

ANNUAL STATISTICAL REPORT 2025



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Foreword

We are proud to present the annual report for 2025 regarding CIED usage in Sweden.

We have over the last years focused on longevity of devices, leads and complications as well as the general usage of CIED in Sweden. We have also increased the data collected regarding lead extractions. The rapid adoption to new pacing methods, CSP, is also included in the report. So far we have limited data regarding long-term performance of these system but we will be monitoring this closely.

Complications are shown for each type of implantation for the country, for the region and hospital. There is also an ongoing discussion regarding concentration of therapy to fewer centers to improve outcomes by increasing the numbers of procedures per operator. To aid in this transformation we publish data on number of interventions for all individual implanters. We have seen some changes this year in the concentration of CRT procedures to fewer implanters.

Lead extractions are reported per hospital using the definition by ACC, the removal of a lead with an implant duration of > one year regardless of the method and leads of < than one year if tools are used. All hospitals performing lead extractions are now sending complete data. Lead extractions are in 2025 concentrated by a decision by the National Board of Welfare to four hospitals, Akademiska Sjukhuset Uppsala, Karolinska Sjukhuset in Stockholm, Skånes universitetssjukhus in Lund and Sahlgrenska Universitetssjukhuset in Göteborg.

The report contains data from all implanting hospitals and > 95-98% of all procedures are reported when validated against the Patient care registry from The National Board of Welfare, Socialstyrelsen, in an annual validation process. There is also an ongoing process of annual auditing at all implanting hospitals.

Fredrik Gadler
Manager Swedish National ICD and Pacemaker Registry

Implant rates

There are 71056 active pacemaker patients in Sweden at the end of 2025. As always there are regional differences with the highest implant rates in Blekinge, 1130 per million and the lowest in the regions of Stockholm and Västmanland, 693 and 636 per million. Both these regions have a lower average age in population.

The overall implant rate is the same as in 2024, 762 new implants per million. The Swedish population is the same as in 2024, 10,6 million and the total number of first implants increased in total to 8080 new pacemaker implants.

The number of implanting hospitals is the same as in the previous five years, 41 centers and the number of implants is 11 for the lowest, Sollefteå, and 595 for the highest volume center, Karolinska Hospital in Stockholm.

Age and gender distribution of pacemaker treatment

The average age for females receiving pacemaker treatment is 77 years and the same for males, 78 years and ten patients over 100 years of age received primary implants. There is a male predominance with 62% of the new implants going to male patients. There is no change in this distribution compared to previous years.

Pacemakers and leads

The manufacturer's shares of the market show only slight redistribution and all regions are bound by tenders for 1-3 years. Abbott has the largest market share with 47% and Medtronic with the brand Vitatron is in second place with 26% market share. Boston Scientific has 8% and Biotronik 19% market share. Right side pacemaker leads are now solely bipolar. Active fixation is used to 99% in the atrium and 99% in the ventricle. We now have active fixation LV leads and 35% of the LV leads were active fixation and all are quadripolar. Medtronic is the sole manufacturer with active fixation LV-leads. Quadripolar lead technology for CRT has rapidly increased and 92% of the LV leads are now quadripolar, an increase from 65% in 2016.

17743 new leads were implanted all together.

Only a small number of epicardial systems, 93 leads, are implanted in small children and patients without venous access and in some CRT patients. Venous access is almost equal between cephalic cut-down technique, 35%, and direct subclavian puncture 19% and 33% axillary puncture, often echo guided 35%, has increased as access route. The leadless pacemaker is not used in large numbers and Medtronic Micras and Abbot Aveir were implanted only in 89 patients in 2025

Pacemakers

All pacemakers implanted have RR capability and DDD-R is the most common subtype, 78%. CRT-P are used in small numbers, 6%, unchanged from previous years.

The rate of MRI safe systems increases rapidly, approximately all off the new systems implanted are MRI safe. The trend from the manufacturers to label older leads together with new pulse generators as MRI safe have 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 than females, 5% vs 2%. 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 occurs, especially in brady-paced patients with heart failure and 2017 a total of 221 patients were upgraded from normal brady pacing to CRT compared to 301 in 2025. Since the EHRA recommendation for upgrade has been strengthened the number should perhaps be higher. Whether or not it is increasing number of CSP implants resulting in less pacemaker induced cardiomyopathy, PIC, or not is still too early to say. In the registry only 178 patients are recorded as having CSP systems implanted in 2025 which is probably an underestimation.

The most common symptom is syncope followed closely by dizziness and dyspnea. ECG indications are 2025 as before mainly related to sinus node disease with AV conduction disorders being the most common cause for pacemaker implantation. Sinus node disease is more common as an indication in women than in men, 40 vs 22%.

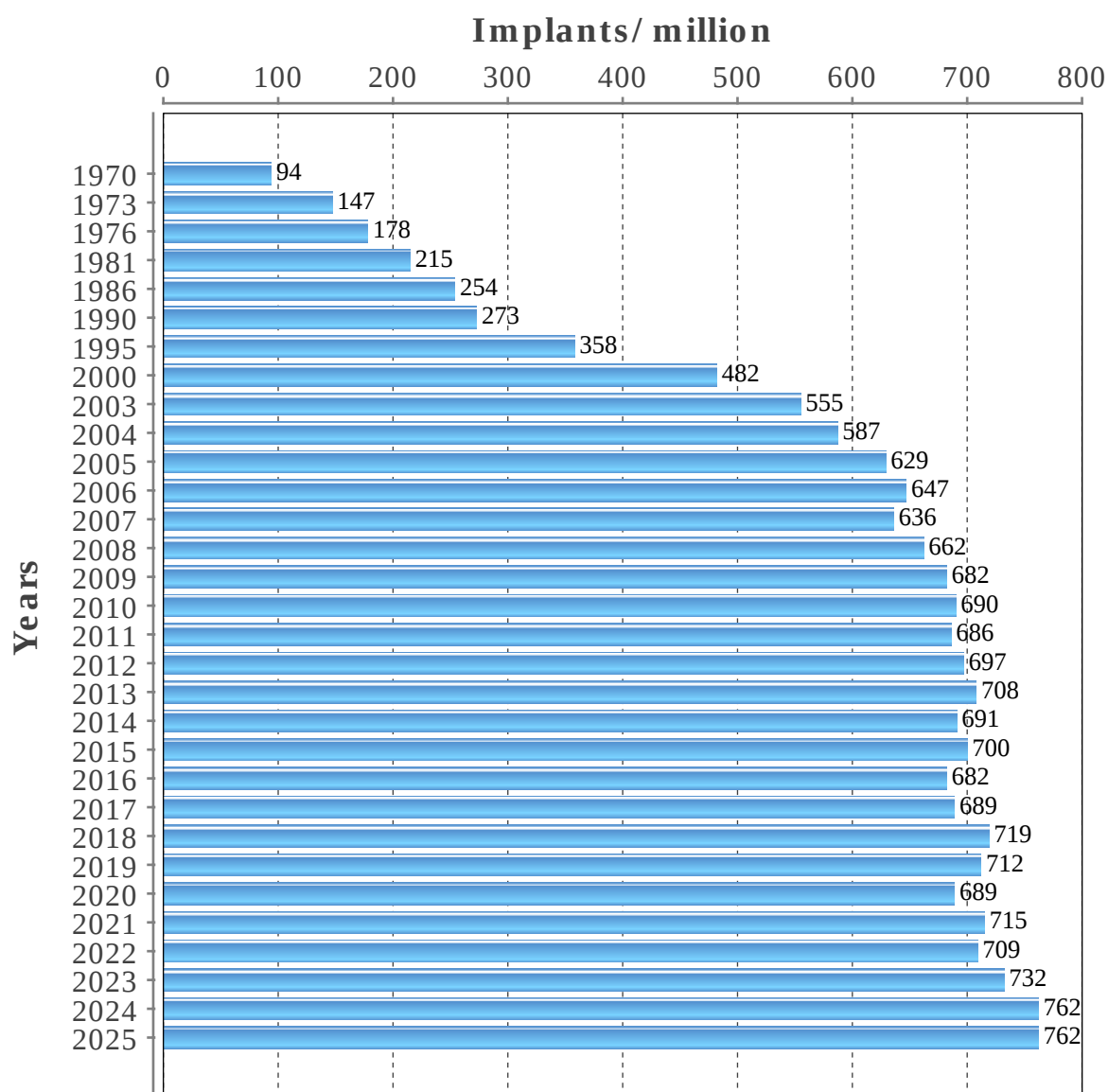
Smaller hospitals tend to use VVI-R pacing more often than larger hospitals for AV-block and SSS. Generators are used to ERI criteria are fulfilled in 49% of the cases and 0.7% exhibit premature EOL, technical failure or changed due to recall 3,5%, Boston Proponent and Abbot Assurity generators being the most common. These generators show an increasing rate of premature depletion.

Lead failures are uncommon and survival rates are very good with a 10-year survival of 98%.

Implanting organization

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 were made by the Swedish Cardiology Societies Arrhythmia Group in 2016 and has so far had little impact on the organization in hospital with low individual implant numbers although some hospitals have concentrated CRT to fewer implanters.

STATISTICS – PACEMAKER – HISTORICAL IMPLANTATION RATES

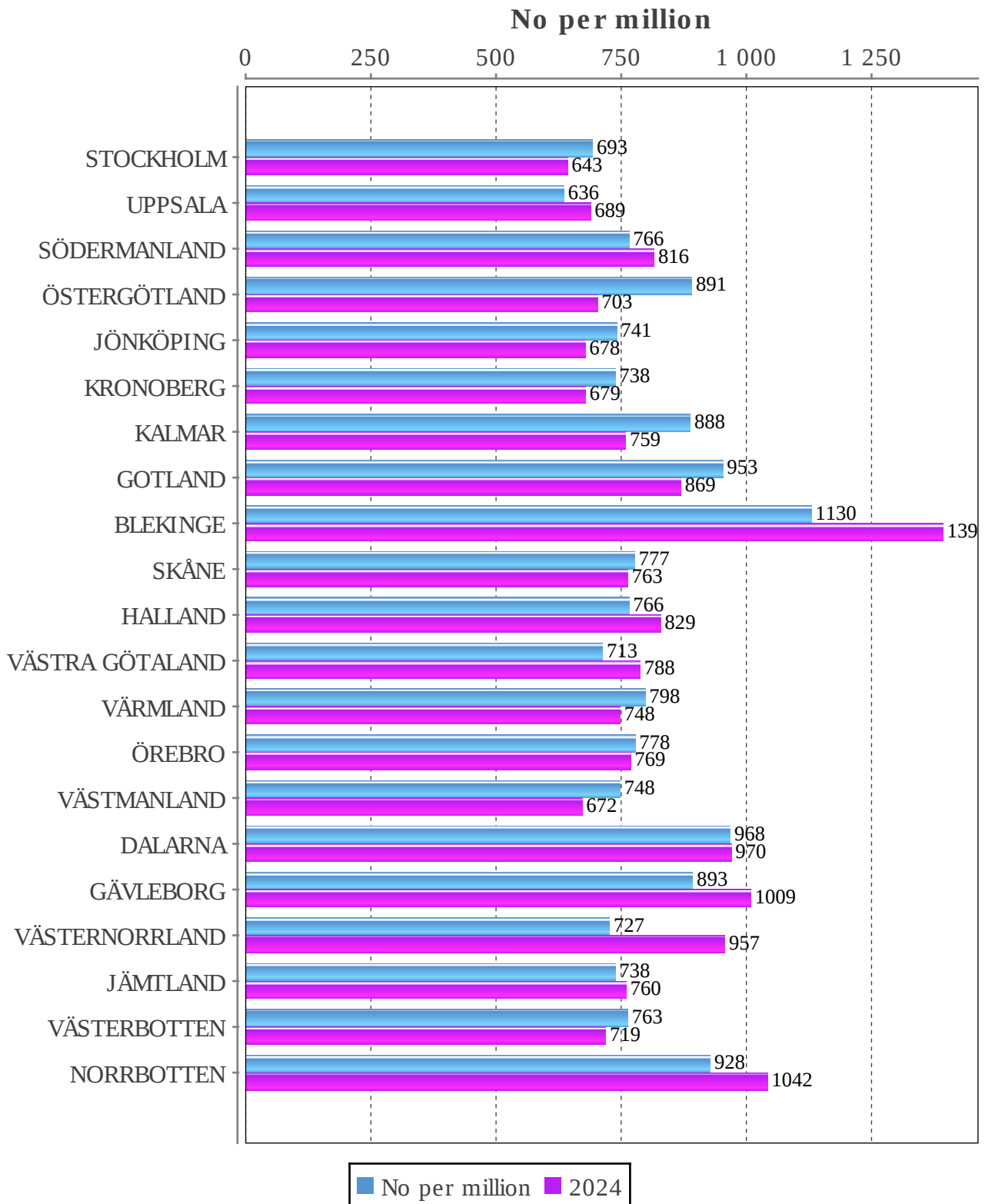


STATISTICS – PACEMAKER – IMPLANTS PER COUNTY

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	2486251	1722	693	14090
UPPSALA	410575	261	636	2667
SÖDERMANLAND	300440	230	766	2097
ÖSTERGÖTLAND	472529	421	891	3313
JÖNKÖPING	369722	274	741	2312
KRONOBERG	203121	150	738	1276
KALMAR	245477	218	888	1580
GOTLAND	60852	58	953	586
BLEKINGE	156616	177	1130	1531
SKÅNE	1433083	1114	777	9631
HALLAND	346090	265	766	2304
VÄSTRA GÖTALAND	1777803	1267	713	11765
VÄRMLAND	283037	226	798	1931
ÖREBRO	308357	240	778	1879
VÄSTMANLAND	280756	210	748	1672
DALARNA	286043	277	968	2399
GÄVLEBORG	283452	253	893	2525
VÄSTERNORRLAND	240640	175	727	2281
JÄMTLAND	132736	98	738	1107
VÄSTERBOTTEN	279028	213	763	1893
NORRBOTTEN	248927	231	928	2217
Total	10605535	8080	762	71056

STATISTICS – PACEMAKER – IMPLANTS PER COUNTY

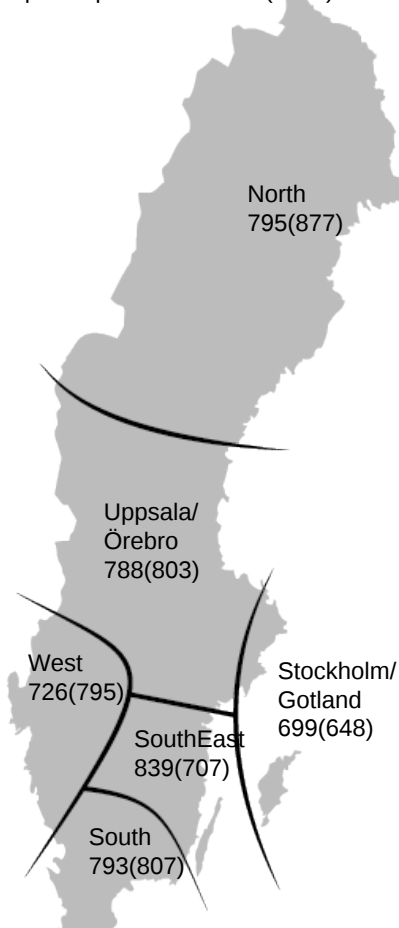


STATISTICS – PACEMAKER – IMPLANTS PER REGION

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	2547103	1780	699	14676
Uppsala/Örebro	2152660	1697	788	15170
South-East Sweden	1087728	913	839	7205
Southern Sweden	1935794	1536	793	13253
Western Sweden	1980916	1438	726	13254
Northern Sweden	901331	717	795	7498
Total	10605532	8081	762	71056

Implants per million 2025(2024)



STATISTICS – PACEMAKER – IMPLANTING HOSPITALS

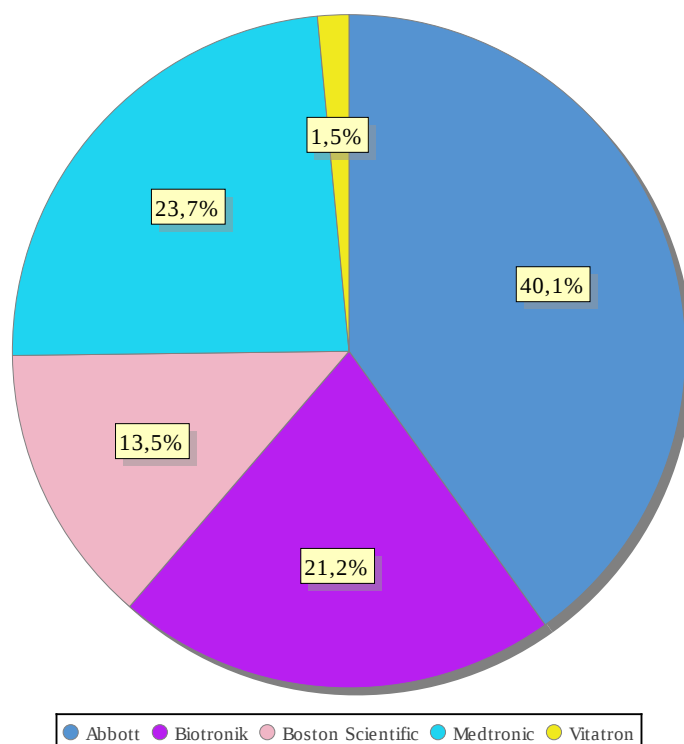
First implants per hospital

Region	Hospital	2025	2024
Northern Sweden	Norrlands Universitetssjukhus	214	185
	Skellefteå lasarett	34	31
	Sollefteå sjukhus	11	27
	Sunderby sjukhus	219	252
	Sundsvalls sjukhus	115	138
	Örnsköldsviks sjukhus	42	57
	Östersunds sjukhus	88	97
Southern Sweden	Blekingesjukhuset	180	228
	Centrallasarettet Växjö	126	132
	Centralsjukhuset Kristianstad	303	303
	Helsingborgs lasarett	213	216
	Länssjukhuset Halmstad	49	61
	Skånes universitetssjukhus, Lund	313	349
	Skånes universitetssjukhus, Malmö	316	256
	Varbergs sjukhus	214	209
South-East Sweden	Linköpings Universitetssjukhus	465	361
	Länssjukhuset Kalmar	166	140
	Länssjukhuset Ryhov	241	230
	Västerviks sjukhus	56	38
Stockholm/Gotland	Danderyds sjukhus	456	528
	Karolinska Universitetssjukhuset	595	502
	St Görans sjukhus	367	291
	Södersjukhuset	349	342
	Visby lasarett	29	22
Uppsala/Örebro	Akademiska sjukhuset	295	318
	Centralsjukhuset Karlstad	179	180
	Centralsjukhuset Västerås	197	180
	Falu lasarett	267	277
	Gävle sjukhus	184	205
	Hudiksvalls sjukhus	60	70
	Mälarsjukhuset	213	216
	Torsby sjukhus	32	24
Western Sweden	Universitetssjukhuset Örebro	263	243
	Alingsås lasarett	58	52
	Drottning Silvias Bus	8	10
	Kungälv's sjukhus	102	96
	Sahlgrenska Universitetssjukhuset	357	390
	Sahlgrenska Universitetssjukhuset /Östra	102	103
	Skaraborgs sjukhus Skövde	166	235
	Södra Älvsborgs sjukhus	217	254
	Trollhättan, NÄL	270	274

STATISTICS – PACEMAKER – PACEMAKERS PER MANUFACTURER

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

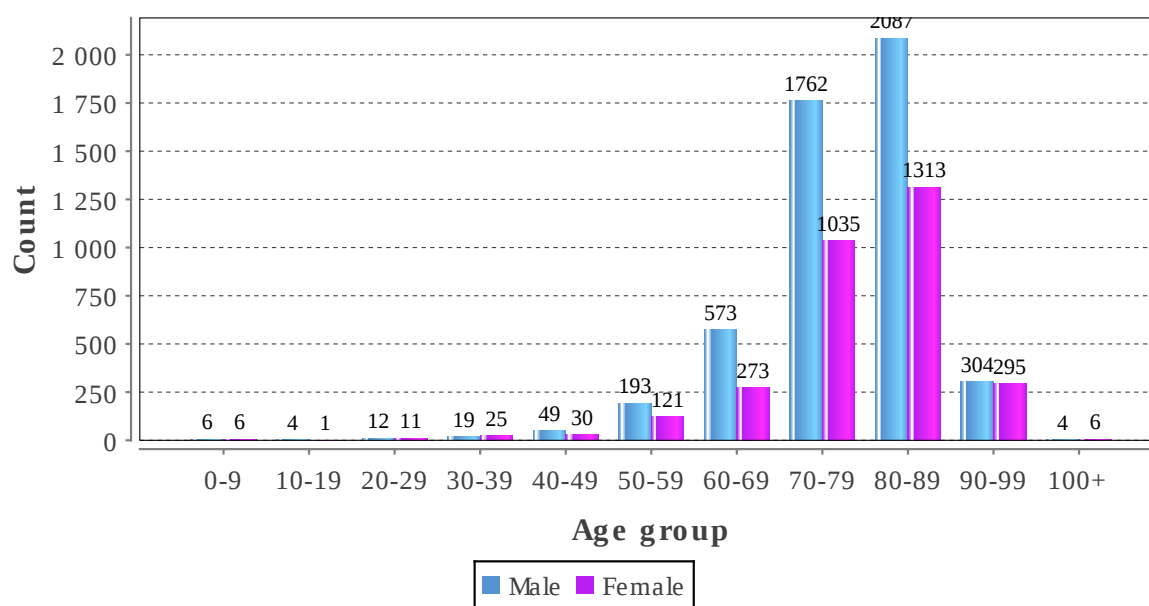
Manufacturer	2022 %	2023 %	2024 %	2025 %
Biotronik	20.9	20.1	20.5	21.2
Boston Scientific	10.9	12.9	13.6	13.5
Medtronic	14.0	20.4	23.4	23.7
Sorin/LivaNova	0.1	0.1	-	-
Abbott	47.4	42.4	39.6	40.1
Vitatron	6.7	4.0	2.9	1.5
N/A	-	-	-	-



