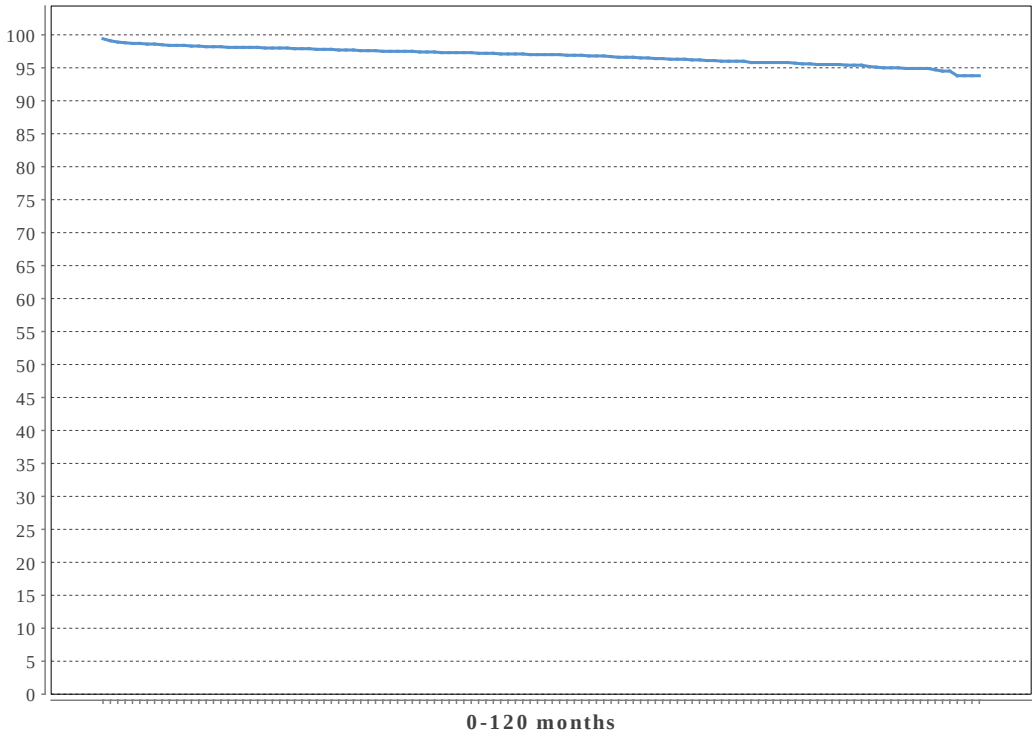
Manuf	Model	Year 1 %	Year 2 %	Year 3 %	Year 4 %	Year 5 %	Year 6 %	Year 7 %	Year 8 %	Year 9 %
Medtronic	DVBC3D1 Evera S VR	100.0	100.0	99.2	99.2	99.2	99.2	99.2	NaN	NaN
Medtronic	DTBA2QQ Viva XT DF4/ IS4	100.0	100.0	99.3	96.9	96.0	85.4	81.1	NaN	NaN
Medtronic	D354DRG Protecta	100.0	100.0	100.0	98.8	93.5	83.8	41.7	7.4	NaN
Medtronic	D264DRM Maximo II	100.0	100.0	100.0	100.0	97.8	87.2	56.8	11.7	NaN
Medtronic	D354DRM Protecta	100.0	100.0	100.0	100.0	98.5	89.4	62.0	-22.5	NaN
Medtronic	DTMC2D4 Compia MRI DF4 CRT-D	100.0	99.2	99.2	99.2	NaN	NaN	NaN	NaN	NaN
Medtronic	DVBC3D4 Evera S VR	100.0	100.0	100.0	100.0	100.0	100.0	100.0	NaN	NaN
Medtronic	D354TRG Protecta	100.0	99.3	94.3	85.0	55.7	26.4	15.5	15.5	15.5
Medtronic	7288 Intrinsic	100.0	98.9	97.6	97.6	88.8	61.2	17.2	NaN	NaN
Medtronic	7298 Sentry	100.0	99.1	93.9	68.8	31.7	4.9	0.8	NaN	NaN
Medtronic	D364VRG Protecta	99.5	99.5	99.5	98.2	96.8	96.8	91.7	83.3	56.1
Medtronic	DTBC2D1 Brava	100.0	100.0	98.8	97.7	93.2	82.8	NaN	NaN	NaN
Medtronic	C174AWK Concerto	99.5	98.9	97.7	91.0	64.5	38.9	20.1	9.7	0.0
Medtronic	DDBC3D1 Evera S DR DF1	100.0	99.4	98.7	98.7	98.7	95.9	95.9	NaN	NaN
Medtronic	D364TRG Protecta	100.0	99.5	96.9	86.1	59.8	28.8	12.8	11.1	11.1
Medtronic	DVFC3D4 Visia MRI AF S-DF4	100.0	100.0	100.0	100.0	NaN	NaN	NaN	NaN	NaN
Medtronic	DDBC3D4 Evera S DR DF4	99.5	99.5	99.5	99.1	98.5	96.9	96.9	NaN	NaN
Medtronic	D164AWG Virtuoso	100.0	98.7	98.7	96.6	88.3	76.0	61.6	29.1	2.1
Medtronic	7232Cx Maximo VR	100.0	100.0	98.9	98.4	97.1	95.8	87.0	53.0	14.5
Medtronic	D284VRC Maximo II	99.7	99.7	99.3	99.3	98.1	96.2	91.2	73.6	33.8
Medtronic	D364DRG Protecta	99.5	99.5	99.0	98.1	94.9	76.4	49.5	28.3	15.4
Medtronic	D284TRK Maximo II	99.8	99.8	98.8	87.0	54.0	14.0	8.2	3.9	2.9
Medtronic	D284DRG Maximo II	99.8	99.8	99.4	98.7	93.9	78.2	41.9	13.8	-1.0
Medtronic	DDMC3D4 Evera S MRI DR DF4	99.6	99.6	99.6	99.6	98.9	98.9	NaN	NaN	NaN