STATISTICS – PACEMAKER – AGE DISTRIBUTION MALES/FEMALES

Age and gender distribution for new implants, total numbers

Age (years)	Total no	%	Male	Female
0-9	12	0.1	6	6
10-19	5	0.1	4	1
20-29	23	0.3	12	11
30-39	44	0.5	19	25
40-49	79	1.0	49	30
50-59	314	3.9	193	121
60-69	846	10.4	573	273
70-79	2797	34.4	1762	1035
80-89	3400	41.8	2087	1313
90-99	599	7.4	304	295
100+	10	0.1	4	6
Average age	78	0.0	77	78
Total number of implants: 8129				



STATISTICS – PACEMAKER – TYPE OF IMPLANTS

Ratio of new implants versus generator changes

	Total		Male		Female	
	no	%	no	%	no	%
First implant	8131	72.7	5015	61.7	3116	38.3
Replacement	3057	27.3	1814	59.3	1243	40.7
Total	11188	100.0	6829	61.0	4359	39.0

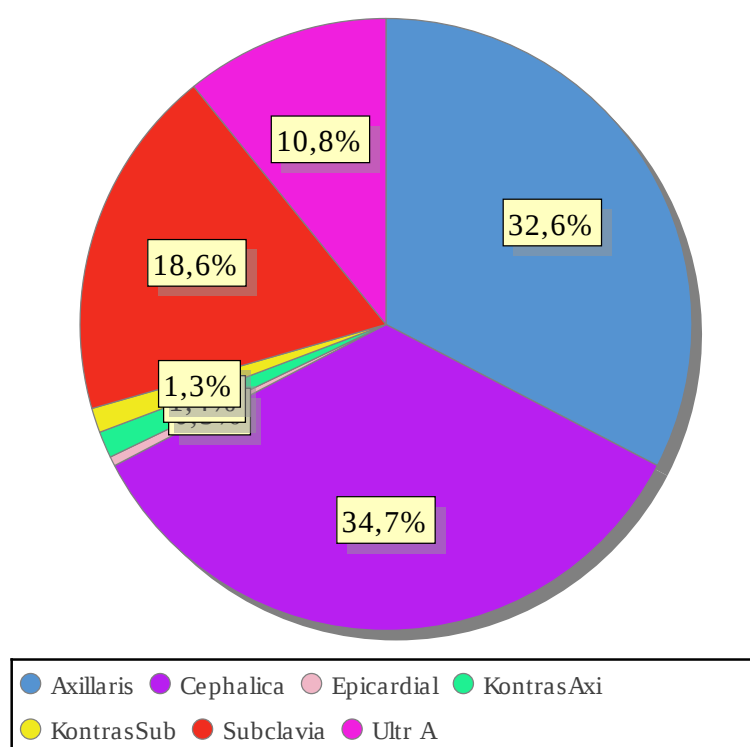
STATISTICS – PACEMAKER – LEAD TYPES

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

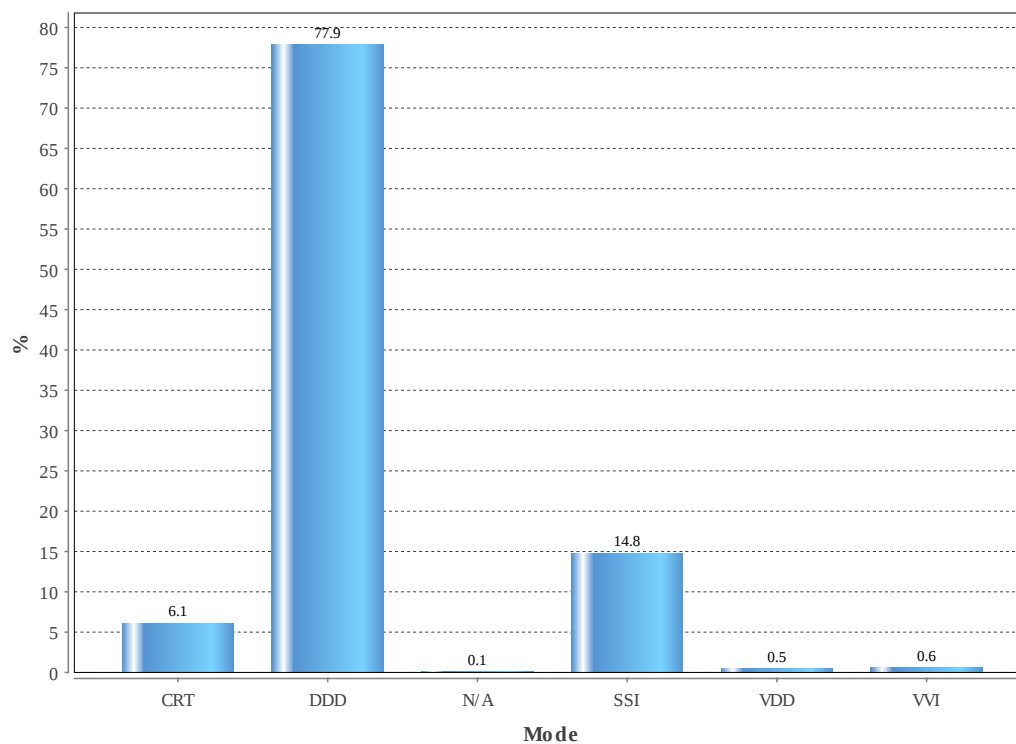
	Atrial		Ventricular		LV-lead	
	no	%	no	%	no	%
Bipolar	7982	99.5	8262	97.4	77	6.2
CSP	4	-	178	2.1	1	0.1
Epicardial	28	0.3	42	0.5	23	1.9
Quadripolar	7	0.1	4	-	1134	91.8

	Atrial		Ventricular		LV-lead	
	no	%	no	%	no	%
Active fixation	8013	99.9	8439	99.4	431	34.9
Passive fixation	8	0.1	48	0.6	804	65.1
Total number of leads: 17743						

STATISTICS – PACEMAKER – LEAD ACCESS



STATISTICS – PACEMAKER – SUB TYPE



Wireless implants per subtype

Mode	No
AAIR	8
VDDR	37
VVIR	44
Total number of first implants 8131	

STATISTICS – PACEMAKER - AETIOLOGY FIRST IMPLANT

Main aetiology for implanting pacemakers

Aetiology	Total %	Male %	Female %
Amyloidosis	0.6	0.8	0.2
Borrelia	0.0	0.0	0.0
Cardiomyopathy cytostatic induced	0.0	0.0	0.0
Cardiomyopathy dilated	2.3	2.4	2.1
Cardiomyopathy hypertrophic	0.5	0.3	0.9
Cardiomyopathy ischaemic	0.8	1.0	0.3
Conduction tissue fibrosis	79.3	78.3	81.0
Congenital	0.2	0.2	0.3
Drug induced	0.2	0.1	0.3
Endocarditis	0.1	0.1	0.1
Heart transplantation	0.1	0.1	0.0
His-ablation	1.7	1.1	2.7
Ionizing radiation	0.0	0.0	0.1
Ischaemic	4.3	5.5	2.3
Long QT-syndrome	0.0	0.0	0.1
Maze procedure	0.0	0.1	0.0
Myocarditis	0.0	0.0	0.0
N/A	0.0	0.0	0.0
Neurocardiogenic syncope	0.2	0.2	0.3
Other structural heart disease	2.2	2.2	2.2
Post TAVI	2.9	2.9	2.8
Post infarction	0.4	0.4	0.5
RF-ablation, complication	0.2	0.2	0.2
Sarcoidosis	0.1	0.2	0.1
Surgical complication	2.6	2.7	2.6
Valvular heart disease	1.2	1.3	0.9

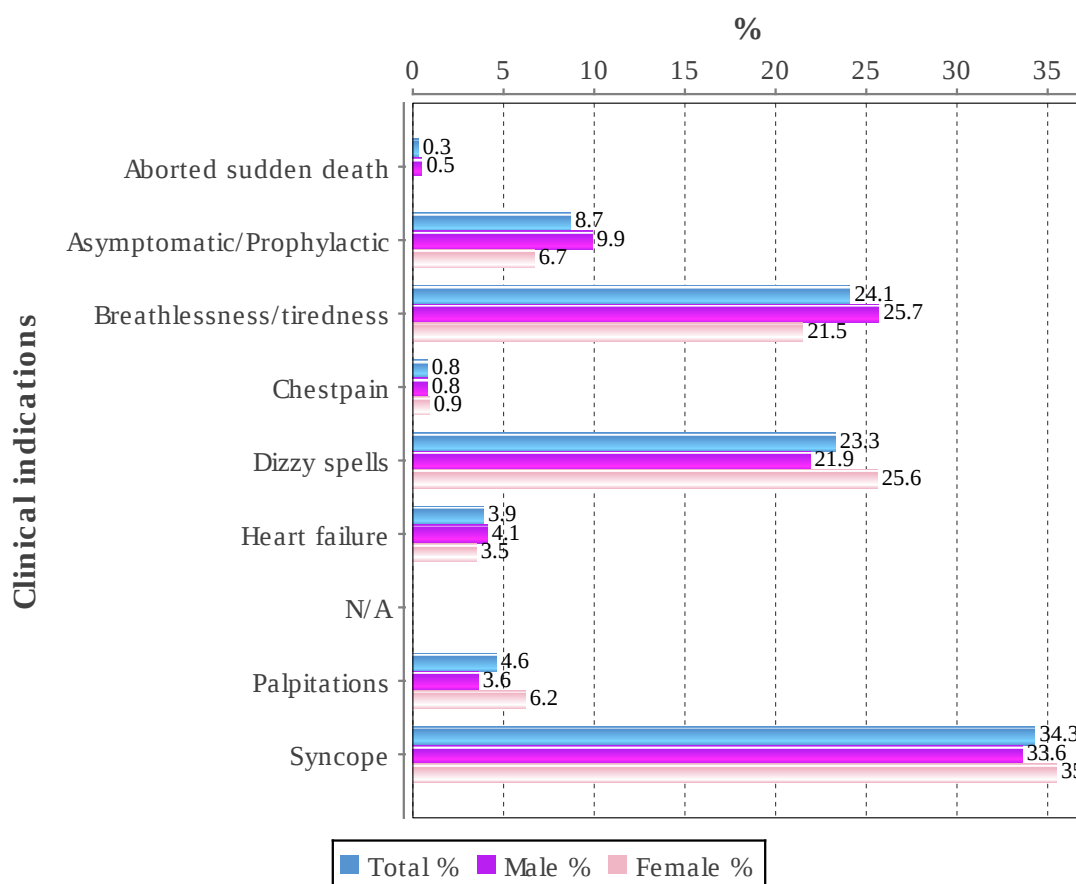
STATISTICS – PACEMAKER – SYSTEM UPGRADE

	2025	2024	2023	2022	2021	2020
VVI to VVIR	5	0	1	1	4	3
AAI/AAIR to DDD/DDDR	10	13	15	11	17	21
VVI/VVIR to DDD/DDDR	29	44	33	34	13	28
VVI/VVIR/DDD/DDDR to CRT	301	311	285	260	267	255

STATISTICS – PACEMAKER – CLINICAL INDICATIONS FIRST IMPLANT

Main symptom for implanting pacemakers

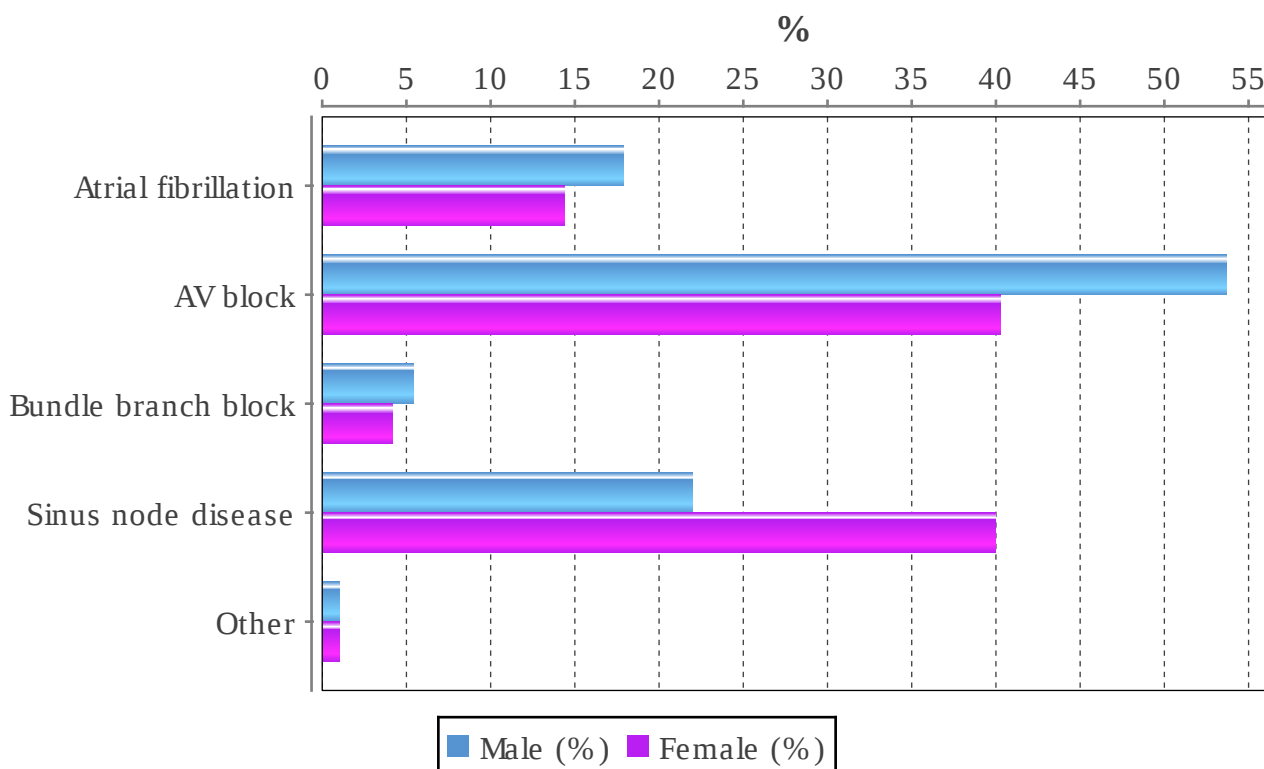
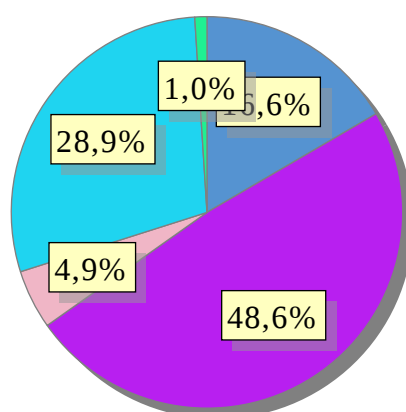
Indication	Total %	Male %	Female %
Aborted sudden death	0.3	0.5	0.0
Asymptomatic/Prophylactic	8.7	9.9	6.7
Breathlessness/tiredness	24.1	25.7	21.5
Chestpain	0.8	0.8	0.9
Dizzy spells	23.3	21.9	25.6
Heart failure	3.9	4.1	3.5
N/A	0.0	0.0	0.0
Palpitations	4.6	3.6	6.2
Syncope	34.3	33.6	35.5



STATISTICS – PACEMAKER - PREPACING ECG FIRST IMPLANT

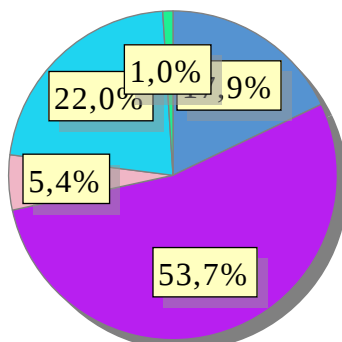
Main ECG indication by gender and for patients < 18 years of age

Indication	No	%	Male (%)	Female (%)	Younger than 18 (%)
Atrial fibrillation	1347	16.6	17.9	14.4	0.0
AV block	3951	48.6	53.7	40.3	62.5
Bundle branch block	402	4.9	5.4	4.2	6.3
Sinus node disease	2351	28.9	22.0	40.0	25.0
Other	80	1.0	1.0	1.0	6.3
Total number of implants 8131					



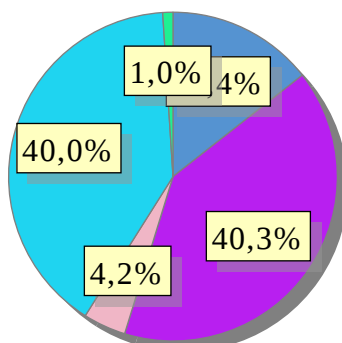
STATISTICS – PACEMAKER - PREPACING ECG FIRST IMPLANT

Male



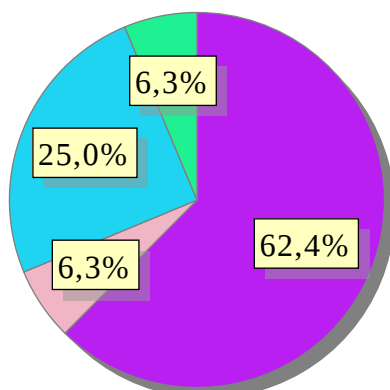
● Atrial fibrillation
 ● AV block
 ● Bundle branch block
 ● Sinus node disease
 ● Other

Female



● Atrial fibrillation
 ● AV block
 ● Bundle branch block
 ● Sinus node disease
 ● Other

< 18



● AV block
 ● Bundle branch block
 ● Sinus node disease
 ● Other

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))

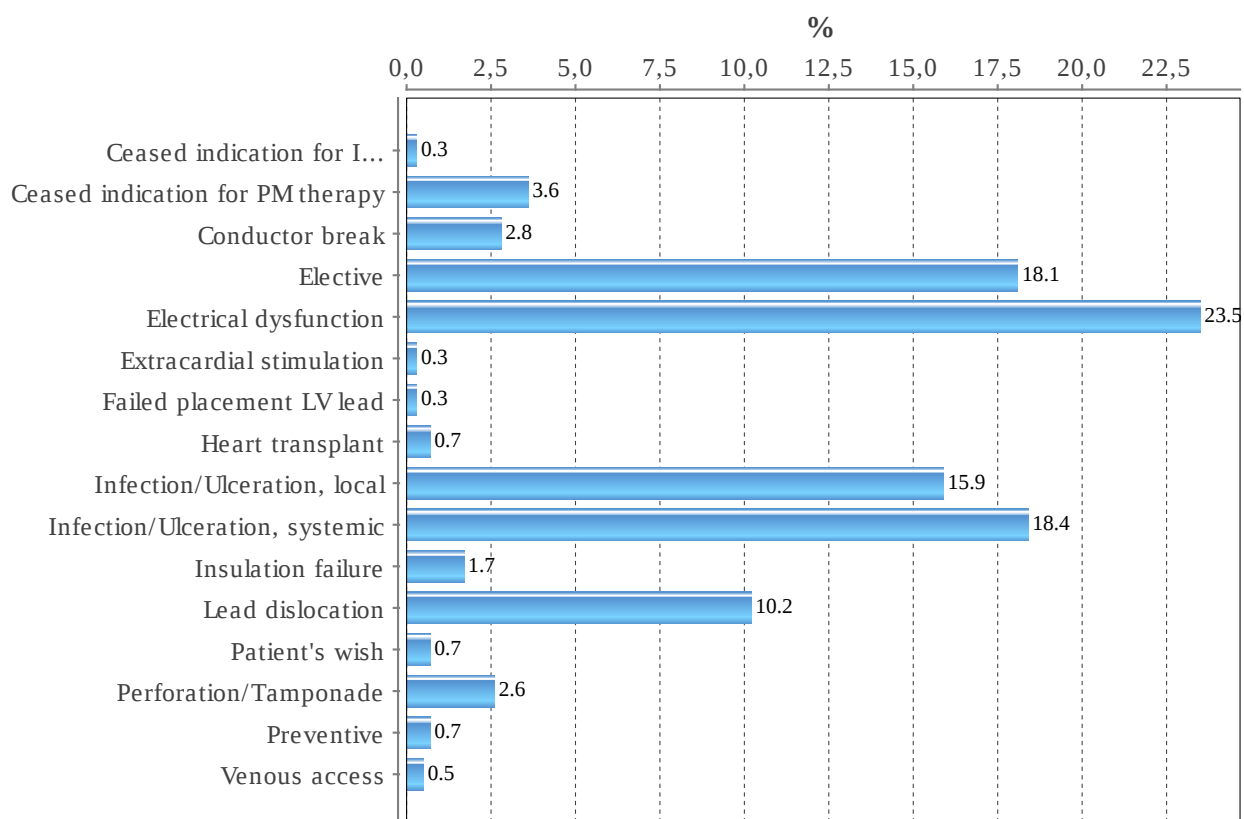
Hospital	Number	DDD %	VVI %	AAI %	CRT %
Akademiska sjukhuset	293	78.5	15.4	0.3	5.8
Alingsås lasarett	58	87.9	10.3	1.7	0.0
Blekingesjukhuset	180	78.9	11.7	0.0	9.4
Centrallasarettet Växjö	126	76.2	23.0	0.0	0.8
Centralsjukhuset Karlstad	179	83.2	10.6	0.6	5.6
Centralsjukhuset Kristianstad	303	83.5	14.5	0.3	1.7
Centralsjukhuset Västerås	197	77.7	16.8	0.0	5.6
Danderyds sjukhus	455	82.9	10.8	0.2	6.2
Drottning Silvias Bus	7	100.0	0.0	0.0	0.0
Falu lasarett	267	76.0	15.0	0.0	9.0
Gävle sjukhus	184	79.9	16.3	0.5	3.3
Helsingborgs lasarett	213	74.6	19.2	1.4	4.7
Hudiksvalls sjukhus	60	93.3	6.7	0.0	0.0
Karolinska Universitetssjukhuset	592	79.4	12.7	0.0	7.9
Kungälv's sjukhus	102	84.3	10.8	4.9	0.0
Linköpings Universitetssjukhus	465	84.7	13.1	0.0	2.2
Länssjukhuset Halmstad	49	81.6	16.3	2.0	0.0
Länssjukhuset Kalmar	152	60.5	33.6	0.7	5.3
Länssjukhuset Ryhov	241	84.2	15.8	0.0	0.0
Mälarsjukhuset	213	83.6	9.9	0.0	6.6
Norrlands Universitetssjukhus	214	75.2	18.2	0.5	6.1
Sahlgrenska Universitetssjukhuset	326	82.2	10.7	0.6	6.4
Sahlgrenska Universitetssjukhuset /Östra	102	74.5	25.5	0.0	0.0
Skaraborgs sjukhus Skövde	166	71.7	15.7	0.0	12.7
Skellefteå lasarett	34	91.2	8.8	0.0	0.0
Skånes universitetssjukhus, Lund	298	69.5	14.8	0.0	15.8
Skånes universitetssjukhus, Malmö	316	86.4	11.7	1.6	0.3
Sollefteå sjukhus	11	100.0	0.0	0.0	0.0
St Görans sjukhus	367	85.0	12.3	0.0	2.7
Sunderby sjukhus	219	74.4	20.1	0.0	5.5
Sundsvalls sjukhus	115	78.3	18.3	0.0	3.5
Södersjukhuset	349	81.9	11.7	0.6	5.7
Södra Älvsborgs sjukhus	217	78.8	15.7	0.5	5.1
Torsby sjukhus	32	56.3	40.6	3.1	0.0
Trollhättan, NÄL	270	71.1	17.4	0.0	11.5
Universitetssjukhuset Örebro	244	71.3	20.5	0.0	8.2
Varbergs sjukhus	214	82.2	11.2	0.0	6.5
Visby lasarett	29	79.3	17.2	0.0	3.4
Västerviks sjukhus	56	89.3	10.7	0.0	0.0
Örnsköldsviks sjukhus	42	88.1	9.5	0.0	2.4
Östersunds sjukhus	88	83.0	10.2	0.0	6.8