Manuf	Model	Year 1 %	Year 2 %	Year 3 %	Year 4 %	Year 5 %	Year 6 %	Year 7 %	Year 8 %	Year 9 %
St Jude Medical/ Abbott	1233-40 Fortify	100.0	100.0	97.7	97.7	97.7	95.0	95.0	91.2	85.5
St Jude Medical/ Abbott	3367-40C Quadra Assura	100.0	94.5	92.3	89.9	87.1	87.1	87.1	NaN	NaN
St Jude Medical/ Abbott	1211-36 Current VR	100.0	100.0	100.0	100.0	100.0	100.0	96.3	83.9	0.0
St Jude Medical/ Abbott	3251-40 Unify Quadra	98.6	98.6	96.8	92.8	82.0	72.8	58.8	43.3	NaN
St Jude Medical/ Abbott	2277-36Q Ellipse	100.0	98.7	98.7	98.7	96.9	95.0	86.3	86.3	NaN
St Jude Medical/ Abbott	2233-40 Fortify DR	100.0	100.0	100.0	97.3	94.4	89.8	86.7	84.4	80.0
St Jude Medical/ Abbott	V-341 Atlas + DR	98.5	98.5	98.5	88.1	65.0	39.8	35.8	10.6	0.0
St Jude Medical/ Abbott	V-193 Atlas + VR	98.0	98.0	98.0	95.6	95.6	95.6	89.6	75.7	17.8
St Jude Medical/ Abbott	1359-40C Fortify Assura	100.0	100.0	97.7	95.8	91.3	91.3	NaN	NaN	NaN
St Jude Medical/ Abbott	1233-40Q Fortify	100.0	100.0	99.1	99.1	96.9	93.5	87.1	87.1	84.7
St Jude Medical/ Abbott	3239-40Q Promote	99.3	99.3	99.3	99.3	98.2	95.0	92.3	68.0	34.0
St Jude Medical/ Abbott	1211-36Q Current VR	99.2	99.2	99.2	99.2	96.9	95.6	93.6	86.6	74.2
St Jude Medical/ Abbott	3235-40Q Unify	100.0	100.0	100.0	98.7	93.4	81.7	64.9	41.5	29.6
St Jude Medical/ Abbott	V-168 Atlas 2 VR	100.0	100.0	100.0	97.4	94.7	88.3	76.6	28.6	NaN
St Jude Medical/ Abbott	2377-36C Ellipse DR	100.0	100.0	100.0	100.0	100.0	100.0	NaN	NaN	NaN
St Jude Medical/ Abbott	3215-36 Promote HF	99.2	98.4	98.4	94.1	90.6	66.3	11.6	2.0	1.0
St Jude Medical/ Abbott	3371- 40C Quadra Assura MP	99.4	99.4	98.2	98.2	98.2	98.2	NaN	NaN	NaN
St Jude Medical/ Abbott	3211-36 Promote	99.3	99.3	97.4	96.3	87.6	37.1	9.4	NaN	NaN
St Jude Medical/ Abbott	2211-36 Current + DR	99.3	99.3	98.4	98.4	98.4	88.3	65.2	23.2	0.0
St Jude Medical/ Abbott	1359-40QC Fortify Assura	100.0	98.8	98.8	98.8	93.7	93.7	NaN	NaN	NaN
St Jude Medical/ Abbott	V-243 Atlas + DR	100.0	100.0	100.0	98.7	97.2	92.6	73.6	42.1	0.0
St Jude Medical/ Abbott	3211-36Q Promote	99.4	99.4	99.4	97.1	91.0	63.4	19.2	0.0	NaN
St Jude Medical/ Abbott	1207-36 Current VR	100.0	100.0	99.2	96.7	95.0	94.0	92.9	83.0	52.4
St Jude Medical/ Abbott	2359-40C Fortify Assura	98.3	95.9	94.3	92.8	91.8	91.8	NaN	NaN	NaN

Manuf	Model	Year 1 %	Year 2 %	Year 3 %	Year 4 %	Year 5 %	Year 6 %	Year 7 %	Year 8 %	Year 9 %
St Jude Medical/ Abbott	3367-40QC Quadra Assura	100.0	98.2	94.5	93.4	91.2	88.0	NaN	NaN	NaN
St Jude Medical/ Abbott	3235-40 Unify	100.0	100.0	98.6	94.1	83.8	70.9	60.9	24.6	10.3
St Jude Medical/ Abbott	2233-40Q Fortify DR	99.6	99.1	98.6	95.4	93.0	86.6	83.3	81.7	72.5
St Jude Medical/ Abbott	V-367 Atlas II	99.5	98.2	94.8	83.2	54.0	29.9	14.2	0.5	0.5
St Jude Medical/ Abbott	3251-40Q Unify Quadra	99.6	97.4	96.2	94.6	91.1	87.7	72.6	37.0	37.0
St Jude Medical/ Abbott	3361-40QC Unify Assura	99.3	98.1	97.1	92.7	92.7	88.5	NaN	NaN	NaN
St Jude Medical/ Abbott	V-268 Atlas II	100.0	100.0	99.1	98.1	87.1	64.4	14.9	NaN	NaN
St Jude Medical/ Abbott	3361-40C Unify Assura	99.5	96.9	94.6	91.2	86.1	86.1	86.1	NaN	NaN
St Jude Medical/ Abbott	3213-36 Promote HF	99.6	99.3	98.0	96.7	86.3	57.6	19.8	8.2	2.5
St Jude Medical/ Abbott	2207-36 Current DR	99.6	99.6	99.6	96.7	94.9	90.7	79.6	35.4	0.0
St Jude Medical/ Abbott	2359-40QC Fortify Assura	99.8	99.5	98.4	95.0	93.9	93.0	NaN	NaN	NaN
St Jude Medical/ Abbott	2211-36Q Current + DR	100.0	100.0	99.7	99.7	98.3	94.5	86.1	43.9	10.4
St Jude Medical/ Abbott	1377-36QC Ellipse VR	100.0	100.0	99.7	99.7	99.7	99.7	NaN	NaN	NaN
St Jude Medical/ Abbott	2377-36QC Ellipse DR	99.6	99.5	99.5	99.2	99.2	99.2	NaN	NaN	NaN
St Jude Medical/ Abbott	3371-40QC Quadra Assura MP	99.6	99.4	98.7	97.5	96.1	96.1	NaN	NaN	NaN

Overall survival probability for all ICD leads as a mean. Elective replacements and replacements due to infections and system changes have been considered as censored events. Based on all implants after 1990

Year	At risk	Survival probabilty %
1	15003	99.4
2	13843	98.3
3	12387	98.0
4	10230	97.6
5	8240	97.3
6	6382	97.0
7	4644	96.6
8	3168	96.0
9	1912	95.6
10	868	95.0

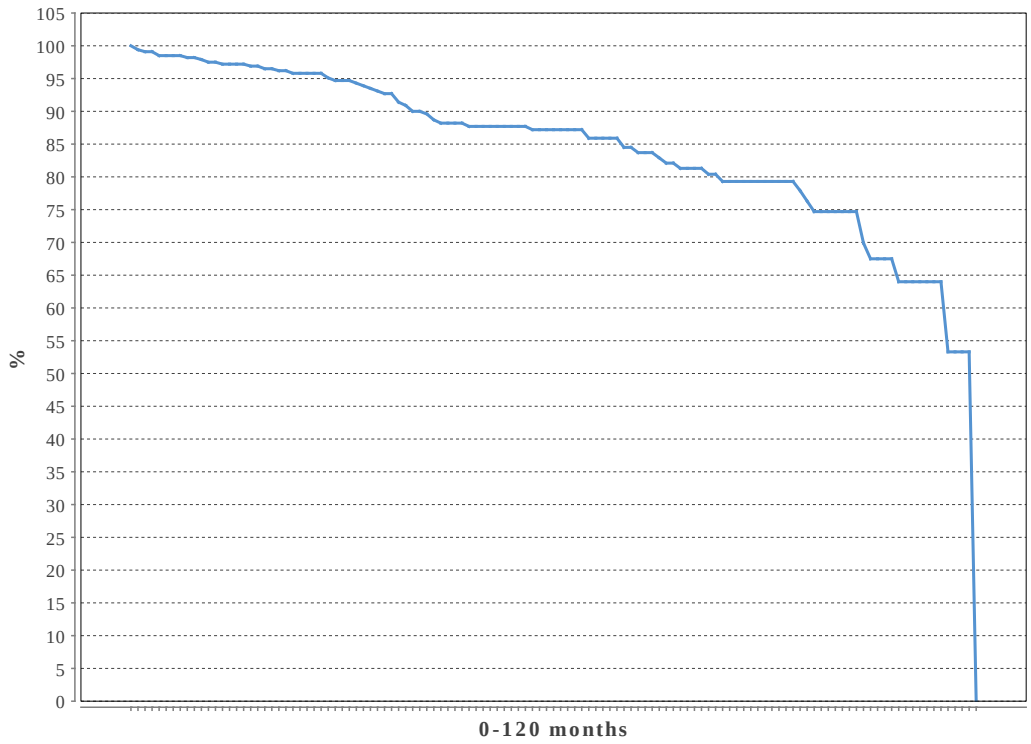


Models that have at least 50 implants and 20 explants

Manufacturer	Model	Years								
		1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	7 (%)	8 (%)	9 (%)
Biotronik	Linox Smart ProMRI S65	99.5	99.5	97.6	97.6	96.9	96.9	96.9	96.9	96.9
Biotronik	Linox Smart SD 65/18	97.0	96.3	94.2	94.2	92.6	92.6	91.6	91.6	91.6
Biotronik	Linox Smart S75	98.5	98.2	98.2	98.2	98.2	97.9	97.5	97.1	96.6
Boston Scientific	0174 Reliance	95.2	95.2	95.2	95.2	95.2	95.2	95.2	95.2	95.2
Boston Scientific	0292 Reliance	99.6	99.1	98.6	98.6	98.6	98.6	98.6	98.6	98.6
Boston Scientific	0692 Reliance	98.3	98.0	98.0	97.7	97.7	97.7	97.7	NaN	NaN
Medtronic	6948 Sprint Fidelis DF1	98.1	98.1	94.5	90.4	90.4	88.3	82.8	74.1	66.7
Medtronic	6944 Sprint DF1	97.8	97.2	96.6	96.6	94.0	92.1	91.0	91.0	91.0
Medtronic	6949 Sprint Fidelis DF1	97.0	94.7	92.0	85.9	84.9	81.3	76.8	76.8	68.3
Medtronic	6935 Sprint Quattro S MRI DF1	99.4	99.4	99.4	99.2	98.8	98.5	98.2	98.2	98.2
Medtronic	6947M Sprint Quattro S MRI DF4	99.2	99.1	99.1	99.1	98.9	98.9	98.9	98.9	98.9
Medtronic	6947 Sprint Quattro S MRI DF1	99.0	98.9	98.4	98.2	98.0	98.0	97.6	97.1	97.1
Medtronic	6935M Sprint Quattro S MRI DF4	99.5	99.5	99.2	99.2	99.0	99.0	99.0	NaN	NaN
St Jude Medical/ Abbott	7041 Riata ST	97.6	97.6	97.6	97.6	86.1	86.1	86.1	68.9	68.9
St Jude Medical/ Abbott	1571 Riata	96.7	96.7	96.7	91.8	91.8	91.8	91.8	91.8	91.8
St Jude Medical/ Abbott	1581 Riata	95.9	95.9	95.9	93.1	90.1	86.5	86.5	73.6	55.2
St Jude Medical/ Abbott	7172Q Durata	99.3	97.8	96.3	96.3	96.3	95.0	95.0	95.0	95.0
St Jude Medical/ Abbott	7001 Riata ST	94.5	94.5	94.5	94.5	94.5	91.1	86.3	86.3	86.3
St Jude Medical/ Abbott	7170 Durata	97.1	95.7	95.0	93.3	93.3	93.3	93.3	93.3	93.3
St Jude Medical/ Abbott	7122 Durata	99.1	98.7	97.7	97.7	97.4	97.0	96.5	95.1	94.1
St Jude Medical/ Abbott	7120Q Durata	98.4	97.9	97.7	97.6	97.4	96.8	96.1	96.1	96.1
St Jude Medical/ Abbott	7120 Durata	96.8	96.3	96.2	95.7	95.5	95.3	94.9	94.6	94.6
St Jude Medical/ Abbott	LDA210Q Optisure DF4	97.6	97.5	97.4	97.2	97.2	97.2	NaN	NaN	NaN
St Jude Medical/ Abbott	7122Q Durata	98.1	97.8	97.5	97.4	97.4	97.3	97.0	97.0	97.0

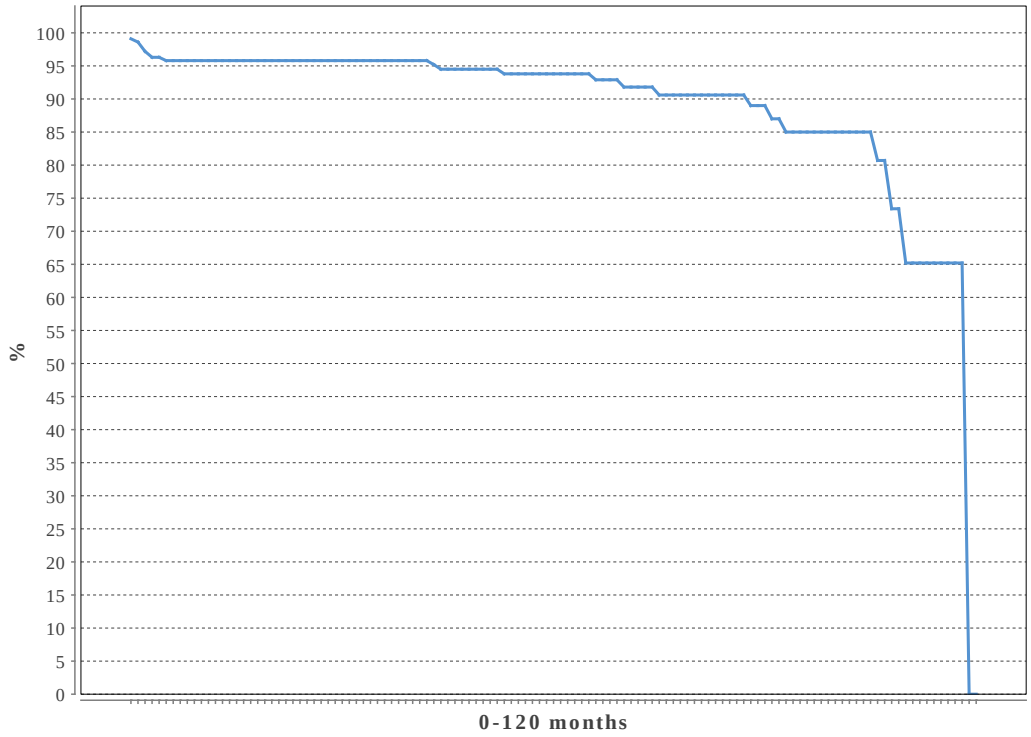
Survival probability for ICD lead Medtronic Sprint Fidelis. Elective replacement and replacements due to infections and system changes have been considered as censored events.

Year	At risk	Survival probability %
1	344	100.0
2	300	97.5
3	268	95.8
4	220	92.7
5	180	87.7
6	151	87.2
7	115	83.7
8	80	79.3
9	49	76.3
10	23	67.5



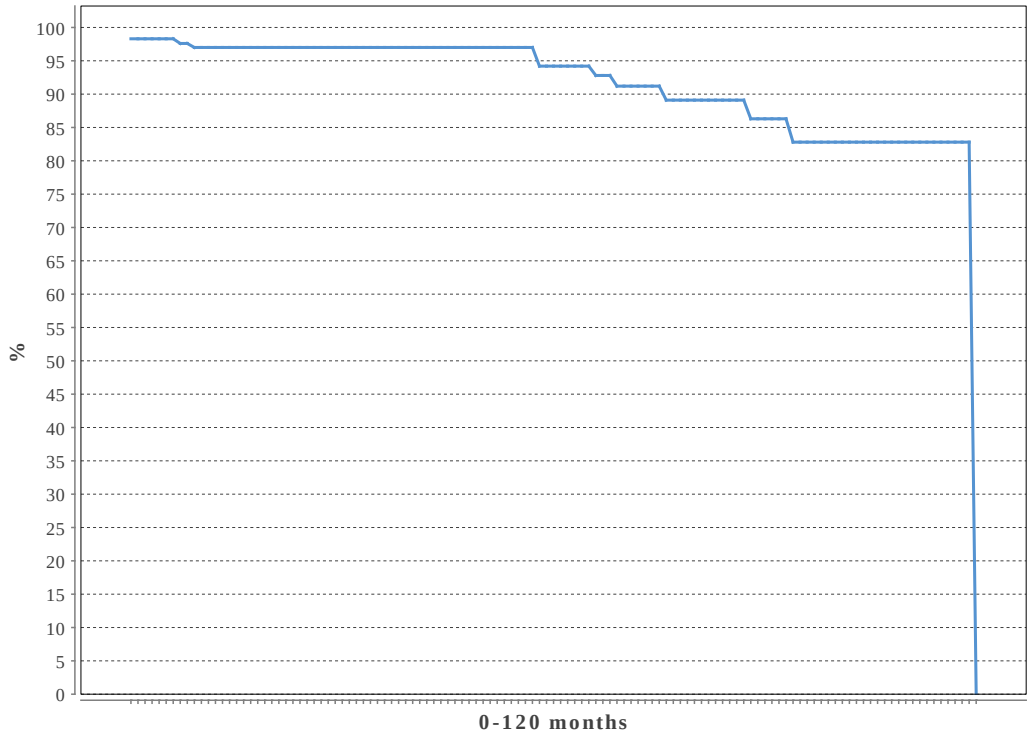
Survival probability for SJM lead type 1561,1570,1571,1572,1580,1581,1582,1591. Elective replacement and replacements due to infections and system changes have been considered as censored events.