STATISTICS – PACEMAKER – REASON FOR GENERATOR CHANGE HISTORICAL

Historical explant indications

Reason	2021 %	2022 %	2023 %	2024 %	2025 %
Preventive	1.3	2.1	1.8	1.6	3.2
Elective	17.0	20.7	21.3	24.8	28.1
Recall/Alert	0.3	1.9	1.3	2.2	3.5
Erosion/Infection, local	2.3	1.6	1.6	2.8	2.5
Erosion/Infection, systemic	3.1	2.9	2.8	3.1	2.8
Patient's wish	0.2	0.3	0.3	0.2	0.2
CRT-P to PM because of discontinued CRT-indication	0.1	0.0	0.1	0.1	0.0
CRT-P to CRT-D	0.4	0.4	0.3	0.2	0.6
ERI	65.4	61.1	60.8	53.1	49.1
Premature EOL	1.4	0.9	0.9	1.8	0.7
Heart transplant	0.1	0.1	0.1	0.1	0.1
Ceased indication for PM therapy	0.6	0.5	0.4	0.4	0.4
PM to CRT-P	5.0	4.7	5.3	6.4	5.7
PM to CRT-D	1.3	1.3	1.2	1.4	1.2
PM to ICD because of arrhythmia	1.2	0.8	1.0	1.0	1.3
Technical failure	0.5	0.5	0.8	1.0	0.8

STATISTICS – PACEMAKER – REASON FOR LEAD EXPLANT



Implant rates

There are 16891 active ICD patients in Sweden 2025, the number slowly increasing over years and could be an effect of better heart failure management with primary prevention increasing most. The number centers implanting ICD's is 31 and represents roughly 2/3 of the PM implanting centers although 6 centers do <20 implants per year, well below recommendations by ESC and the Swedish national society. The national implant rate is lower in 2025 than 2024, 142 vs 143 per million. Of this 90 per million is primary prevention.

The south region is the only region that have increased the implant rate, all others show stable implant rates. Otherwise implant rates show the same regional differences as in pacemakers with the highest rates in Västmanland region with 214 per million and the lowest in the Stockholm region, 109 per million.

About 35% of the ICD procedures are replacements but could be expected to go further down with generators now showing increased longevity.

As with PM the regions are bound by ICD purchasing tenders and manufacturers share show only slight variations over previous year. Abbott is the largest with 45% market share, Medtronic second with 34%. Boston Scientific with 13% and Biotronik is smallest with 8% market share.

Patients

The average age for ICD implant is stable at 65 years in males and 60 years in females for all types of implants, unchanged from previous years. In the older category 48 patients in the age group 80-89 received a first ICD implants as secondary prevention and of these 19 were primary prevention.

Clinical indication for all ICD implants was secondary prevention in 36% and primary in 64%. Aethiology was ischemic heart disease in 39% of all patients but more common in males.

Medication at the start of therapy is displayed in tables.

Subtypes and leads

97% of the leads are now single coil and 98% 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 or axillary puncture.

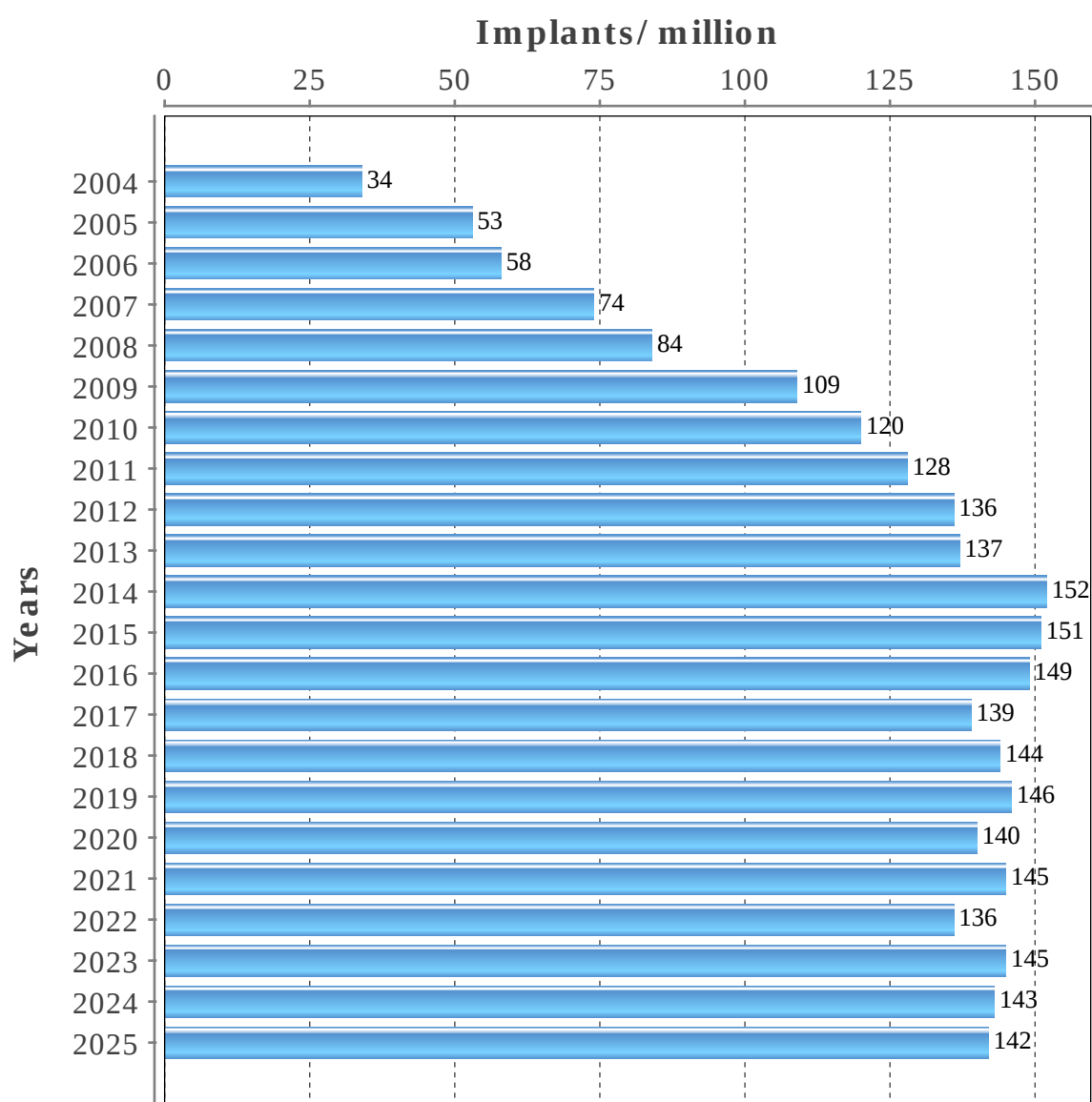
The most common type of ICD was DDDR with 43%, CRT with 31%, VR with 24%. A small number of S-ICD devices were also used; 34, 2% and 19 EV-ICD??? (mode på dessa var VDD, vilket kan vara någon annan product?). Jag fick vid sökning upp 12 st EV-ICD (på EV-ICD var mode "S-ICD") Placering för S-ICD Subcutan, EV-ICD Sub- sternal

Only 45% of the ICD's are used until normal EOL/ERI, 11% are changed due to system upgrade to a CRT system. Technical recalls stand for 0,9 % of all box changes and premature EOL is 0,7%.

ICD leads display larger failure rates compared to pacemaker leads but overall longevity is still good.

Specific statistics for Sprint Fidelis, Linx and Durata leads are displayed in the quality section.

The number of procedures display the same large variation in volumes as with pacemaker procedures at different hospitals and some are clearly below recommended volumes in many centers.

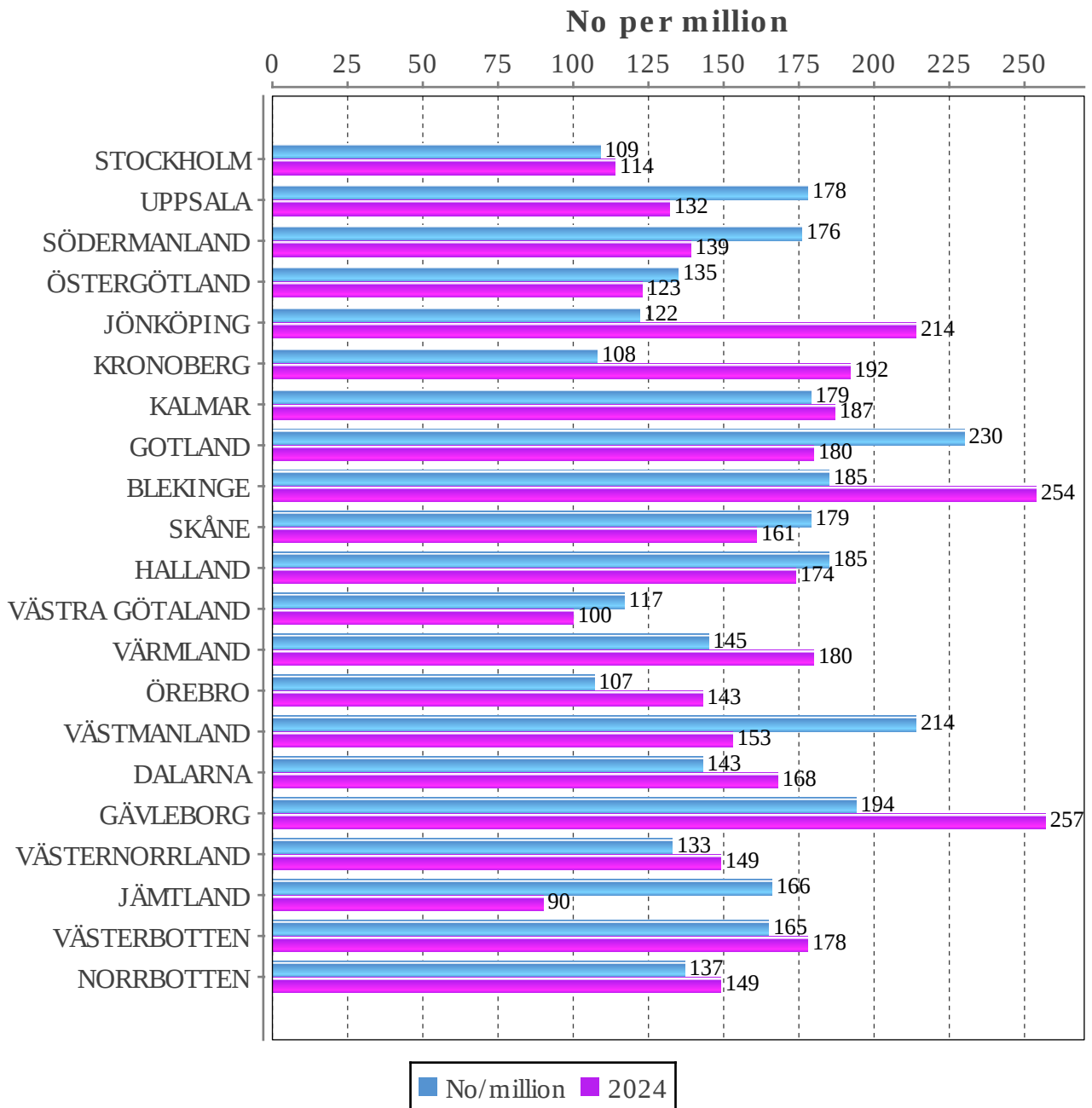


STATISTICS – ICD – IMPLANTS PER COUNTY

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

County	Population	No of first	No/million	Active patients
STOCKHOLM	2486251	272	109	3350
UPPSALA	410575	73	178	711
SÖDERMANLAND	300440	53	176	490
ÖSTERGÖTLAND	472529	64	135	735
JÖNKÖPING	369722	45	122	640
KRONOBERG	203121	22	108	338
KALMAR	245477	44	179	510
GOTLAND	60852	14	230	135
BLEKINGE	156616	29	185	408
SKÅNE	1433083	256	179	2540
HALLAND	346090	64	185	642
VÄSTRA GÖTALAND	1777803	208	117	1999
VÄRMLAND	283037	41	145	467
ÖREBRO	308357	33	107	483
VÄSTMANLAND	280756	60	214	478
DALARNA	286043	41	143	561
GÄVLEBORG	283452	55	194	659
VÄSTERNORRLAND	240640	32	133	478
JÄMTLAND	132736	22	166	235
VÄSTERBOTTEN	279028	46	165	509
NORRBOTTEN	248927	34	137	523
Total	10605535	1508	142	16891

STATISTICS – ICD – IMPLANTS PER COUNTY

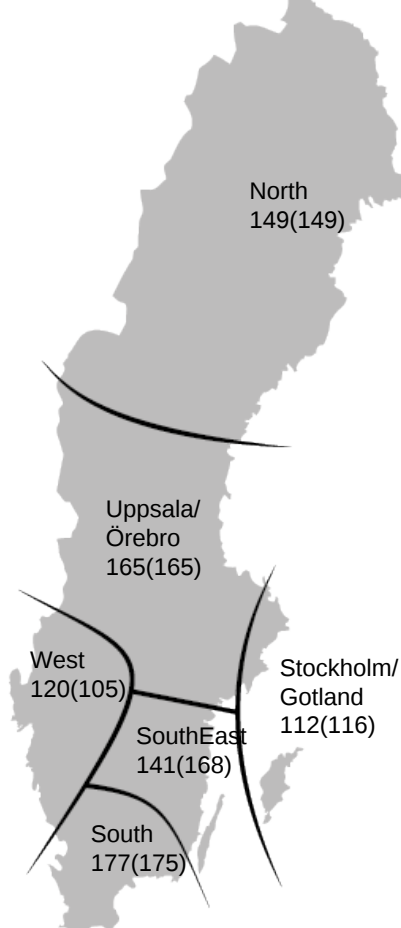


STATISTICS – ICD – IMPLANTS PER REGION

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	2547103	286	112	3485
Uppsala/Örebro	2152660	356	165	3849
South-East Sweden	1087728	153	141	1885
Southern Sweden	1935794	342	177	3596
Western Sweden	1980916	237	120	2331
Northern Sweden	901331	134	149	1745
Total	10605532	1508	142	16891

Implants per million 2025(2024)



STATISTICS – ICD – IMPLANTING HOSPITALS

First implants per hospital (inclusive CRT)

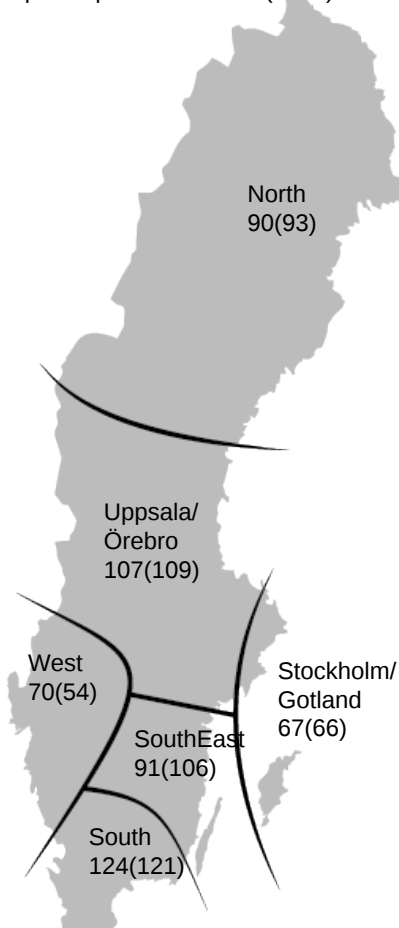
Region	Hospital	2025	2024
Northern Sweden	Norrlands Universitetssjukhus	49	49
	Skellefteå lasarett	3	4
	Sunderby sjukhus	30	32
	Sundsvalls sjukhus	16	21
	Örnsköldsviks sjukhus	12	12
	Östersunds sjukhus	20	11
Southern Sweden	Blekingesjukhuset	30	39
	Centrallasarettet Växjö	18	36
	Centralsjukhuset Kristianstad	66	36
	Helsingborgs lasarett	30	25
	Skånes universitetssjukhus, Lund	115	146
	Skånes universitetssjukhus, Malmö	53	43
	Varbergs sjukhus	57	53
South-East Sweden	Linköpings Universitetssjukhus	83	82
	Länssjukhuset Kalmar	39	41
	Länssjukhuset Ryhov	30	57
Stockholm/Gotland	Danderyds sjukhus	58	63
	Karolinska Universitetssjukhuset	157	147
	St Görans sjukhus	45	47
	Södersjukhuset	48	51
	Visby lasarett	3	2
Uppsala/Örebro	Akademiska sjukhuset	71	61
	Centralsjukhuset Karlstad	37	52
	Centralsjukhuset Västerås	60	41
	Falu lasarett	41	47
	Gävle sjukhus	47	57
	Hudiksvalls sjukhus	6	12
	Mälarsjukhuset	45	36
	Universitetssjukhuset Örebro	32	42
	Kungälv's sjukhus	1	0
Western Sweden	Sahlgrenska Universitetssjukhuset	97	85
	Sahlgrenska Universitetssjukhuset /Östra	12	0
	Skaraborgs sjukhus Skövde	24	28
	Södra Älvsborgs sjukhus	40	30
	Trollhättan, NÄL	42	40

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	2547103	171	67	1938
Uppsala/Örebro	2152660	230	107	2342
South-East Sweden	1087728	99	91	1174
Southern Sweden	1935794	240	124	2257
Western Sweden	1980916	138	70	1196
Northern Sweden	901331	81	90	996
Total	10605532	959	90	9903

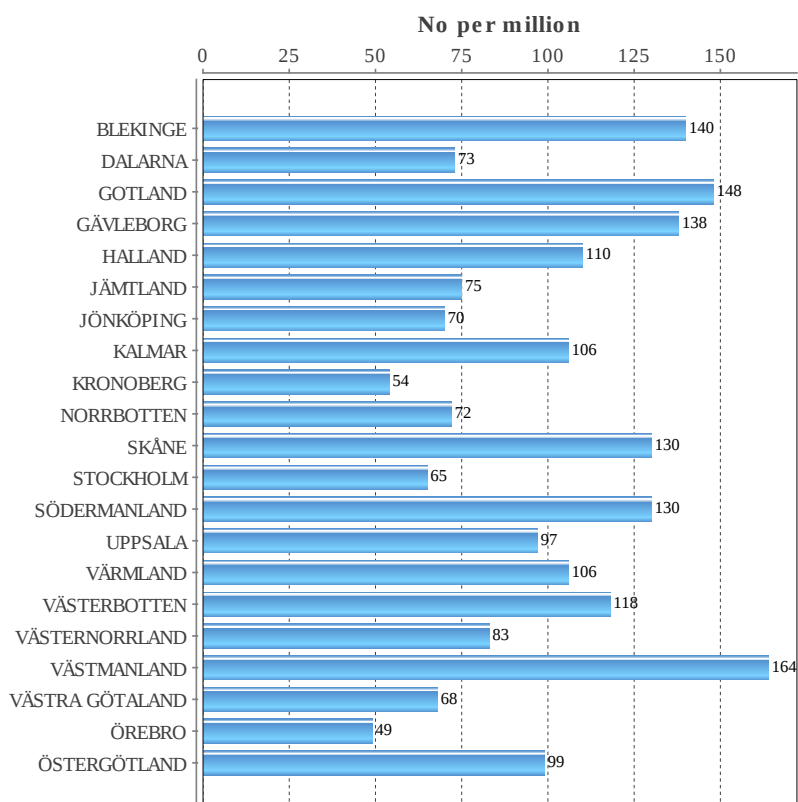
Implants per million 2025(2024)