Year	At risk	Survival probability %
1	219	99.1
2	193	95.8
3	176	95.8
4	158	95.8
5	138	94.5
6	114	93.8
7	80	91.8
8	60	90.6
9	39	85.0
10	11	73.4



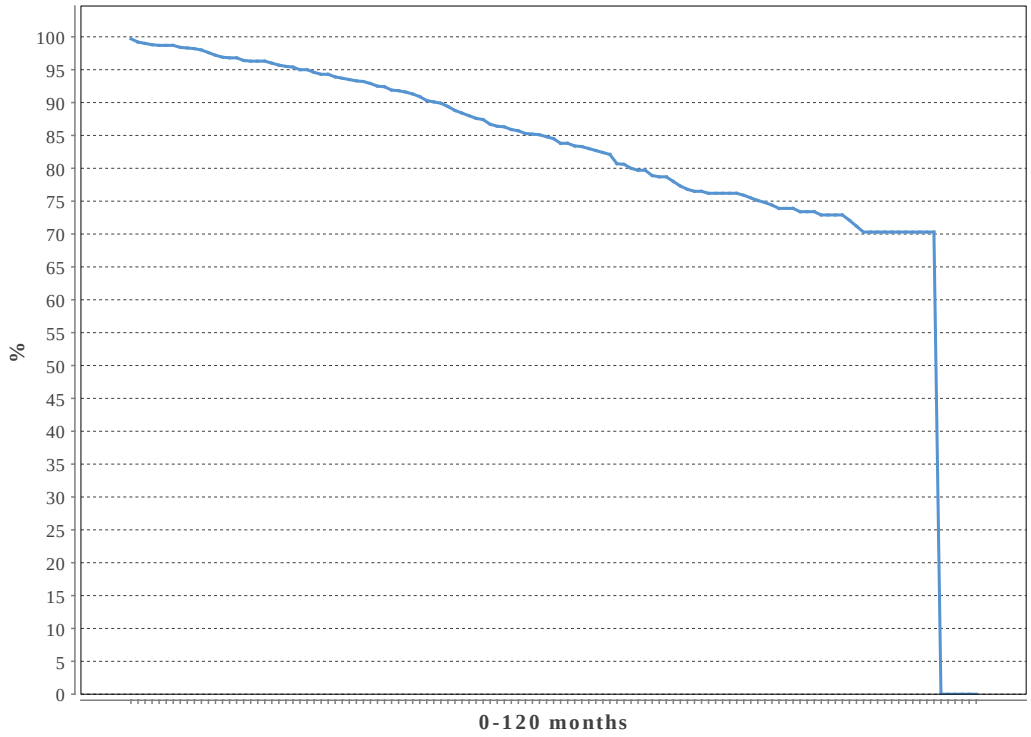
Survival probability for SJM lead type 7000,7001,7002,7040,7041,7042. Elective replacement and replacements due to infections and system changes have been considered as censored events.

Year	At risk	Survival probability %
1	175	98.3
2	139	97.0
3	127	97.0
4	113	97.0
5	91	97.0
6	69	94.2
7	53	91.2
8	38	89.1
9	22	82.8
10	12	82.8



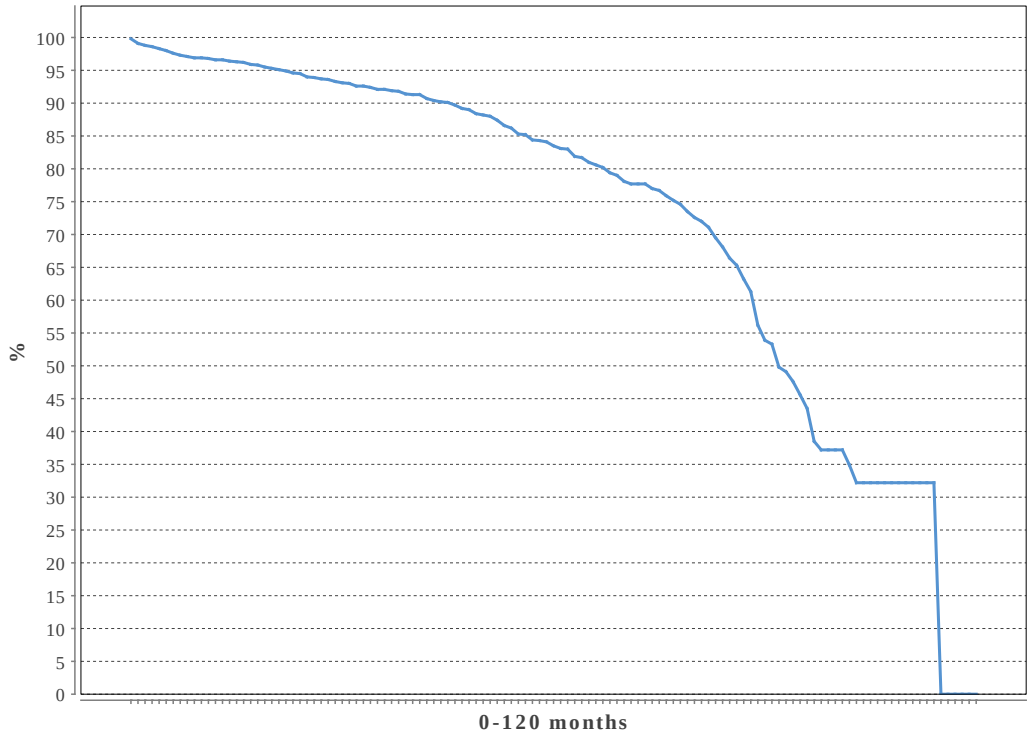
Survival probability for SJM ICD Fortify. Elective replacement and replacements due to infections and system changes have been considered as censored events.

Year	At risk	Survival probability %
1	1818	99.7
2	1668	97.2
3	1501	95.0
4	1278	92.4
5	955	88.0
6	686	84.5
7	441	79.7
8	251	76.2
9	141	73.4
10	41	70.3



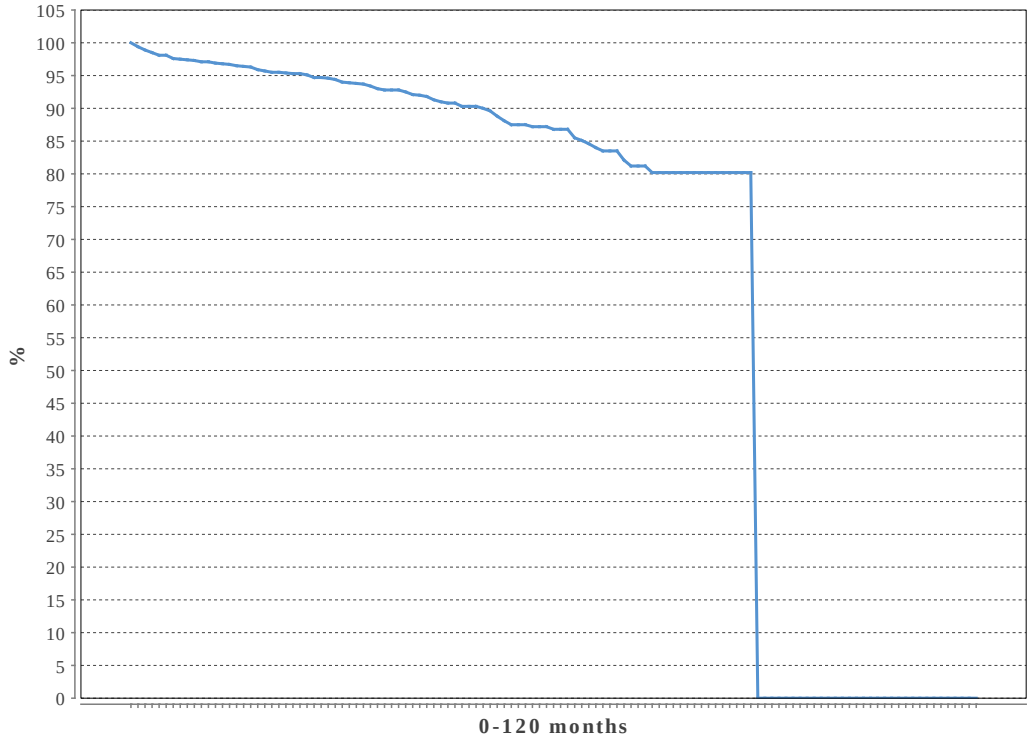
Survival probability for SJM ICD Unify. Elective replacement and replacements due to infections and system changes have been considered as censored events.

Year	At risk	Survival probability %
1	1663	99.8
2	1460	96.6
3	1263	94.5
4	1034	92.1
5	781	89.0
6	522	83.5
7	351	77.7
8	208	68.1
9	43	43.5
10	7	32.2



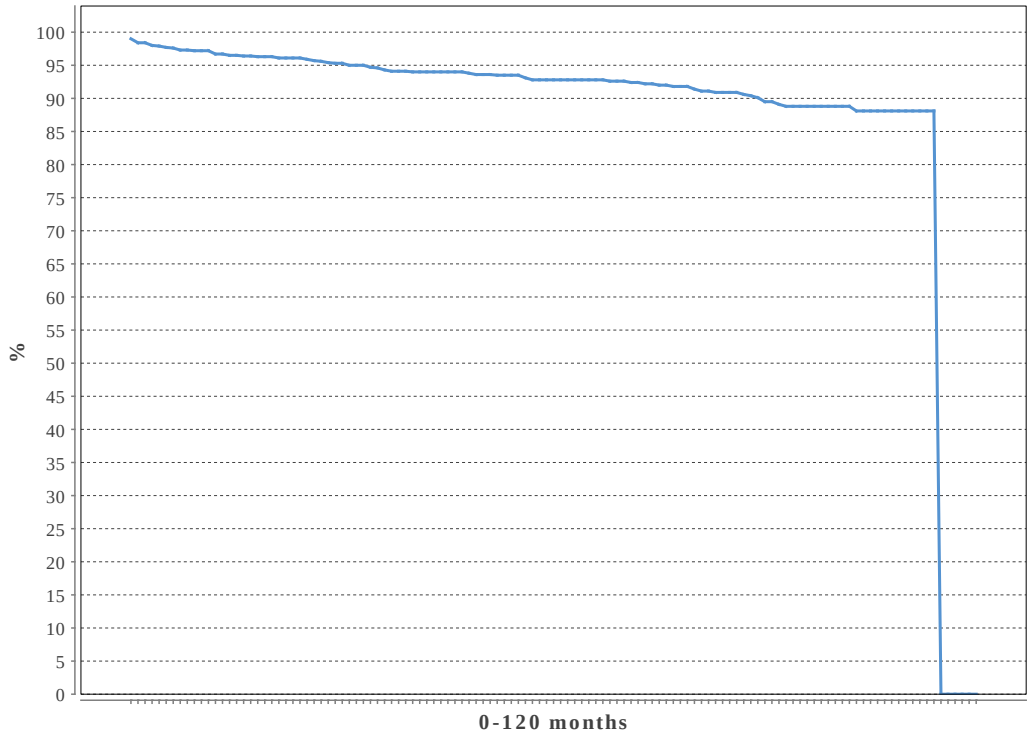
Survival probability for SJM ICD Quadra. Elective replacement and replacements due to infections and system changes have been considered as censored events.

Year	At risk	Survival probability %
1	1549	100.0
2	1349	96.9
3	1107	95.3
4	765	92.8
5	458	90.3
6	241	86.8
7	97	81.2
8	19	80.2
9	0	0.0
10	0	0.0



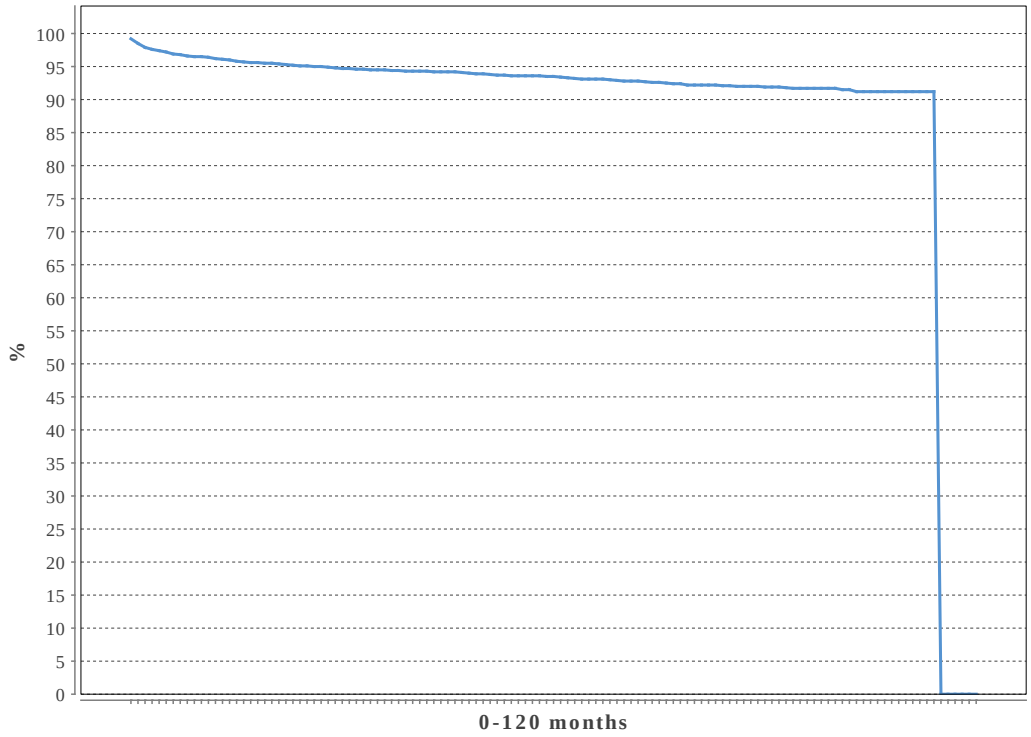
Survival probability for Biotronic ICD Linox. Elective replacement and replacements due to infections and system changes have been considered as censored events.