STATISTICS – ICD – PRIMARY PREVENTION PER COUNTY

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

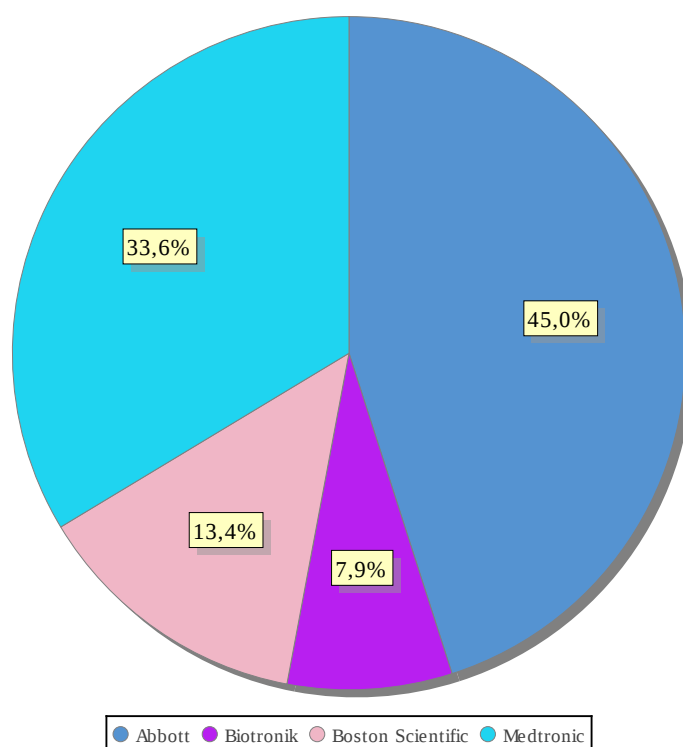
County	Population	No of first	No/million
BLEKINGE	156616	22	140
DALARNA	286043	21	73
GOTLAND	60852	9	148
GÄVLEBORG	283452	39	138
HALLAND	346090	38	110
JÄMTLAND	132736	10	75
JÖNKÖPING	369722	26	70
KALMAR	245477	26	106
KRONOBERG	203121	11	54
NORRBOTTEN	248927	18	72
SKÅNE	1433083	186	130
STOCKHOLM	2486251	162	65
SÖDERMANLAND	300440	39	130
UPPSALA	410575	40	97
VÄRMLAND	283037	30	106
VÄSTERBOTTEN	279028	33	118
VÄSTERNORRLAND	240640	20	83
VÄSTMANLAND	280756	46	164
VÄSTRA GÖTALAND	1777803	121	68
ÖREBRO	308357	15	49
ÖSTERGÖTLAND	472529	47	99
Total	10605535	959	90



STATISTICS – ICD – ICDS PER MANUFACTURER

Market share per manufacturer in Sweden

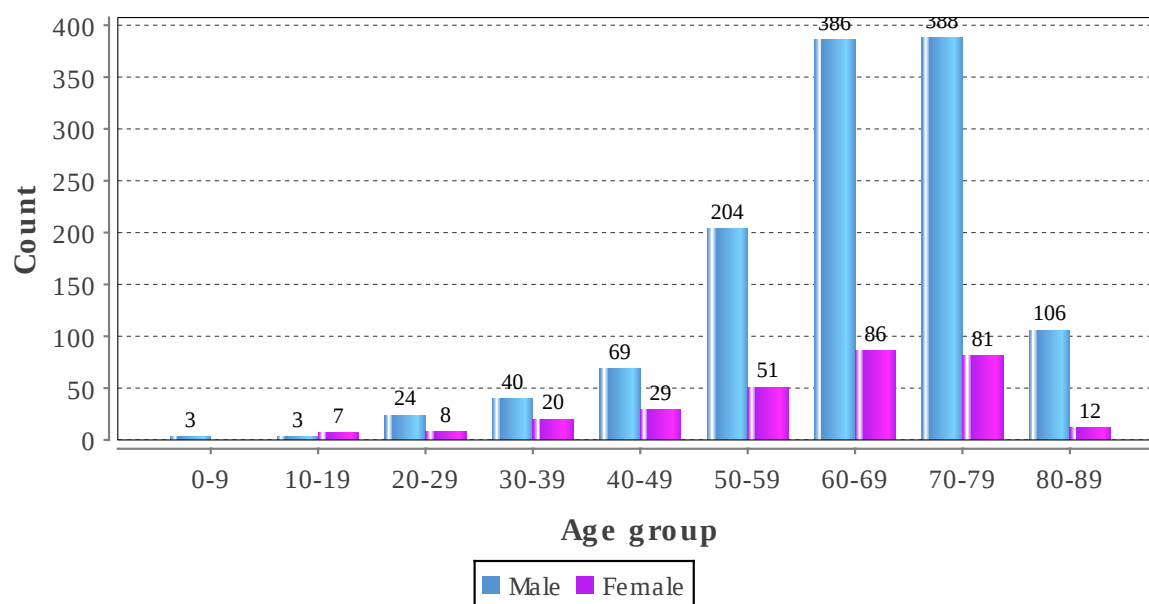
Manufacturer	2022 %	2023 %	2024 %	2025 %
Biotronik	5.4	6.5	7.9	7.9
Boston Scientific	12.6	14.9	14.1	13.4
Medtronic	33.4	32.5	33.8	33.6
Abbott	48.5	43.4	44.2	45.0



STATISTICS – ICD – AGE DISTRIBUTION MALES/FEMALES

Age and gender distribution for new implants, total numbers

Age (years)	Total no	%	Male	Female
0-9	3	0.2	3	0
10-19	10	0.7	3	7
20-29	32	2.1	24	8
30-39	60	4.0	40	20
40-49	98	6.5	69	29
50-59	255	16.8	204	51
60-69	472	31.1	386	86
70-79	469	30.9	388	81
80-89	118	7.8	106	12
Average age	64	-	65	60
Total number of implants: 1517				

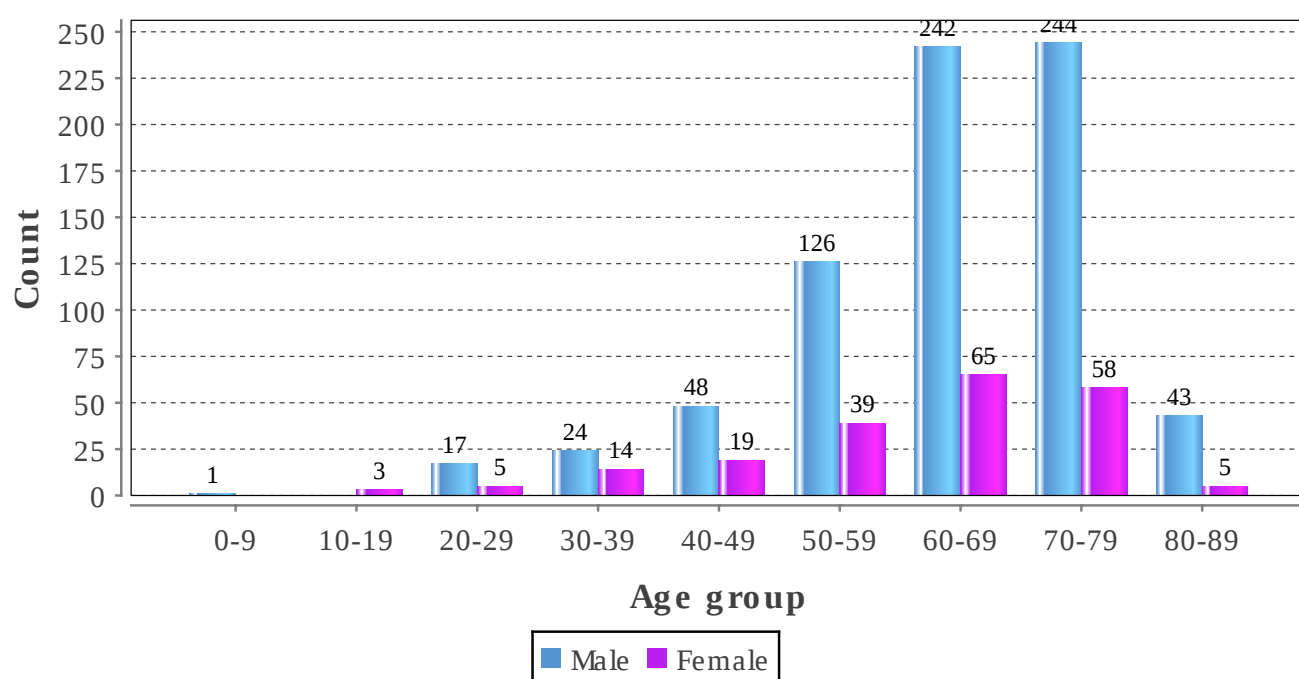


STATISTICS – ICD – AGE DISTRIBUTION PRIMARY PREVENTION

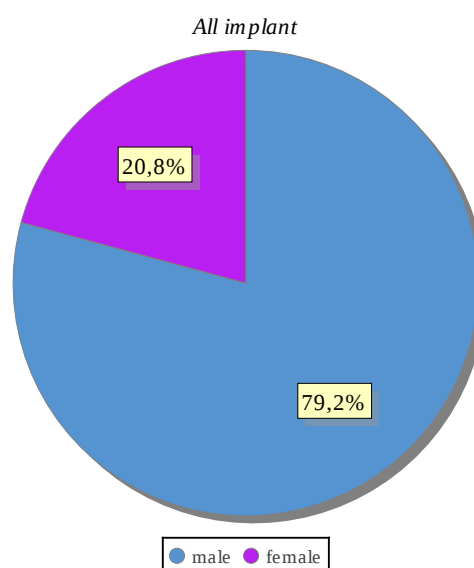
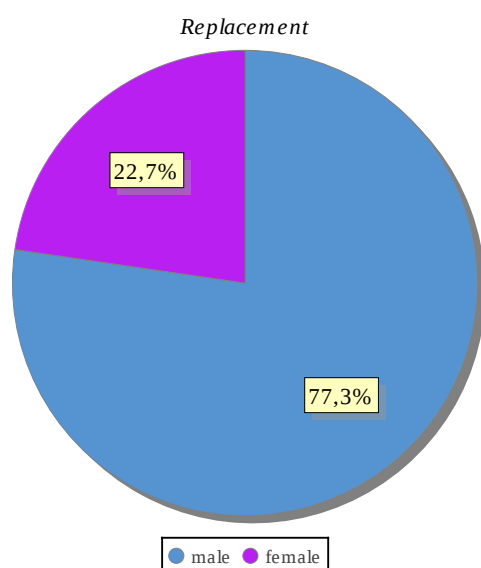
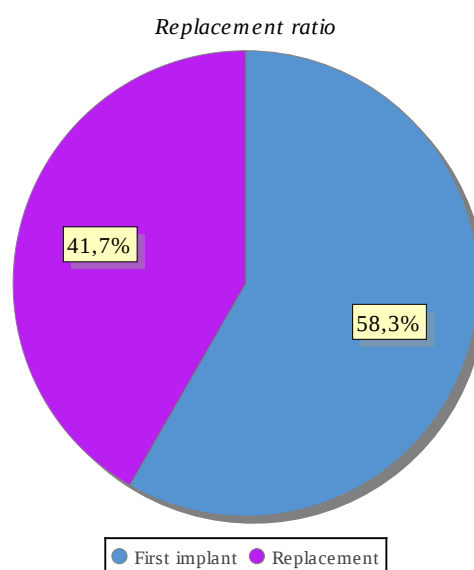
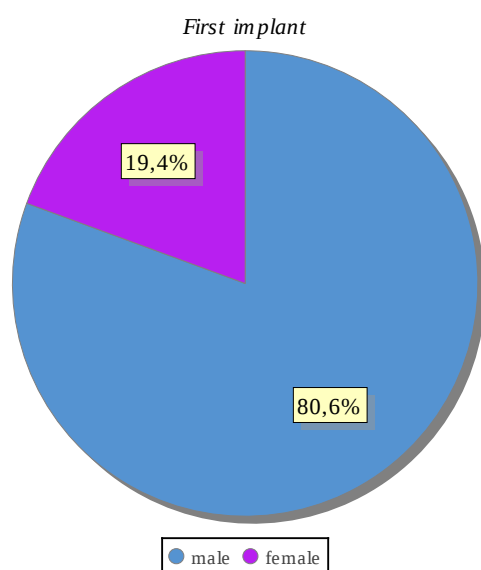
Primary prevention divided by gender and age.

Age (years)	Total no	%	Male	Female
0-9	1	0.1	1	0
10-19	3	0.3	0	3
20-29	22	2.3	17	5
30-39	38	4.0	24	14
40-49	67	7.0	48	19
50-59	165	17.3	126	39
60-69	307	32.2	242	65
70-79	302	31.7	244	58
80-89	48	5.0	43	5
Average age	63	-	64	60

Total number of implants: 953



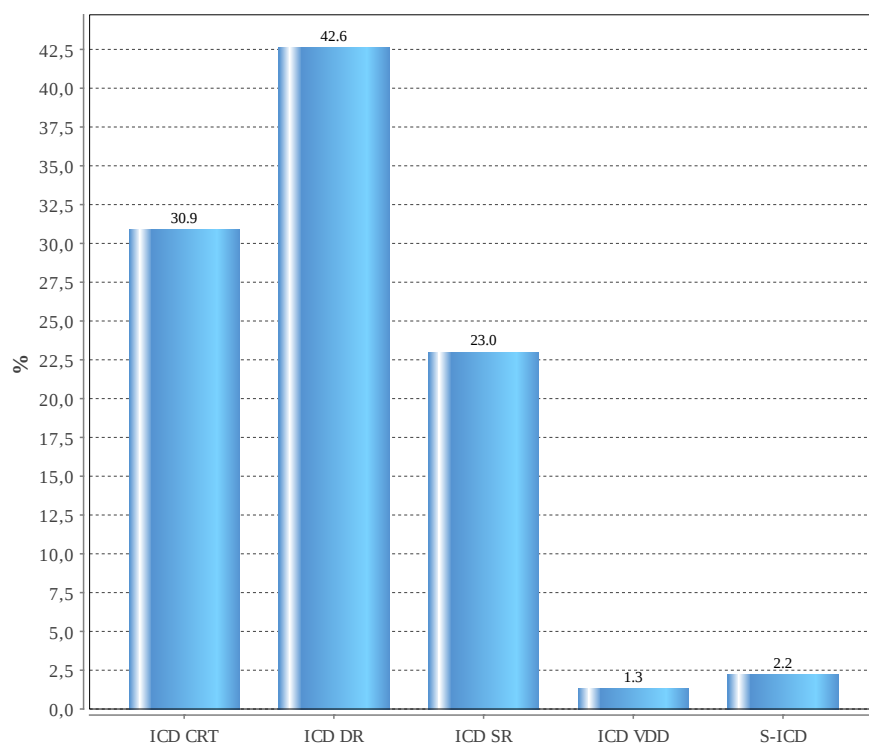
STATISTICS – ICD – TYPE OF IMPLANTS



STATISTICS – ICD – SUB TYPE

ICD subtype for new implants

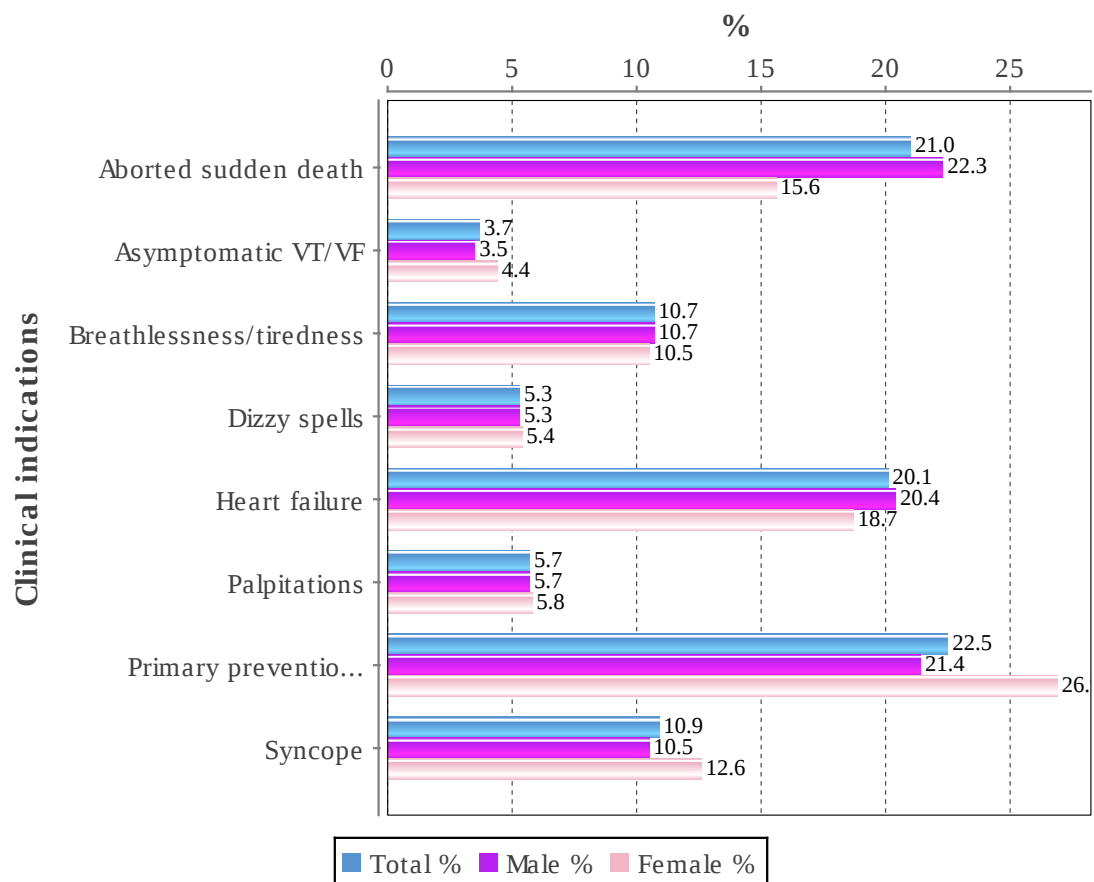
Mode	%	No
ICD CRT	30.9	469
ICD DR	42.6	646
ICD SR	23.0	349
ICD VDD	1.3	19
S-ICD	2.2	34



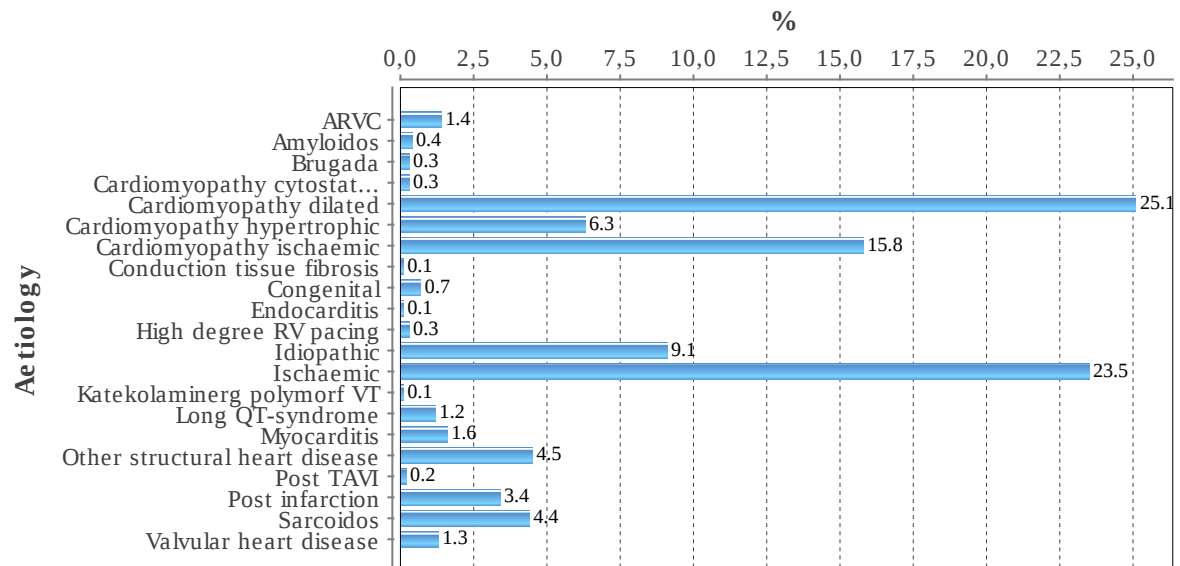
STATISTICS – ICD – CLINICAL INDICATIONS FIRST IMPLANT

Main symptom for implanting ICDs

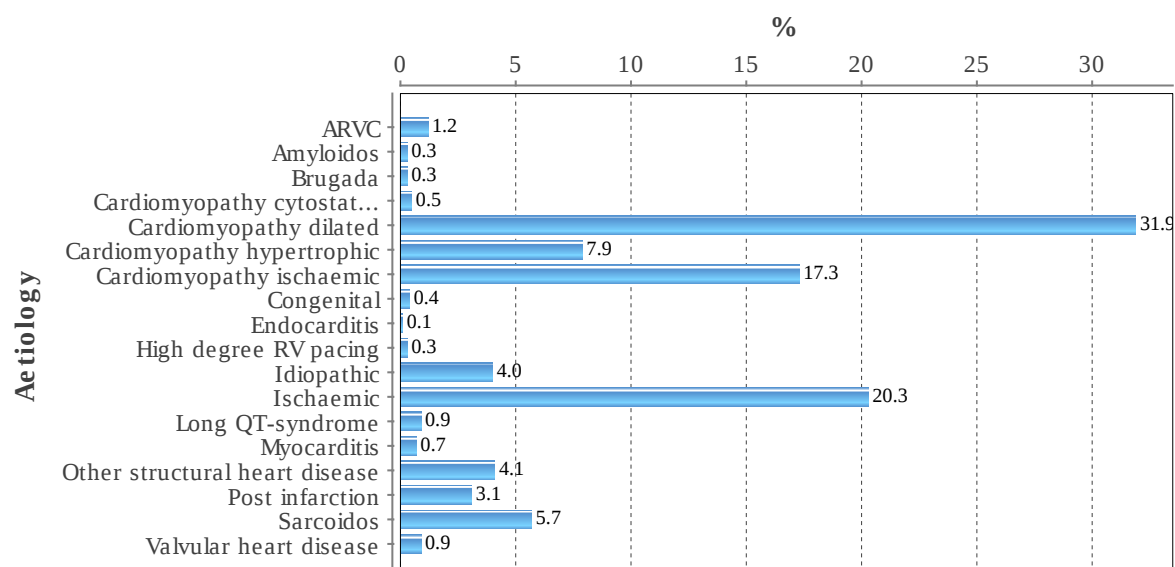
Indication	Total %	Male %	Female %
Aborted sudden death	21.0	22.3	15.6
Asymptomatic VT/VF	3.7	3.5	4.4
Breathlessness/tiredness	10.7	10.7	10.5
Dizzy spells	5.3	5.3	5.4
Heart failure	20.1	20.4	18.7
Palpitations	5.7	5.7	5.8
Primary prevention, asymptomatic	22.5	21.4	26.9
Syncope	10.9	10.5	12.6