Year	At risk	Survival probability %
1	797	99.0
2	729	96.7
3	692	96.1
4	632	94.3
5	596	93.8
6	541	92.8
7	473	92.4
8	373	90.9
9	220	88.8
10	79	88.1



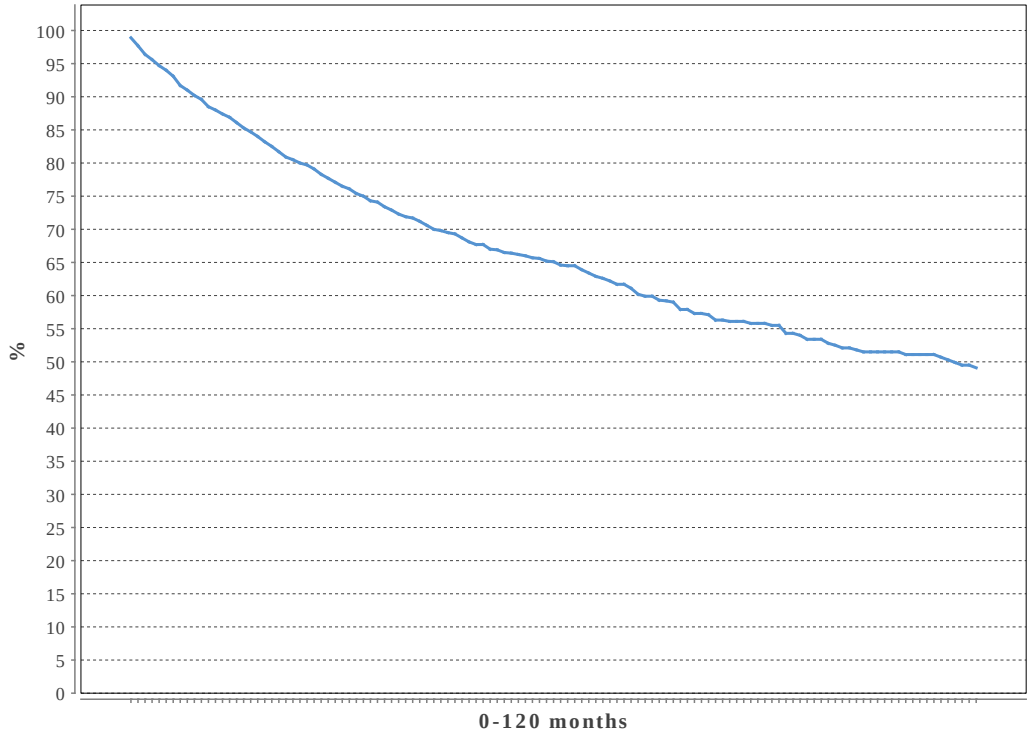
Survival probability for SJM ICDLEAD Durata. Elective replacement and replacements due to infections and system changes have been considered as censored events.

Year	At risk	Survival probability %
1	5403	99.2
2	4907	96.2
3	4455	95.1
4	3861	94.5
5	3271	94.0
6	2533	93.5
7	1883	92.8
8	1205	92.1
9	666	91.7
10	213	91.2



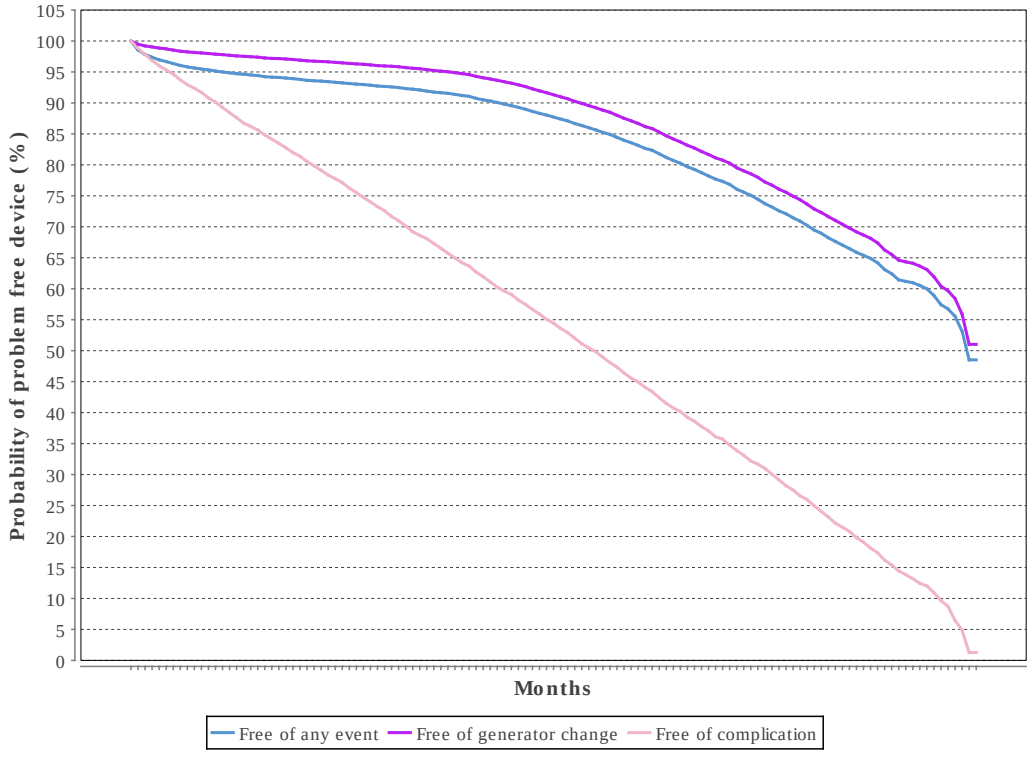
Based on all implants after 1990

Year	At risk	Survival probability %
1	1982	98.9
2	1679	88.0
3	1462	80.0
4	1177	73.4
5	863	68.1
6	574	65.1
7	366	60.2
8	233	56.3
9	175	53.4
10	146	51.5