STATISTICS – ICD - AETIOLOGY FIRST IMPLANT



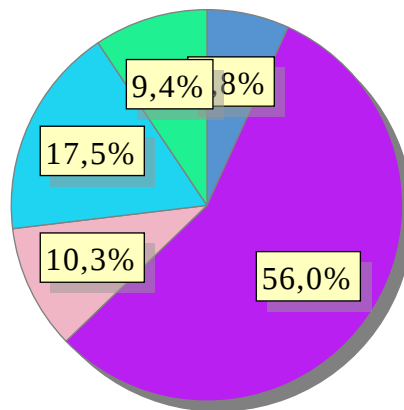
STATISTICS – ICD - AETIOLOGY PRIMARY PREVENTION



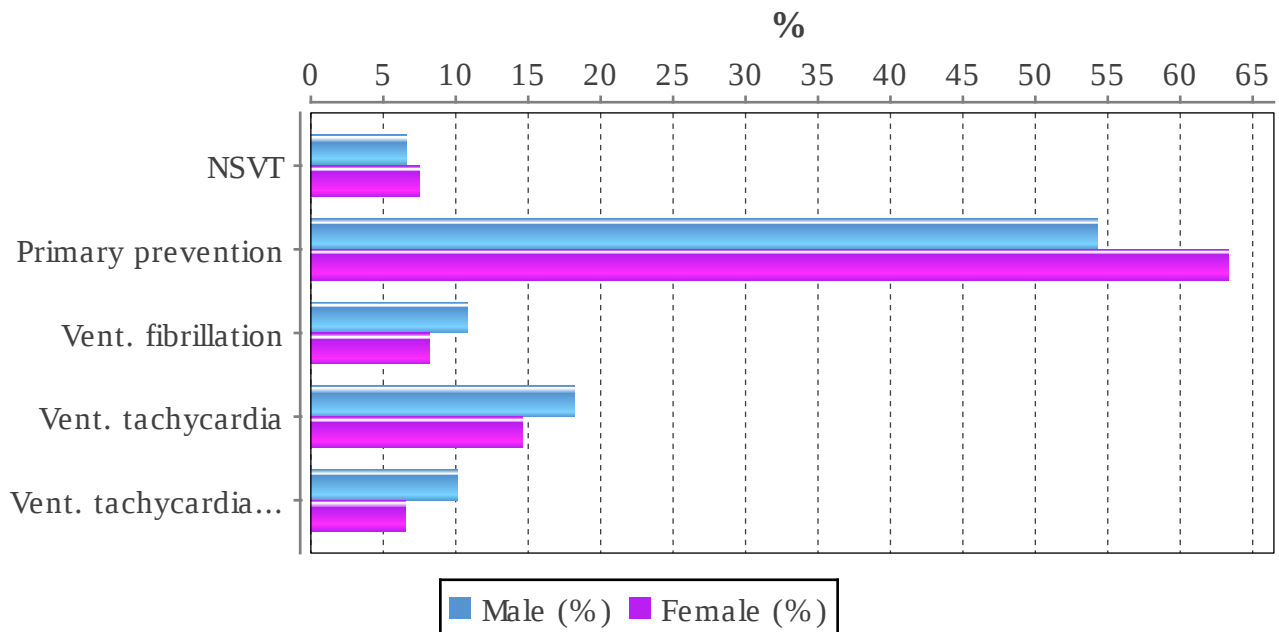
STATISTICS – ICD – PREPACING ECG (TACHY)

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

Indication	No	Total %	Male (%)	Female (%)	It 18 (%)
NSVT	103	6.8	6.6	7.5	0.0
Primary prevention	850	56.0	54.3	63.3	33.3
Vent. fibrillation	156	10.3	10.8	8.2	22.2
Vent. tachycardia	266	17.5	18.2	14.6	22.2
Vent. tachycardia + fibrillation	142	9.4	10.1	6.5	22.2
Total number of implants 1517					

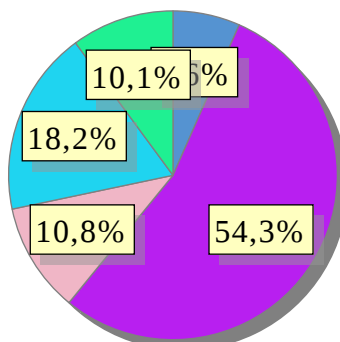


● NSVT
 ● Primary prevention
 ● Vent. fibrillation
 ● Vent. tachycardia
 ● Vent. tachycardia + fibrillation



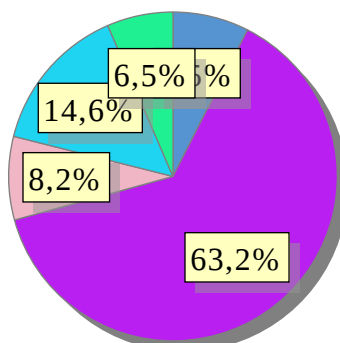
STATISTICS – ICD – PREPACING ECG (TACHY)

Male



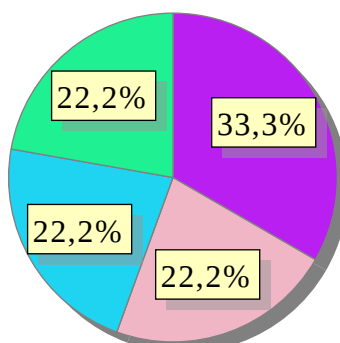
● NSVT
 ● Primary prevention
 ● Vent. fibrillation
 ● Vent. tachycardia
 ● Vent. tachycardia + fibrillation

Female



● NSVT
 ● Primary prevention
 ● Vent. fibrillation
 ● Vent. tachycardia
 ● Vent. tachycardia + fibrillation

< 18



● Primary prevention
 ● Vent. fibrillation
 ● Vent. tachycardia
 ● Vent. tachycardia + fibrillation

STATISTICS – ICD – REASON FOR GENERATOR EXPLANT

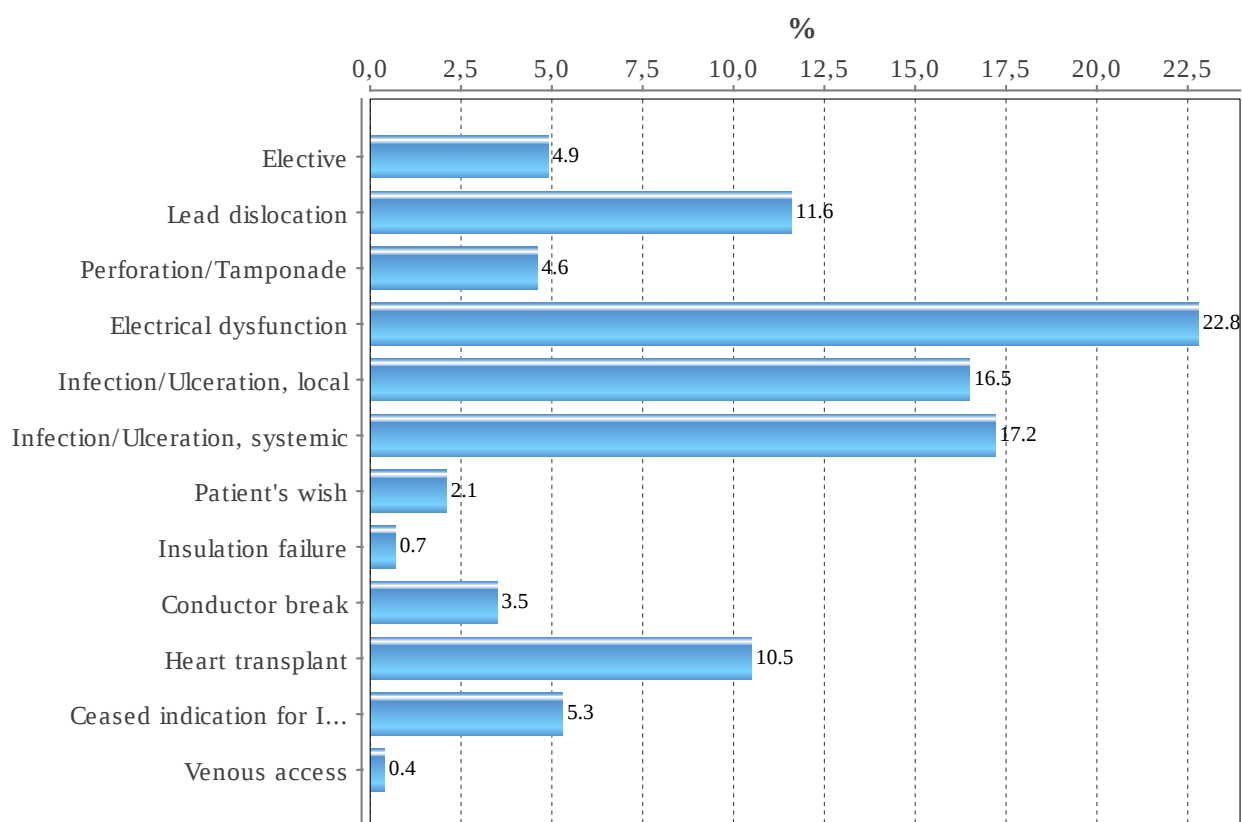
Historical explants indications

Reason	2023 %	2024 %	2025 %
Preventive	1.4	1.1	1.9
Elective	18.1	19.6	27.4
Recall/Alert	0.1	0.1	0.3
Erosion/Infection, local	3.9	2.6	3.7
Erosion/Infection, systemic	3.2	4.1	3.9
Patient's wish	0.8	0.4	0.5
CRT-D to CRT-P	0.8	0.8	0.8
CRT-D to ICD because of ceased CRT-indication	0.2	0.1	0.3
ERI	55.8	56.6	45.3
Premature EOL	1.1	0.7	0.7
Heart transplant	2.8	1.8	2.2
Ceased indication for ICD therapy	1.9	1.0	1.4
ICD to CRT-D	8.7	9.4	10.1
ICD to PM because of ceased indication	0.3	0.5	0.3
Technical failure	0.8	0.9	0.6
ICD to CRT-P because of heart failure	0.0	0.4	0.5

STATISTICS – ICD – REASON FOR LEAD EXPLANT

Historical lead explants indications

Reason	2023 %	2024 %	2025 %
Preventive	1.2	1.3	0.0
Elective	5.5	5.5	4.9
Lead dislocation	7.5	8.0	11.6
Extracardial stimulation	0.4	0.4	0.0
Perforation/Tamponade	1.6	3.8	4.6
Electrical dysfunction	32.3	28.3	22.8
Infection/Ulceration, local	14.6	13.9	16.5
Infection/Ulceration, systemic	13.8	20.3	17.2
Patient's wish	0.8	2.1	2.1
Insulation failure	0.8	0.4	0.7
Conductor break	2.8	3.0	3.5
Heart transplant	11.8	8.9	10.5
Ceased indication for ICD therapy	6.7	4.2	5.3
Venous access	0.4	0.0	0.4



Implant rates

Implant rates of CRT system in 2025 were 59 per million CRT-P's and 54 per million CRT-D's. The highest implant rate of CRT in total is found in Blekinge with 223 per million and the lowest in Jönköping with 46 per million new implants or upgrades.

The distribution between CRT-D and CRT-P systems show only small regional differences.

Patients

The average age of CRT-P patients at first implant is 77 y and CRT-D patients 68 years with a large male predominance, the same as last year. Medication for patients receiving CRT for the first time is given in tables.

Implanting organisations

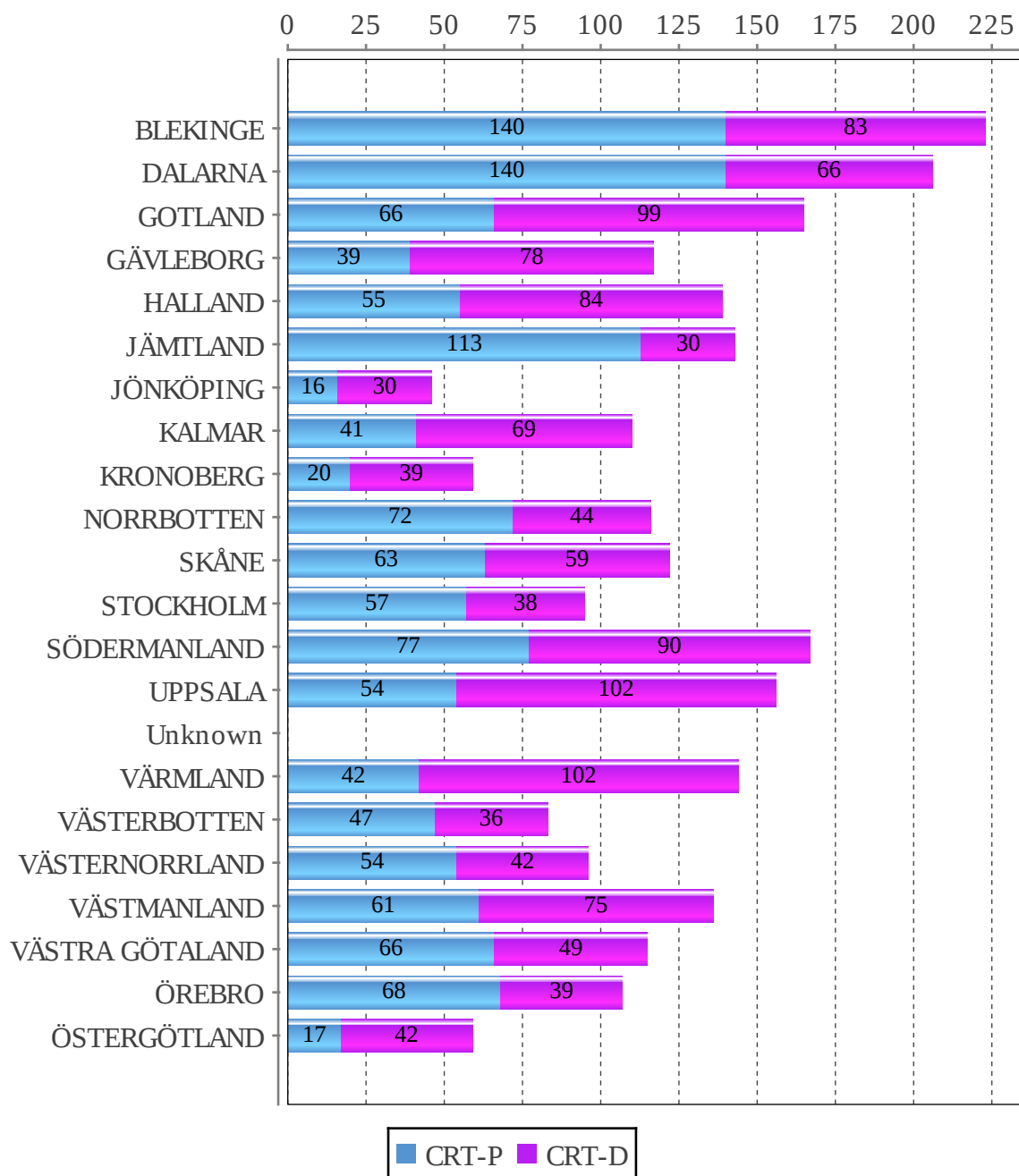
The number of centers performing CRT implantations are less than the number doing ICD's 30 vs 32. The number of CRT procedures per implanter range from 1-77 and only a few implanters performing >50 implants. The failure rate at implant is according to the registry 5% but this is most likely an underestimation when compared to the literature.

STATISTICS – CRT – HISTORICAL IMPLANT RATES

CRT Historical implant rates per hundred thousand residents

Year	Population	No First Impl	CRT-P		CRT-D	
			No	Rate	No	Rate
2021	10457147	1236	606	5.8	630	6.0
2022	10520558	1221	652	6.2	569	5.4
2023	10551707	1246	694	6.6	552	5.2
2024	10587700	1281	701	6.6	580	5.5
2025	10604464	1206	629	5.9	577	5.4

STATISTICS – CRT – IMPLANTS PER COUNTY

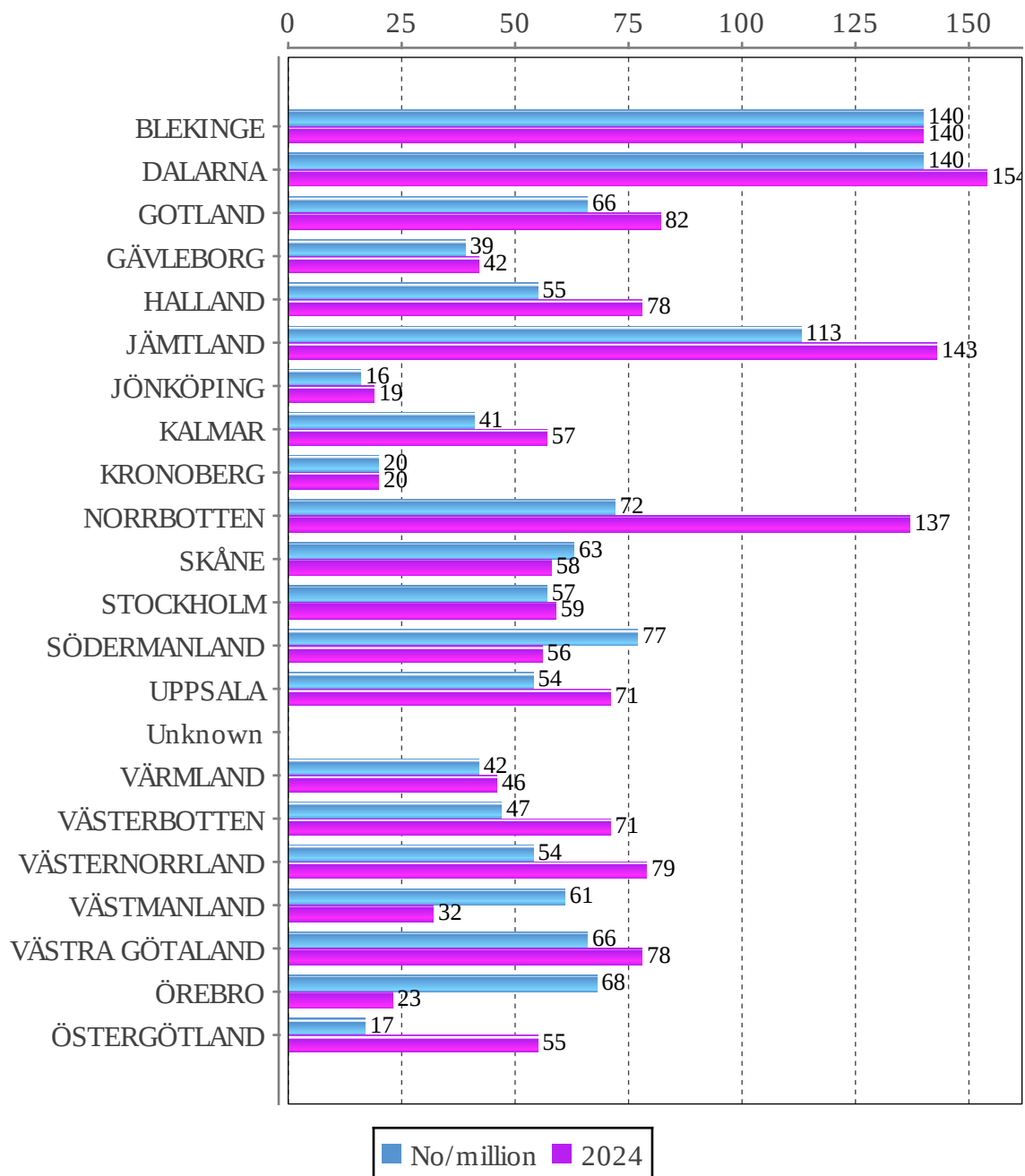


STATISTICS – CRT-P – IMPLANTS PER COUNTY

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

	Population	No first impl	No/million
BLEKINGE	156616	22	140
DALARNA	286043	40	140
GOTLAND	60852	4	66
GÄVLEBORG	283452	11	39
HALLAND	346090	19	55
JÄMTLAND	132736	15	113
JÖNKÖPING	369722	6	16
KALMAR	245477	10	41
KRONOBERG	203121	4	20
NORRBOTTEN	248927	18	72
SKÅNE	1433083	90	63
STOCKHOLM	2486251	142	57
SÖDERMANLAND	300440	23	77
UPPSALA	410575	22	54
Unknown	0	2	0
VÄRMLAND	283037	12	42
VÄSTERBOTTEN	279028	13	47
VÄSTERNORRLAND	240640	13	54
VÄSTMANLAND	280756	17	61
VÄSTRA GÖTALAND	1777803	118	66
ÖREBRO	308357	21	68
ÖSTERGÖTLAND	472529	8	17
Total	10605535	630	59

STATISTICS – CRT-P – IMPLANTS PER COUNTY

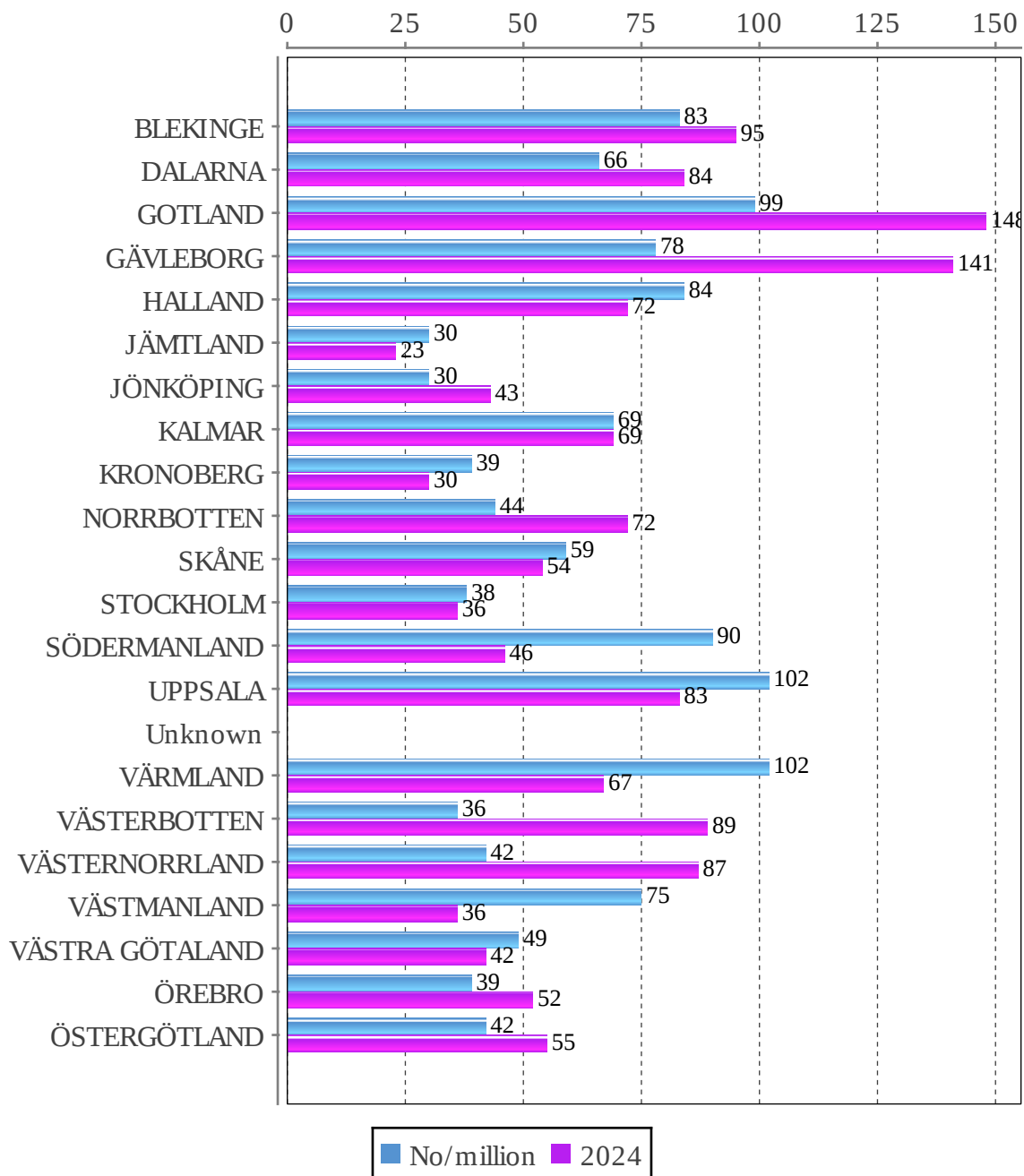


STATISTICS – CRT-D – IMPLANTS PER COUNTY

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

	Population	No first impl	No/million
BLEKINGE	156616	13	83
DALARNA	286043	19	66
GOTLAND	60852	6	99
GÄVLEBORG	283452	22	78
HALLAND	346090	29	84
JÄMTLAND	132736	4	30
JÖNKÖPING	369722	11	30
KALMAR	245477	17	69
KRONOBERG	203121	8	39
NORRBOTTEN	248927	11	44
SKÅNE	1433083	85	59
STOCKHOLM	2486251	95	38
SÖDERMANLAND	300440	27	90
UPPSALA	410575	42	102
Unknown	0	3	0
VÄRMLAND	283037	29	102
VÄSTERBOTTEN	279028	10	36
VÄSTERNORRLAND	240640	10	42
VÄSTMANLAND	280756	21	75
VÄSTRA GÖTALAND	1777803	87	49
ÖREBRO	308357	12	39
ÖSTERGÖTLAND	472529	20	42
Total	10605535	581	55

STATISTICS – CRT-D – IMPLANTS PER COUNTY

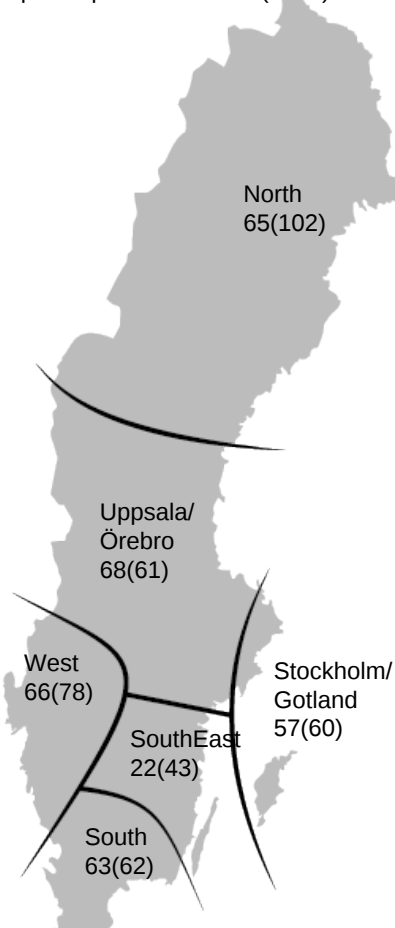


STATISTICS – CRT-P – IMPLANTS PER REGION

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

Region	Population	No of first impl	No per million
Stockholm/Gotland	2547103	146	57
Uppsala/Örebro	2152660	146	68
South-East Sweden	1087728	24	22
Southern Sweden	1935794	122	63
Western Sweden	1980916	131	66
Northern Sweden	901331	59	65
Total	10605532	628	59

Implants per million 2025(2024)

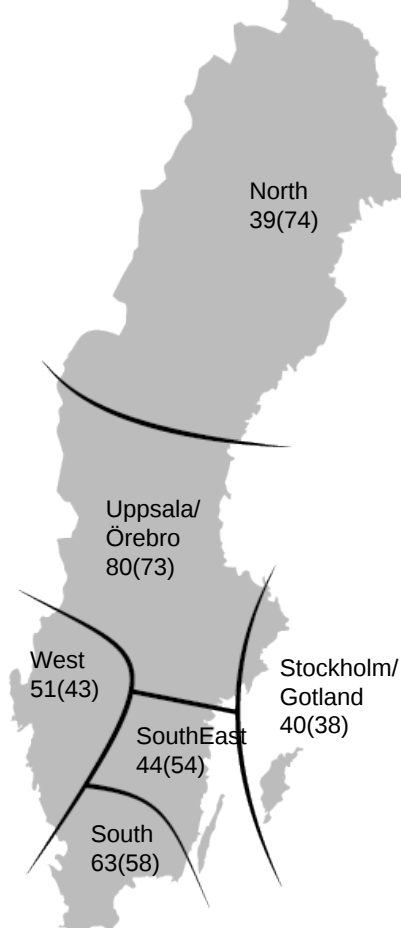


STATISTICS – CRT-D – IMPLANTS PER REGION

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

Region	Population	No of first impl	No per million
Stockholm/Gotland	2547103	101	40
Uppsala/Örebro	2152660	172	80
South-East Sweden	1087728	48	44
Southern Sweden	1935794	122	63
Western Sweden	1980916	101	51
Northern Sweden	901331	35	39
Total	10605532	579	55

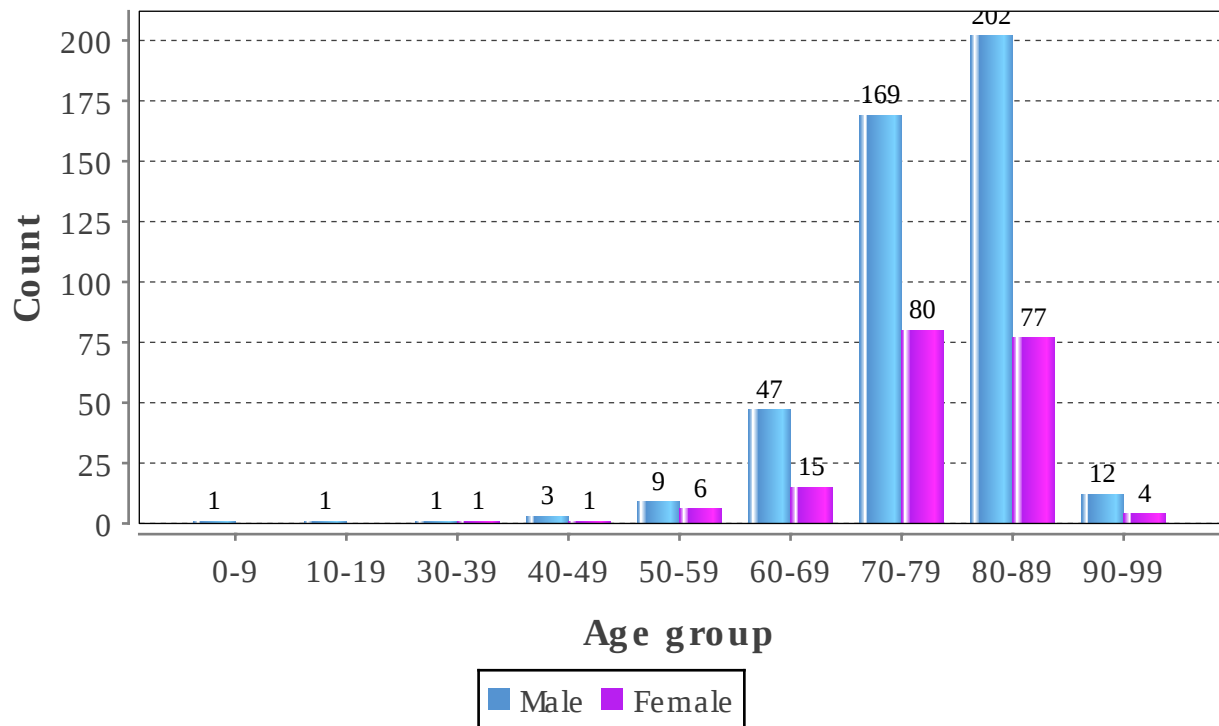
Implants per million 2025(2024)



STATISTICS – CRT-P – AGE DISTRIBUTION MALES/FEMALES

Age and gender distribution for new implants, total numbers

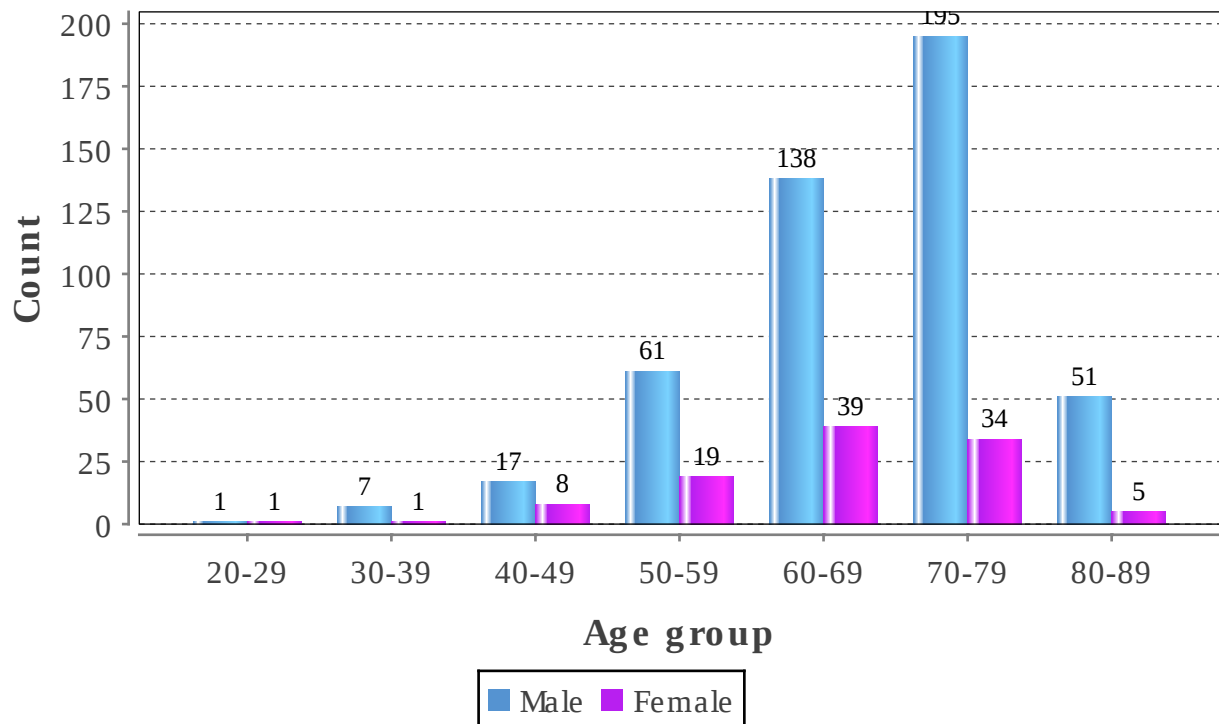
Age (years)	Total no	%	Male	Female
0-9	1	0.2	1	0
10-19	1	0.2	1	0
30-39	2	0.3	1	1
40-49	4	0.6	3	1
50-59	15	2.4	9	6
60-69	62	9.9	47	15
70-79	249	39.6	169	80
80-89	279	44.4	202	77
90-99	16	2.5	12	4
Average age	77	0.0	78	77
Total number of implants: 629				



STATISTICS – CRT-D – AGE DISTRIBUTION MALES/FEMALES

Age and gender distribution for new implants, total numbers

Age (years)	Total no	%	Male	Female
20-29	2	0.3	1	1
30-39	8	1.4	7	1
40-49	25	4.3	17	8
50-59	80	13.9	61	19
60-69	177	30.7	138	39
70-79	229	39.7	195	34
80-89	56	9.7	51	5
Average age	68	0.0	68	65
Total number of implants: 577				



STATISTICS – CRT – TYPE OF IMPLANTS

Based on both CRT-P and CRT-D

	Total		Male		Female	
	no	%	no	%	no	%
First implant	1202	54.8	912	75.9	290	24.1
Replacement	992	45.2	718	72.4	274	27.6
Total	2194	100.0	1630	74.3	564	25.7

ILR

1250 ILR's were implanted in Sweden 2024 which is slightly less than in 2024 with the main indication being dizzy spells 5%, palpitations, 6% and syncope 84%.

At the end of the ILR investigation period 30% of the patients were found to have an PM indication and 5% an ICD indication, the rest showed no pathological rhythm during the FU.

In 5% a new ILR was implanted to extend the monitoring period.

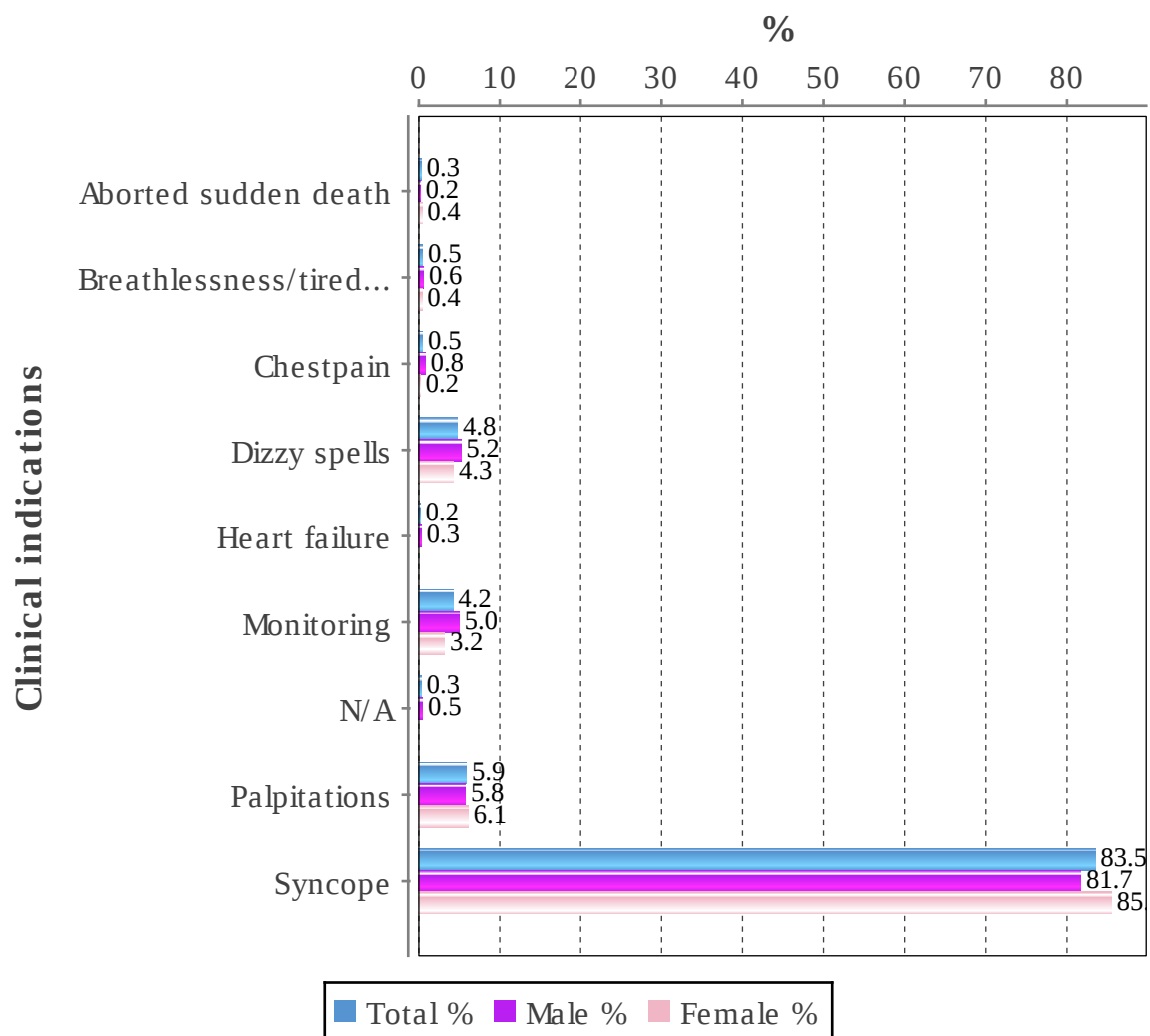
Fredriks fråga: Siffrorna på sidan 90 är lite missledande. Man skall dividera antalet PM med det totala antalet ILR 1250 för att få "rätt" procent. Fråga tillbaka: Ta frågan till Zsolt att göra om tabellen? Till nästa år!

STATISTICS – ILR – TYPE OF IMPLANTS

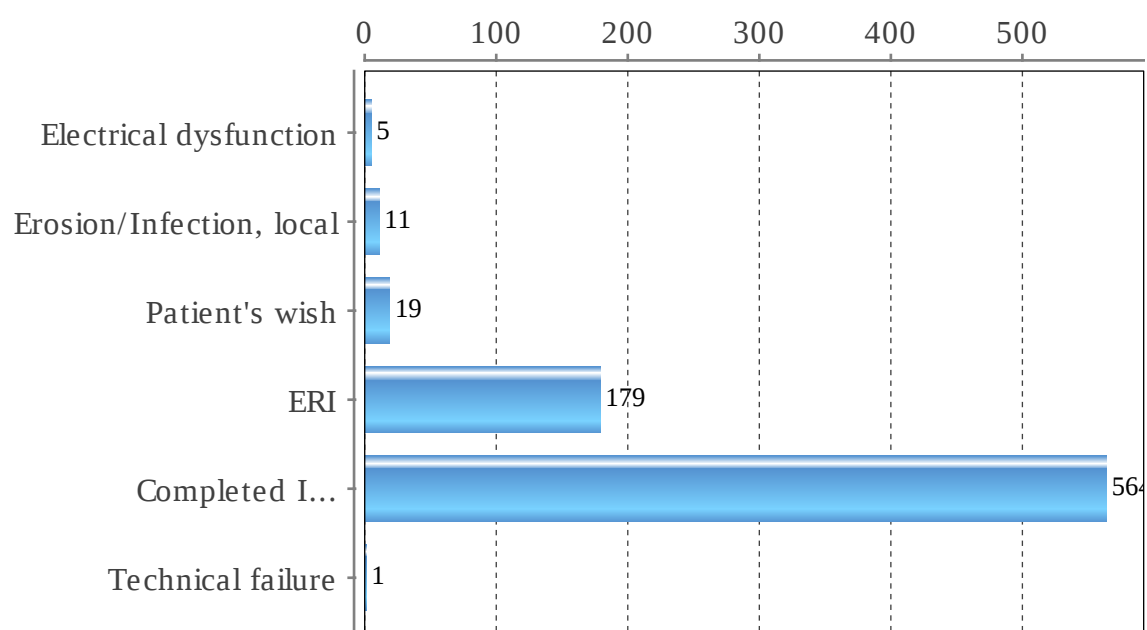
Ratio of new implants versus generator changes

	Total		Male		Female	
	no	%	no	%	no	%
First implant	1198	95.8	640	53.4	558	46.6
Replacement	52	4.2	27	51.9	25	48.1
Total	1250	100.0	667	53.4	583	46.6

STATISTICS – ILR – CLINICAL INDICATIONS



STATISTICS – ILR – REASON FOR REMOVAL



STATISTICS – ILR – ACTION AFTER ILR

Investigation after first ILR implant in % of completed ILR investigation

Action	No	%
Pacemaker implant	375	66.5
ICD implant	61	10.8
New ILR implant	67	11.9

Pacing modes

In high degree AV block only 5% of the patients receive VVI-R systems on average the same in all hospitals.