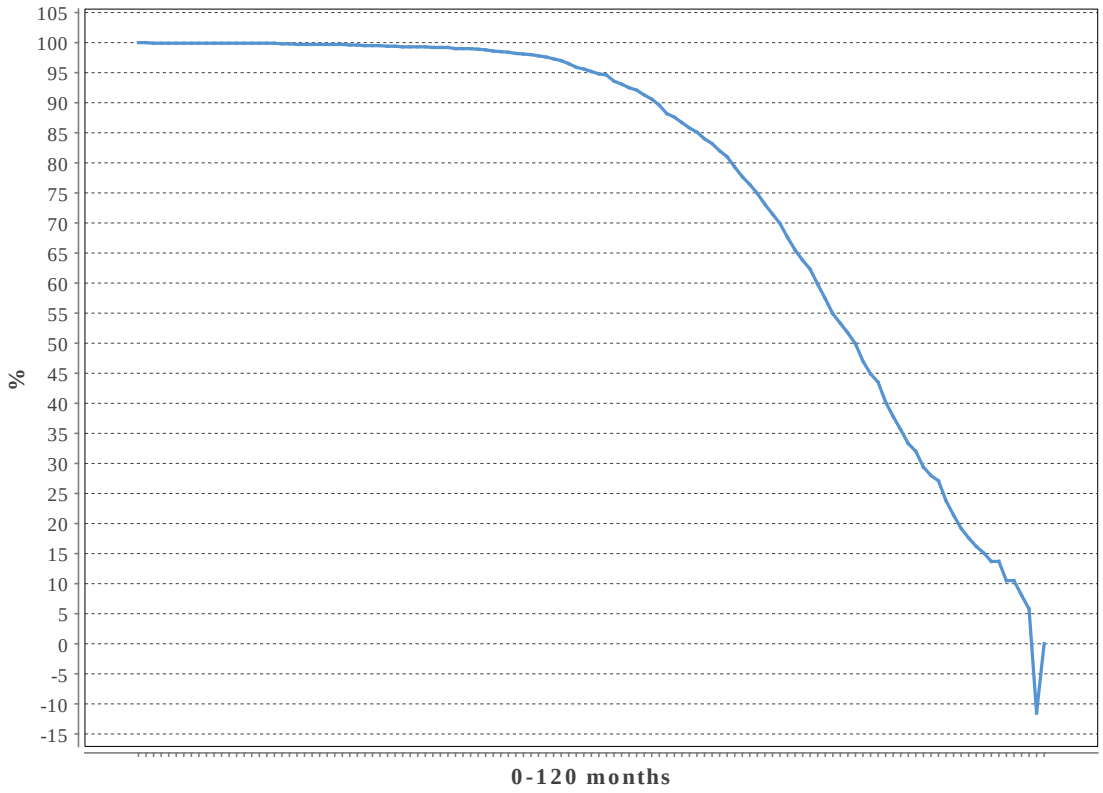
Probablility of event free CRT-device

Year	At risk	Free of any event %	Free of generator change %	Free of complication %
1	46978	95.2	97.9	90.1
2	38414	93.8	96.9	81.4
3	31043	92.7	96.0	72.6
4	24244	91.1	94.6	63.7
5	18043	87.7	91.3	54.4
6	12504	83.1	86.7	44.9
7	7902	77.3	80.8	35.7
8	4290	70.2	73.6	25.9
9	1712	62.4	65.5	15.4
10	92	48.5	51.0	1.3



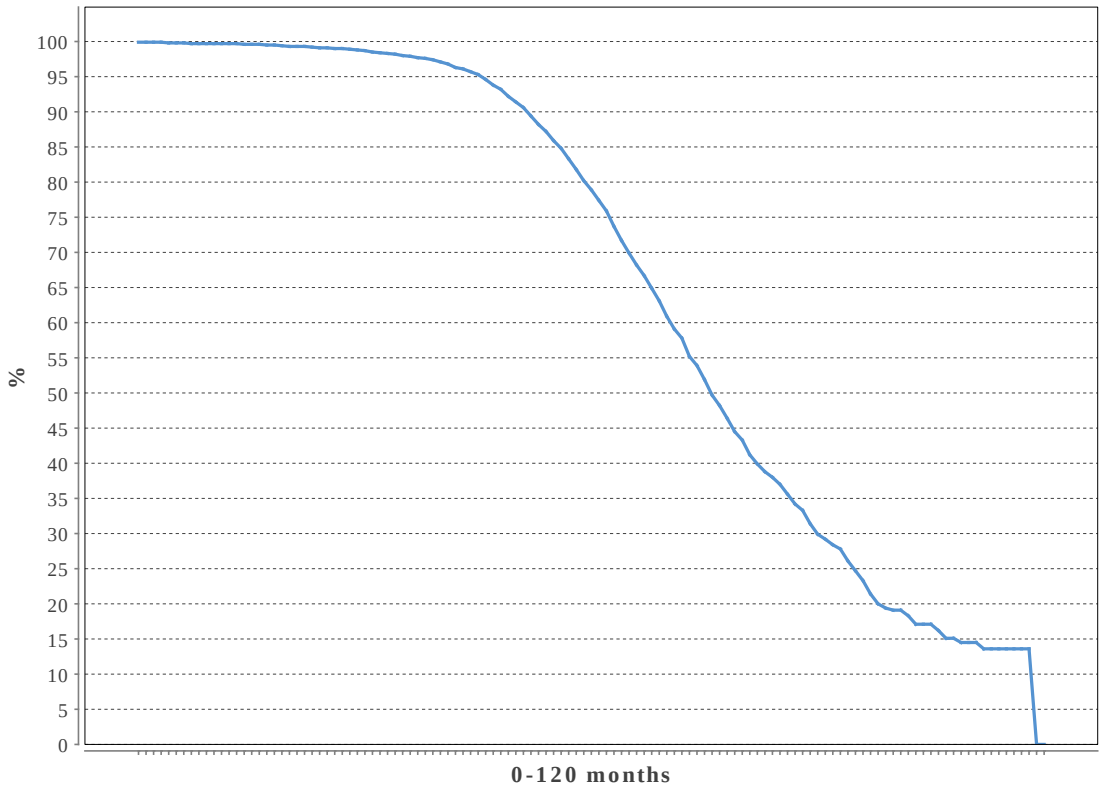
Overall CRT-P generator survival as a mean. Elective replacements and replacements due to infections and system changes have been considered as censored events. Based on all implants after 2006

Year	At risk	Survival probability %
1	6819	100.0
2	5924	99.9
3	4868	99.7
4	3781	99.3
5	2908	98.5
6	2096	95.2
7	1424	86.7
8	828	71.5
9	338	47.0
10	90	21.4



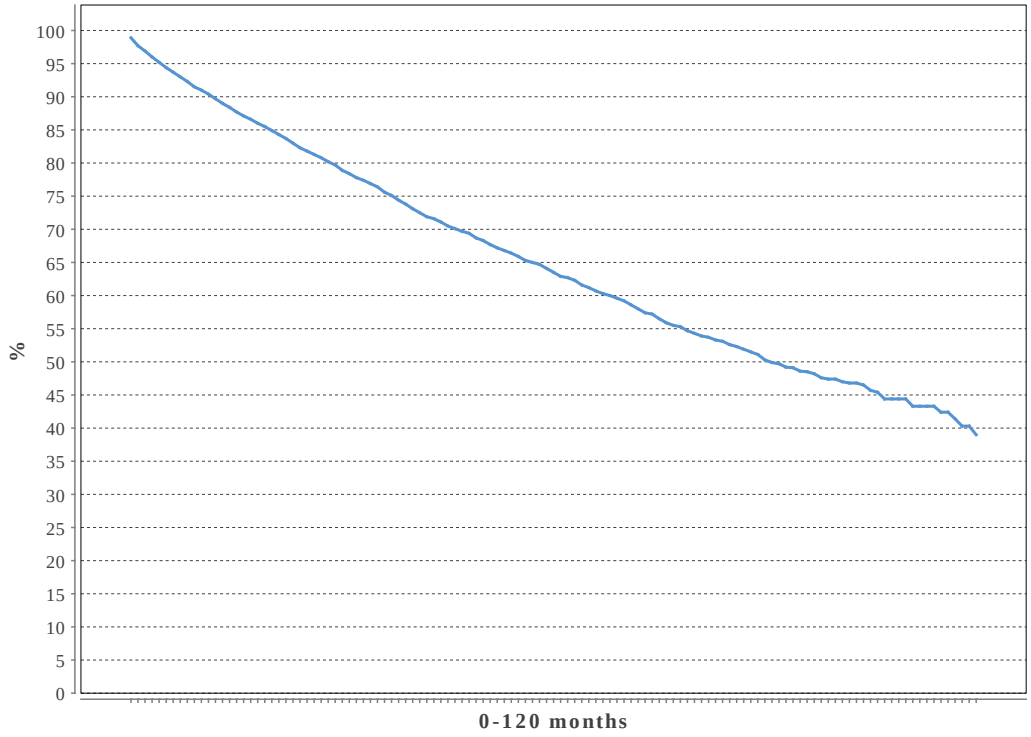
Overall CRT-D generator survival as a mean. Elective replacements and replacements due to infections and system changes have been considered as censored events. Based on all implants after 2006

Year	At risk	Survival probability %
1	7728	99.9
2	6934	99.7
3	5917	99.1
4	4658	97.9
5	3361	93.2
6	2073	78.9
7	1057	57.8
8	396	38.0
9	102	23.3
10	29	15.1