The use of VVIR pacing mode in sinus node disease vary from 4-7% when comparing different hospitals.

Lead extraction

The numbers of lead extractions are increasing and there are now 4 centers performing regular assisted lead extraction. Numbers are given as patients/leads: Karolinska 106/191 leads, Lund 73/136, Sahlgrenska 71/153, Uppsala 51/107. The total number of procedures are similar to 2024.

The lead dwell time is in the vast majority of cases 1-2 years but 64 leads had >20 years dwell time.

Abbot 2088 leads are the most common lead to fail with its well-known insulation problems.

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 2025 than before due to decreasing numbers of leads still in use.

Methods and success rate are displayed for those hospitals that have complete reporting.

Complications pacemaker

The total complication rate for pacemaker procedures is 3,8% vs 3.7% in 2024 with lead dislodgement being the most common. Passive atrial leads show the highest dislodgement rate with 3,3% vs 1.6% for active fix atrial leads. LV leads show the same tendency with 1,8% dislodgement for all passive types and 0,8% for the Medtronic screw-in type CS lead.

There is a variation among the operating hospitals with possible underreporting in many cases. Hospitals that have registered <3% in total complication can be regarded as having incomplete registration. This is based on literature regarding pacemaker procedure complications with a common rate of 5-10%.

Complications and gender

Infections are more common during generator changes, 1,0%, than new implants, 0,7% and most common in CRT system changes, 1%.

In PMR female sex is associated with less complications of all types except pneumothorax and infections after upgrade to CRT. This is difference from the literature that usually have an overrepresentation of females in all types of complications.

Complications ICD

The overall complication rate to ICD treatment is 5,3% and is the same as in 2024. The most common complication is lead dislodgement 2,2% followed by infection with 0,4%.

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

Complications CRT

This is presented as both CRT-D and CRT-P complications. Both are 4-5% and are very low and does not compare well with literature findings of up to 15% complications.

Most common are as with ICD's and PM's lead dislodgement 0,7% vs 2,3% 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 procedures at different sites are marked as not reliable for comparison.

A single chamber device takes 44 +/- 25 minutes to implant, and a dual chamber device 55 +/- 28 min and a CRT system 89 +/- 41 minutes to implant.

Device longevity ICD and PM

Generators generally have very good longevity with an average survival rate for Pacemakers of 94% after 5 years and 78% after 10 years but there are large differences between models and manufacturers. Data for each model is given in the tables.

Pacemaker lead survival is very good with a survival rate of 92% after 10 years with very little difference between models. Abbot 2088 has a slightly higher failure rate with only 94% 10-year and failure rate is increasing rapidly. CS leads have lower survival rates with a range of 80-90% 10-year survival.

ICD generator survival is more heterogenous than PM generator survival with larger differences between manufacturers and models and an average of 89% after 5 years and 57% after 10 years. Boston Scientific generally has the best survival rate for ICDs.

Abbott Fortify and Unify were identified as problem generators in 2014 in our registry long before the Abbott alert and survival curves are given for each model.

ICD lead survival is also shorter than pacemaker lead survival, 92% after 5 years and 88% after 10 years but still very good as an average.

The Medtronic Sprint Fidelis models were implanted in 903 cases in Sweden and the survival rate is 68% after 10 years and decreased rapidly as expected from previous years but now seems to be steady.

In the Abbott Riata model's failures are increasing and 10-year survival is now down to 73% at 10 year.

The Biotronik Linx leads also have a decreased longevity compared to the average ICD lead and have an 89% survival at 5 years and a 64% 10-year survival.

Patients

The pacemaker patients have a 5-year survival of 70% and a 10-year survival of 43%.

The ICD patient survival is 67% after 5 years and 45% after 10 years.

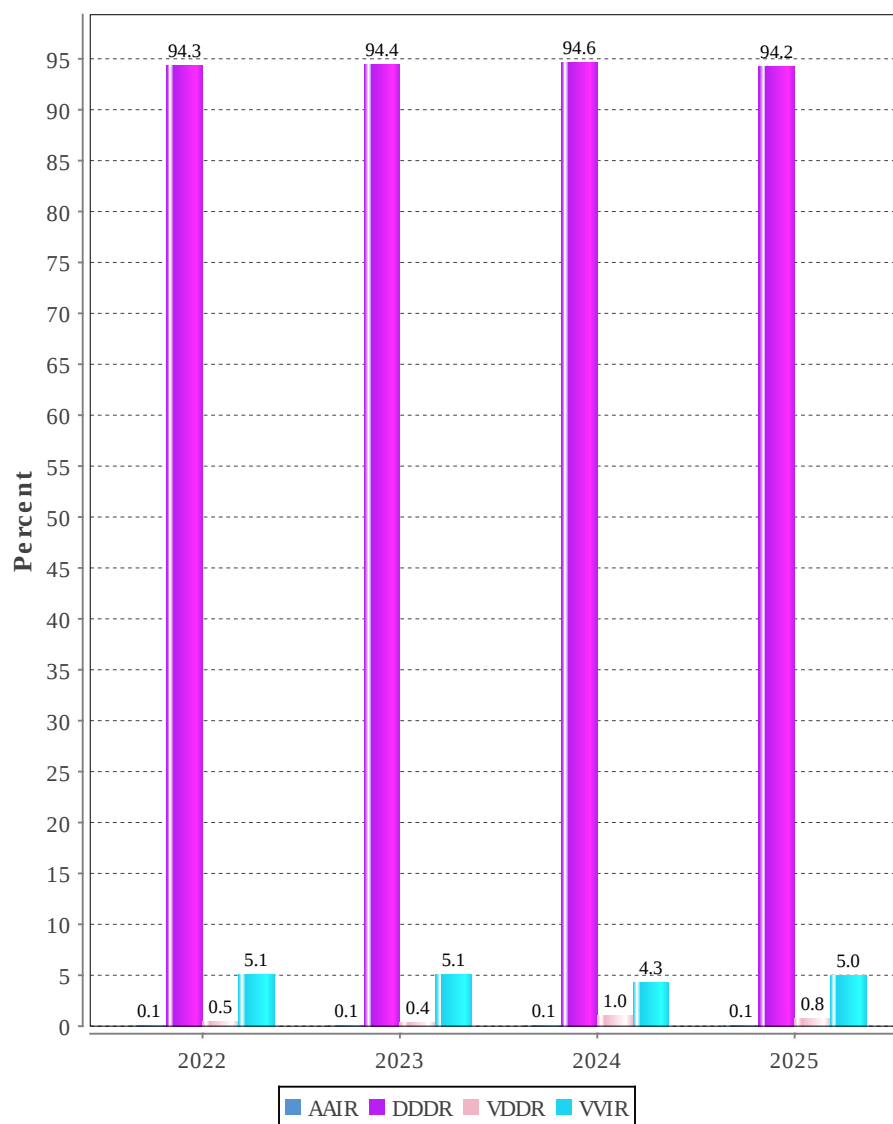
The heart failure patients treated with CRT also have the shortest expected survival rate among the PM and ICD patients. CRT-P patients have a 65% 5-year survival and 33% 10-year survival. CRT-D patients 31% 5-year survival and 28% 10-year survival.

One-year mortality is 6% in PM patients, 3% in ICD patients 5% in CRT-P patients and 3% in CRT-D patients.

QUALITY – PACEMAKER – FIRST IMPLANT HIGH DEGREE AV-BLOCK

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

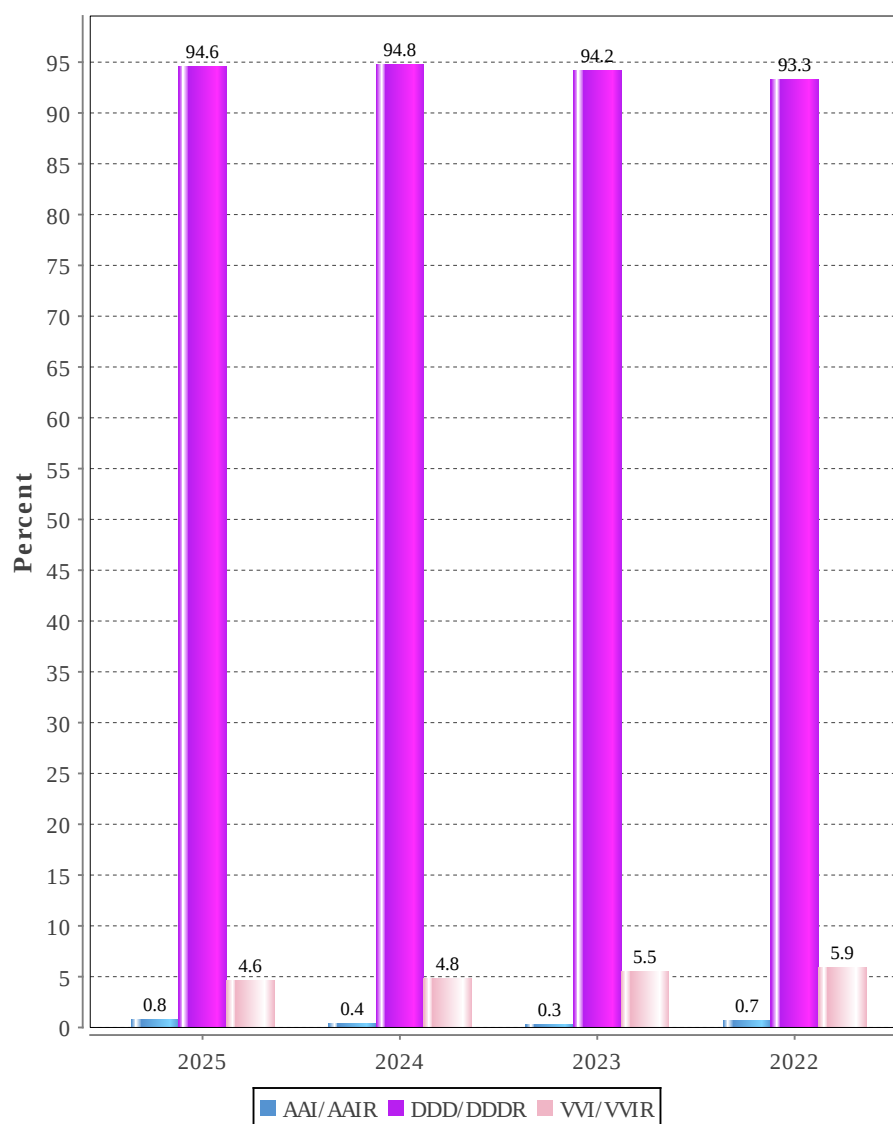
Mode %	2022	2023	2024	2025
AAIR	0.1	0.1	0.1	0.1
DDDR	94.3	94.4	94.6	94.2
VDDR	0.5	0.4	1.0	0.8
VVIR	5.1	5.1	4.3	5.0



QUALITY – PACEMAKER – FIRST IMPLANT SINUS NODE DYSFUNCTION

Use of pacing mode for Sinus Node Disease, historical data

Mode (%)	2025	2024	2023	2022
AAI/AAIR	0.8	0.4	0.3	0.7
DDD/DDDR	94.6	94.8	94.2	93.3
VVI/VVIR	4.6	4.8	5.5	5.9



QUALITY – PACEMAKER – LEAD DISLOCATION

Dislocation rate for different lead types in atrial or ventricular placement. Based on all implants implanted 2007 and later and explanted/corrected 2025 or earlier

Type	Right atrium %	Right ventricle %	Left ventricle %	Total %
Fixed screw	1.6	0.9	0.8	1.2
Retractable screw	1.6	0.9	0.8	1.2
Passive	3.3	1.6	1.8	1.3
All	1.6	0.9	1.5	1.2

QUALITY – LEAD EXTRACTIONS

Extractions per hospital

Hospital	No of patients	No of leads
Akademiska sjukhuset	51	107
Blekingesjukhuset, Karlskrona	5	6
Falu lasarett	6	8
Karolinska Solna	106	191
Linköpings universitetssjukhus	7	8
Östersunds sjukhus	7	9
Sahlgrenska universitetssjukhuset	71	153
Skånes universitetssjukhus, Lund	73	136

Extractions per type

Type	Extractions
ICD lead	132
Pacemaker lead	519

Extractions per model (more than 5 extractions)

Manufacturer	Model	Extractions
Abbott	1258T QuickFlex	6
Abbott	1456Q Quartet MRI	6
Abbott	1458Q Quartet MRI	23
Abbott	1948 Isoflex MRI	6
Abbott	1999 Optisense	19
Abbott	2088TC Tendril STS MRI 46/52/58 cm	159
Abbott	7122Q Durata	24
Abbott	LDA210Q Optisure DF4	22
Abbott	LPA1200M52cm TendrilMRI	7
Abbott	LPA1200M58cm TendrilMRI	7
Biotronik	Solia S53 MRI	22
Biotronik	Solia S60 MRI	28
Boston Scientific	0672 Reliance 4-Front	8
Boston Scientific	4470 Fineline II Sterox EZ MRI	13
Boston Scientific	7741 Ingevity MRI	6
Boston Scientific	7841 Ingevity MRI	9
Boston Scientific	7842 Ingevity MRI	6
Medtronic	4076 CapSureFix Novus MRI	94
Medtronic	4598 Attain Performa MRI	7
Medtronic	4798 Attain Stability Quad MRI	7
Medtronic	5076 CapSureFix MRI	22
Medtronic	6935M Sprint Quattro S MRI DF4	32

QUALITY – LEAD EXTRACTIONS

Extractions per reason

Reason	Extractions
Ceased indication for ICD therapy	12
Ceased indication for PM therapy	11
Conductor break	8
Elective	57
Electrical dysfunction	72
Heart transplant	57
Infection/Ulceration, local	168
Infection/Ulceration, systemic	219
Lead dislocation	20
Preventive	10
Venous access	7

*Extraction positions**

Hospital	Femoral	Left superior	N/A	Right superior
Akademiska sjukhuset	0	89	0	18
Blekingesjukhuset, Karlskrona	2	4	0	0
Falu lasarett	1	5	0	2
Karolinska Solna	0	172	0	19
Linköpings universitetssjukhus	0	8	0	0
Östersunds sjukhus	0	9	0	0
Skånes universitetssjukhus, Lund	0	133	0	3

*Hospital Sahlgrenska and Sunderby excluded

QUALITY – LEAD EXTRACTIONS

Extraction problems*

Hospital	I	E	O	P	X	D
Akademiska sjukhuset	0	0	0	0	0	0
Blekingesjukhuset, Karlskrona	0	0	0	0	0	0
Falu lasarett	0	0	0	0	0	0
Karolinska Solna	0	0	0	0	0	0
Linköpings universitetssjukhus	0	0	0	0	0	0
Östersunds sjukhus	0	0	0	0	0	0
Skånes universitetssjukhus, Lund	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 successful	Successful
Akademiska sjukhuset	0	1	106
Blekingesjukhuset, Karlskrona	0	0	6
Falu lasarett	0	0	8
Karolinska Solna	0	1	190
Linköpings universitetssjukhus	0	0	8
Östersunds sjukhus	0	0	9
Skånes universitetssjukhus, Lund	0	0	136

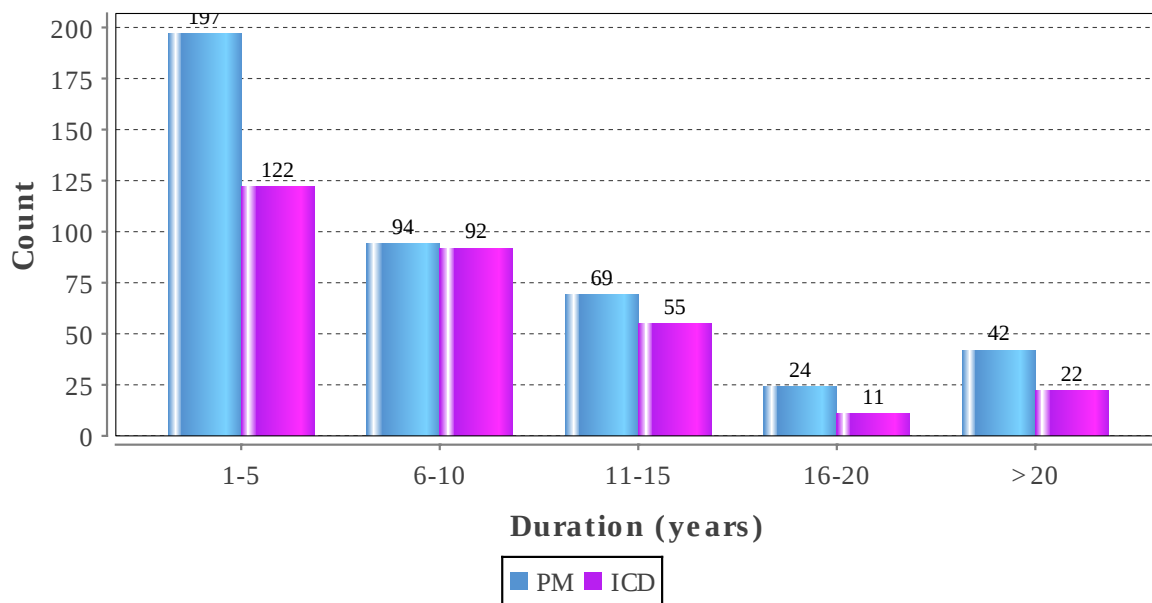
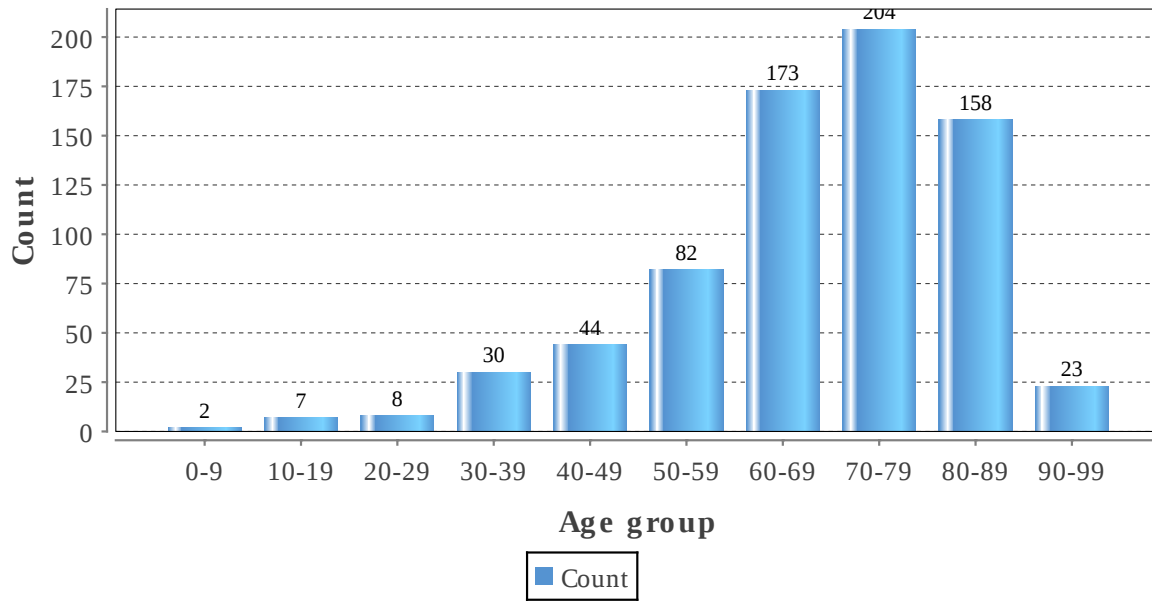
*Hospital Sahlgrenska and Sunderby excluded

Extraction tools*

Hospital	SS	LS	PS	AM	L	S	PK	EK	AL
Akademiska sjukhuset	24	10	2	57	1	0	0	0	13
Blekingesjukhuset, Karlskrona	1	0	0	0	0	0	0	0	0
Falu lasarett	0	0	0	0	0	0	0	0	1
Karolinska Solna	2	49	4	61	0	0	0	0	0
Linköpings universitetssjukhus	4	0	0	0	0	0	0	0	0
Östersunds sjukhus	9	0	0	0	0	0	0	0	0
Skånes universitetssjukhus, Lund	13	1	1	68	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