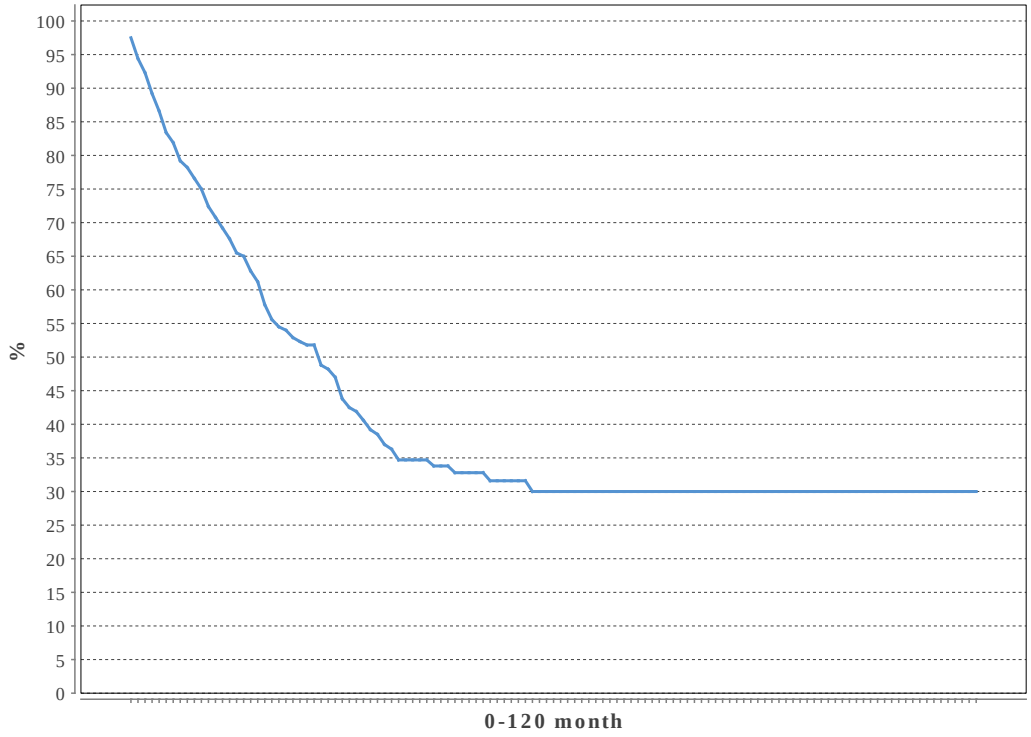
Overall patient survival probability for patients receiving CRT-P therapy. Based on all implants after 2006

Year	At risk	Survival probability %
1	6919	98.9
2	5989	89.7
3	4895	82.3
4	3820	75.6
5	2940	69.4
6	2122	63.5
7	1450	58.0
8	849	53.1
9	364	48.5
10	117	44.4



Overall patient survival probability for patients receiving CRT-D therapy. Based on all implants after 1990

Year	At risk	Survival probability %
1	200	97.5
2	138	70.8
3	97	52.3
4	54	37.0
5	32	32.8
6	18	30.0
7	15	30.0
8	14	30.0
9	13	30.0
10	13	30.0



QUALITY – DEAD WITHIN ONE YEAR FROM IMPLANT

Ratio of patients being dead one year after implantation

Type	Implants in 2019	Death within year	%
PM	10215	929	9.1
ICD	2424	109	4.5
CRT-P	647	57	8.8
CRT-D	613	35	5.7

Intervention ratio (primary/correction)

Region	Hospital	Type	Count
Norra Sverige	Norrlands Universitetssjukhus	PFE	249
	Norrlands Universitetssjukhus	PFG	64
	Örnsköldsviks sjukhus	PFE	83
	Örnsköldsviks sjukhus	PFG	11
	Östersunds sjukhus	PFE	179
	Östersunds sjukhus	PFG	29
	Skellefteå lasarett	PFE	75
	Skellefteå lasarett	PFG	7
	Sollefteå sjukhus	PFE	26
	Sunderby sjukhus	PFE	297
	Sunderby sjukhus	PFG	85
	Sundsvalls sjukhus	PFE	286
	Sundsvalls sjukhus	PFG	62
Södra Sverige	Blekingesjukhuset	PFE	193
	Blekingesjukhuset	PFG	70
	Centrallasarettet Växjö	PFE	169
	Centrallasarettet Växjö	PFG	41
	Centralsjukhuset Kristianstad	PFE	351
	Helsingborgs lasarett	PFE	336
	Helsingborgs lasarett	PFG	17
	Länssjukhuset Halmstad	PFE	162
	Länssjukhuset Halmstad	PFG	3
	Skånes universitetssjukhus, Lund	PFE	495
	Skånes universitetssjukhus, Lund	PFG	365
	Skånes universitetssjukhus, Malmö	PFE	275
	Skånes universitetssjukhus, Malmö	PFG	12
	Varbergs sjukhus	PFE	189
	Varbergs sjukhus	PFG	96
Stockholm/Gotland	Danderyds sjukhus	PFE	656
	Danderyds sjukhus	PFG	113
	Karolinska Huddinge	PFE	317
	Karolinska Huddinge	PFG	73
	Karolinska Solna	PFE	357
	Karolinska Solna	PFG	163
	Södersjukhuset	PFE	414
	Södersjukhuset	PFG	83
	St Görans sjukhus	PFE	413
	St Görans sjukhus	PFG	65
	Visby lasarett	PFE	48
	Visby lasarett	PFG	5
Sydöstra Sverige	Länssjukhuset Kalmar	PFE	121
	Länssjukhuset Kalmar	PFG	78
	Länssjukhuset Ryhov	PFE	314
	Länssjukhuset Ryhov	PFG	56
	Linköpings universitetssjukhus	PFE	529
	Linköpings universitetssjukhus	PFG	134
	Oskarshamns sjukhus	PFE	12
	Västerviks sjukhus	PFE	75
Uppsala/Örebro	Akademiska sjukhuset	PFE	433
	Akademiska sjukhuset	PFG	87

Region	Hospital	Type	Count
	Arvika sjukhus	PFE	9
	Centralsjukhuset Karlstad	PFE	245
	Centralsjukhuset Karlstad	PFG	63
	Centralsjukhuset Västerås	PFE	210
	Centralsjukhuset Västerås	PFG	53
	Falu lasarett	PFE	317
	Falu lasarett	PFG	75
	Gävle sjukhus	PFE	323
	Gävle sjukhus	PFG	79
	Hudiksvalls sjukhus	PFE	92
	Hudiksvalls sjukhus	PFG	10
	Mälarsjukhuset	PFE	236
	Mälarsjukhuset	PFG	56
	Torsby sjukhus	PFE	52
	Universitetssjukhuset Örebro	PFE	270
	Universitetssjukhuset Örebro	PFG	79
Utland	Ålands centralsjukhus	PFE	50
	Ålands centralsjukhus	PFG	7
	Utland	PFE	16
	Utland	PFG	3
Västra Sverige	Alingsås lasarett	PFE	99
	Drottning Silvias Bus	PFE	16
	Kungälvs sjukhus	PFE	132
	Sahlgrenska universitetssjukhuset	PFE	635
	Sahlgrenska universitetssjukhuset	PFG	132
	Sahlgrenska universitetssjukhuset /Östra	PFE	118
	Skaraborgs sjukhus Skövde	PFE	269
	Skaraborgs sjukhus Skövde	PFG	43
	Södra Älvsborgs sjukhus	PFE	239
	Södra Älvsborgs sjukhus	PFG	35
	Trollhättan, NÄL	PFE	362
	Trollhättan, NÄL	PFG	54