QUALITY – LEAD EXTRACTIONS

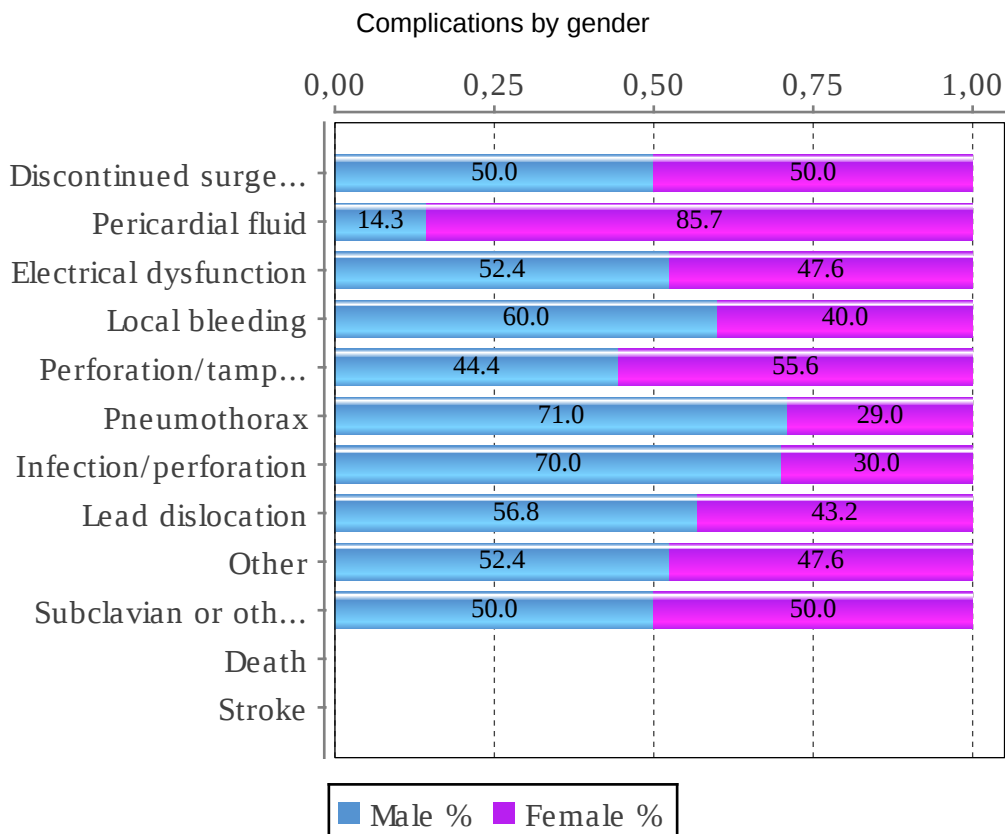


QUALITY – PACEMAKER – COMPLICATIONS

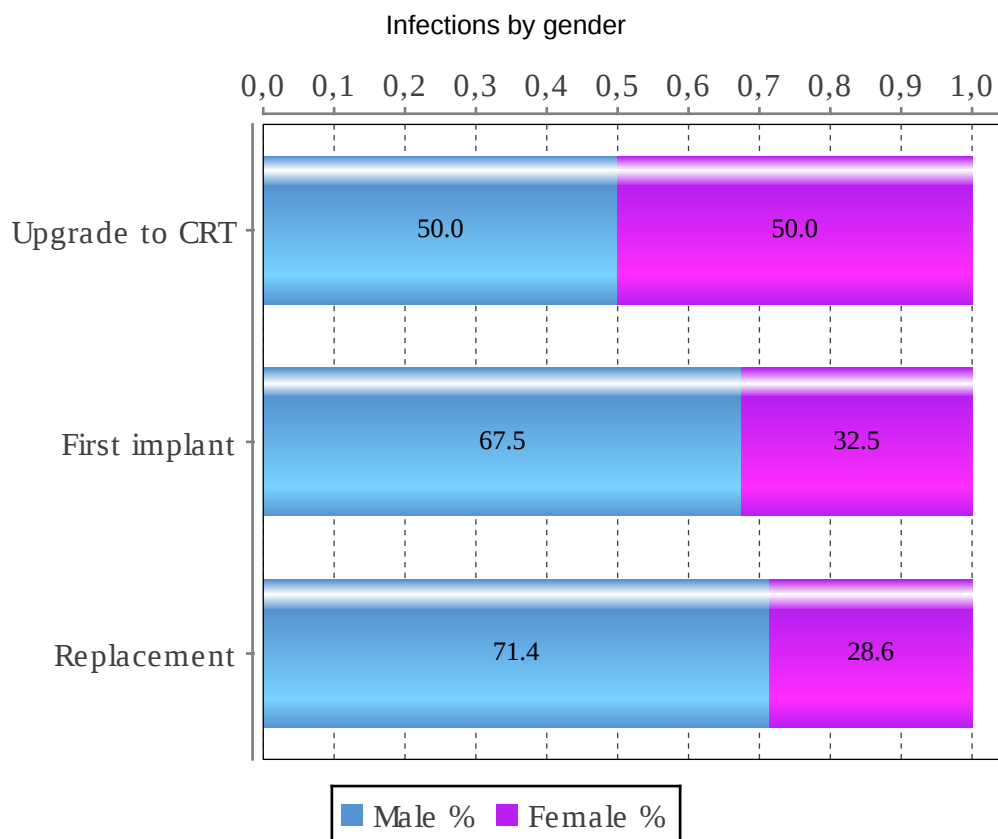
Registered complications for new implants and for bleeding, infection and other also including replacements

Complication	2024 %	2025 %	Based on
Discontinued surgery due to hemodynamic reasons	0.0	0.0	A
Pericardial fluid	0.0	0.1	A
Electrical dysfunction	0.3	0.2	B
Local bleeding	0.2	0.2	A
Perforation/tamponade	0.3	0.3	B
Pneumothorax	0.4	0.4	B
Infection/perforation	0.5	0.4	A
Lead dislocation	1.3	1.6	B
Other	0.4	0.4	A
Subclavian or other related thrombosis	0.1	0.1	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	0.2	0.1	A
Total	3.7	3.8	

Based on A=11182 (all implants) alternatively B=8593 (first implants + lead replacement) validated events



QUALITY – PACEMAKER INFECTIONS



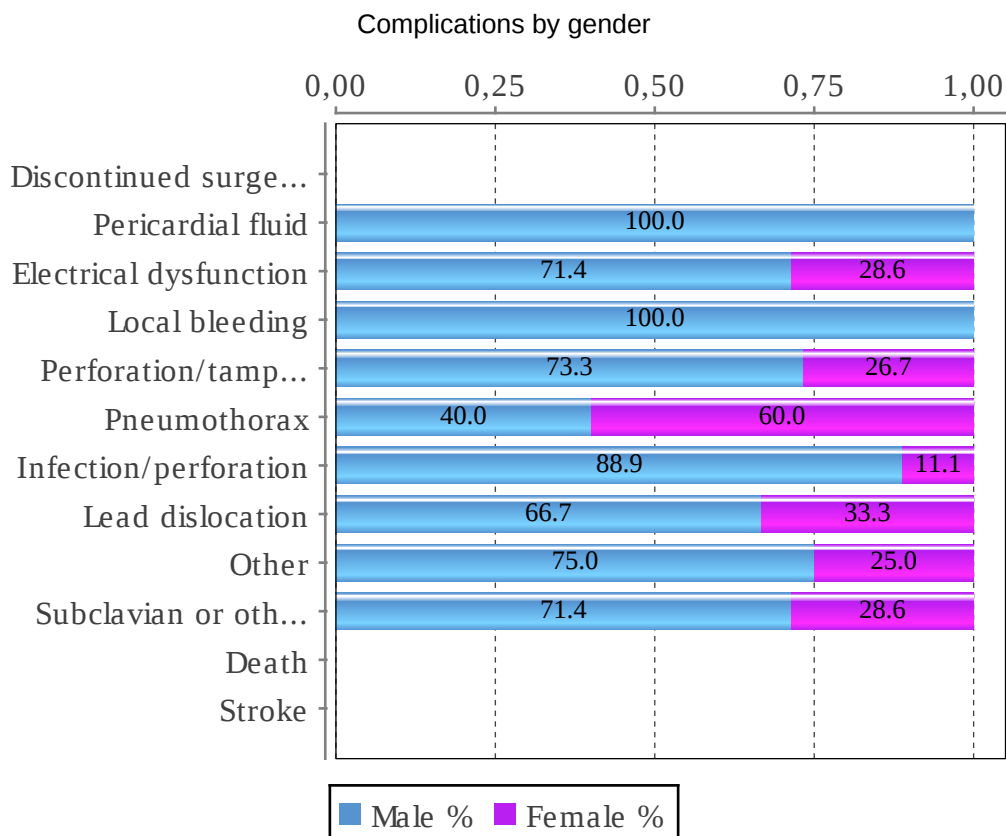
Infections related to all interventions by gender

Reason	Male %	Female %
First implant	0.5	0.4
Replacement	0.8	0.5
Upgrade to CRT	0.5	1.2

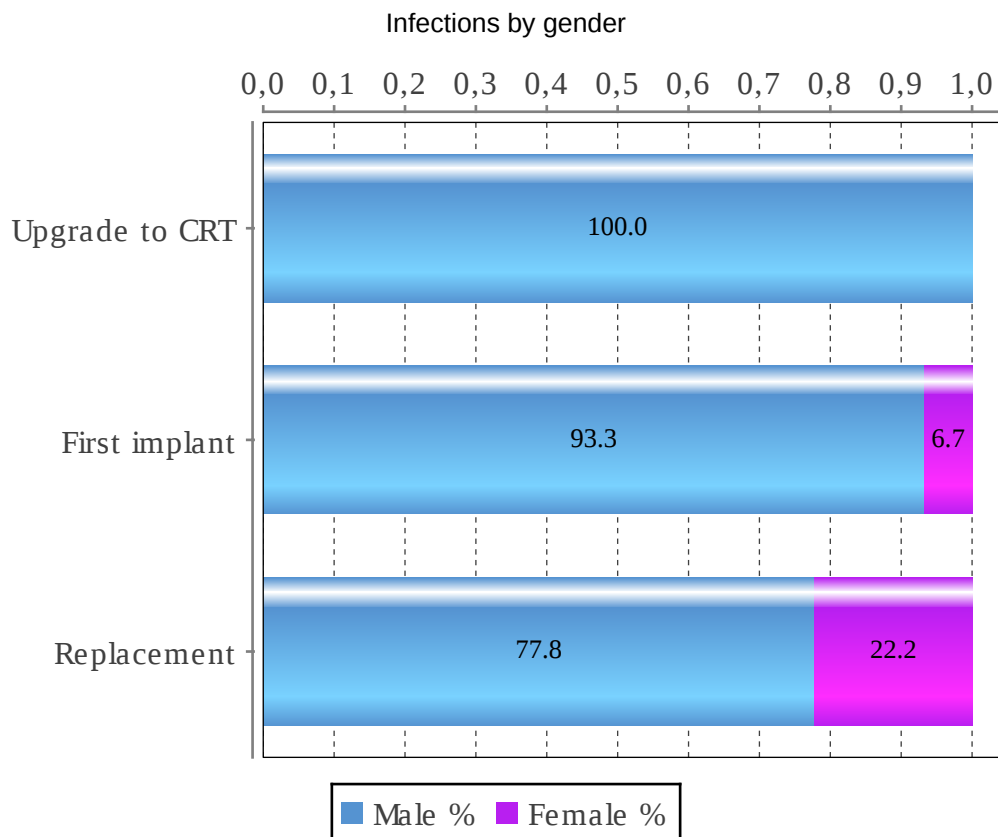
QUALITY – ICD – COMPLICATIONS

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

Complication	2024 %	2025 %
Discontinued surgery due to hemodynamic reasons	0.0	0.0
Electrical dysfunction	0.6	0.4
Local bleeding	0.2	0.2
Perforation/tamponade	0.5	0.9
Pneumothorax	0.2	0.3
Infection/perforation	0.4	0.3
Lead dislocation	2.5	2.2
Other	0.4	0.2
Subclavian or other related thrombosis	0.0	0.3
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	0.5	0.5
Total	5.3	5.3
Based on 2604 (all implants) alternatively 1654 (first implants + lead replacements) validated events		



QUALITY – ICD INFECTIONS



Infections related to all interventions by gender

Reason	Male %	Female %
<i>First implant</i>	<i>1.1</i>	<i>0.3</i>
<i>Replacement</i>	<i>0.8</i>	<i>0.8</i>
<i>Upgrade to CRT</i>	<i>0.7</i>	<i>0.0</i>

QUALITY – CRT – COMPLICATIONS

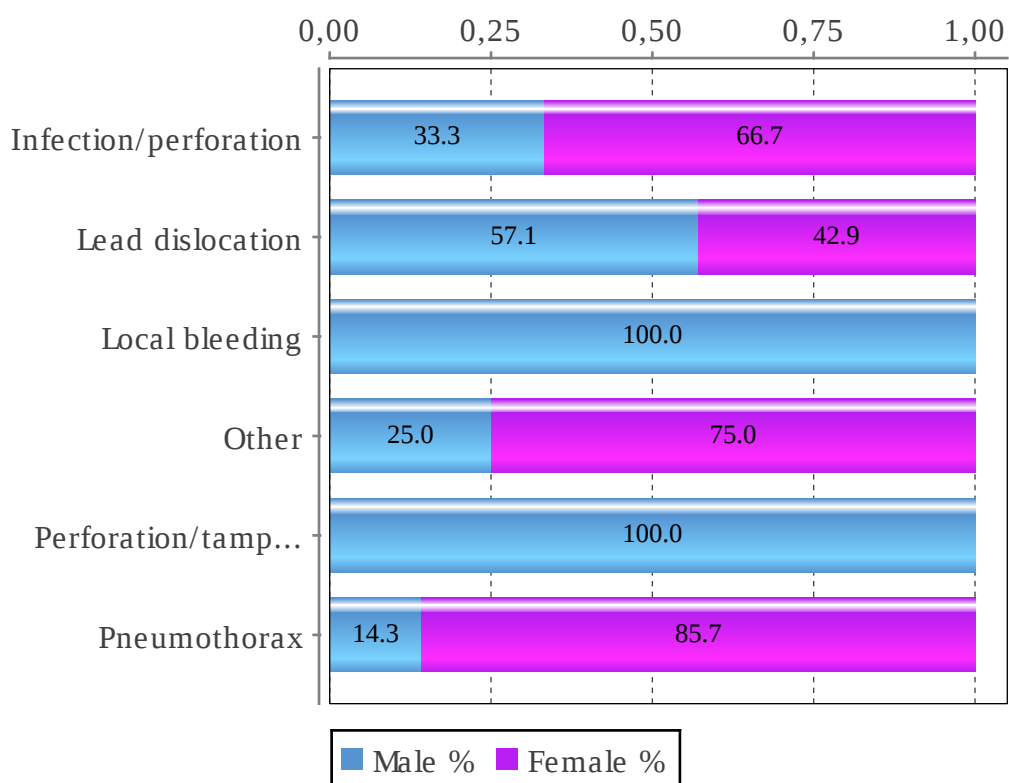
Registered complications for new implants and for bleeding, infection and other also including replacements.

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	-
Infection/perforation	0.5
Lead dislocation	2.2
Local bleeding	0.2
Other	0.6
Perforation/tamponade	0.2
Pericardial fluid	-
Peroperative arrhythmia requiring acute medication	-
Pneumothorax	1.1
Stroke	-
Subclavian or other related thrombosis	-
Total	4.7
Total no of implants 636	

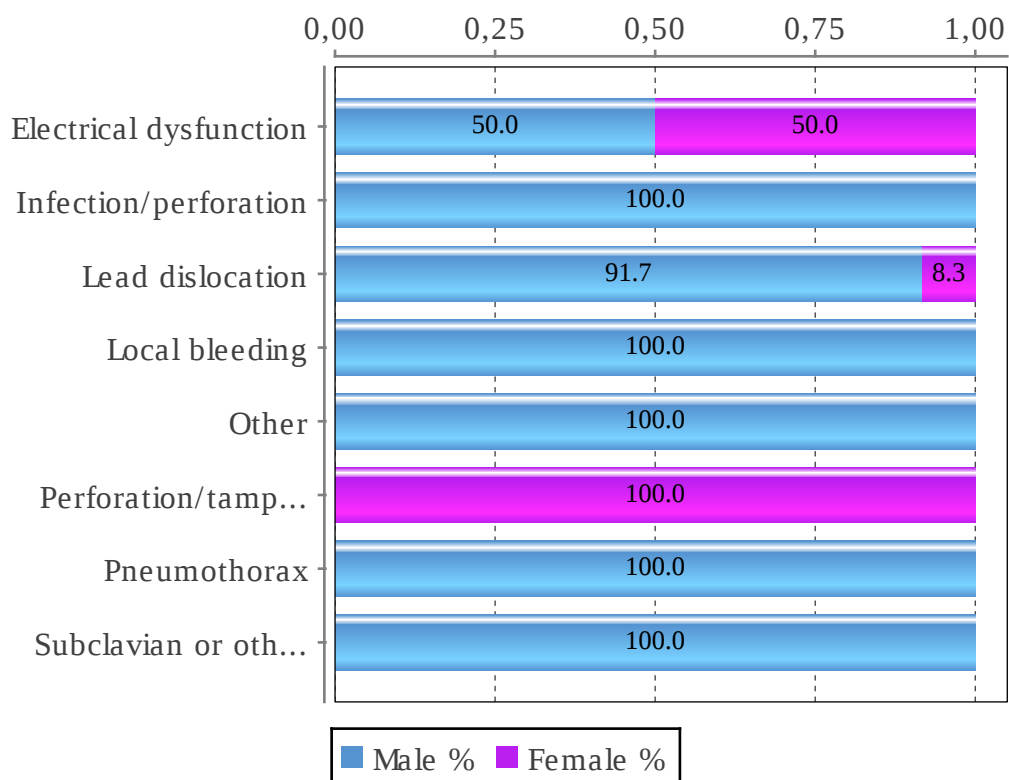
CRT-D Complication	%
Death	-
Discontinued surgery due to LV-lead impl. failure	-
Discontinued surgery due to hemodynamic reasons	-
Discontinued surgery due to lack of venous access	-
Electrical dysfunction	0.3
Infection/perforation	0.2
Lead dislocation	2.1
Local bleeding	0.7
Other	0.2
Perforation/tamponade	0.3
Pericardial fluid	-
Peroperative arrhythmia requiring acute medication	-
Pneumothorax	0.2
Stroke	-
Subclavian or other related thrombosis	0.3
Total	4.4
Total no of implants 573	

QUALITY – CRT – COMPLICATIONS

CRT-P complications by gender



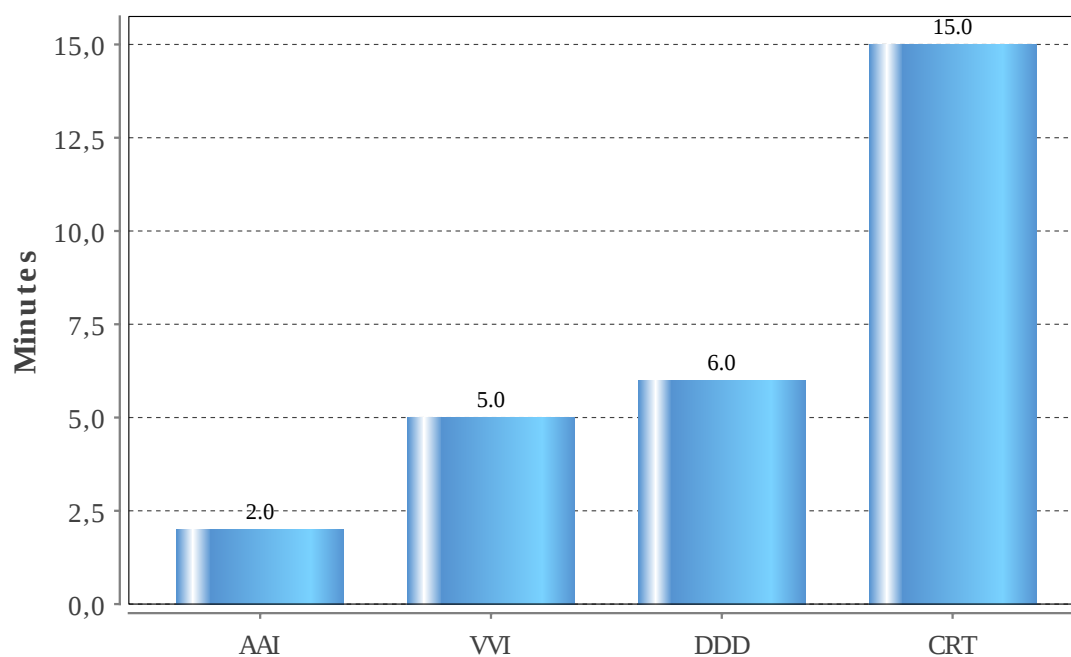
CRT-D complications by gender



QUALITY – PACEMAKER – FLUOROSCOPY PER SUBTYPE

National mean fluoroscopy duration for a new implant of different subtypes

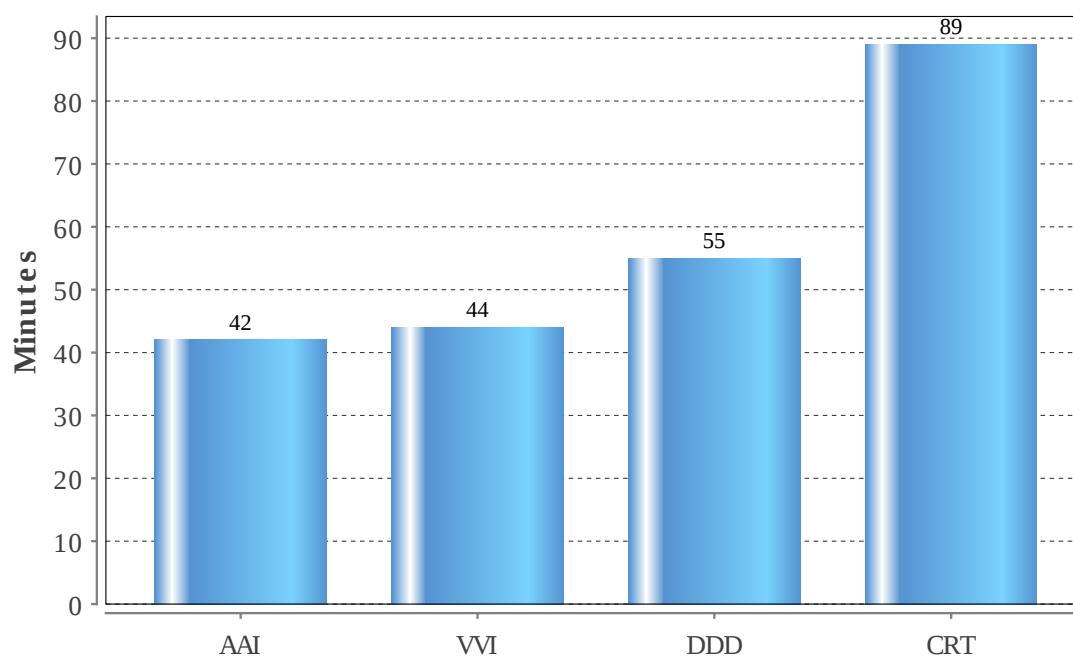
Fluoroscopy time	Average	Standard deviation
AAI	2.0	2.9
VVI	5.0	19.2
DDD	6.0	14.3
CRT	15.0	12.1



QUALITY – PACEMAKER – KNIFE TIME PER SUBTYPE

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

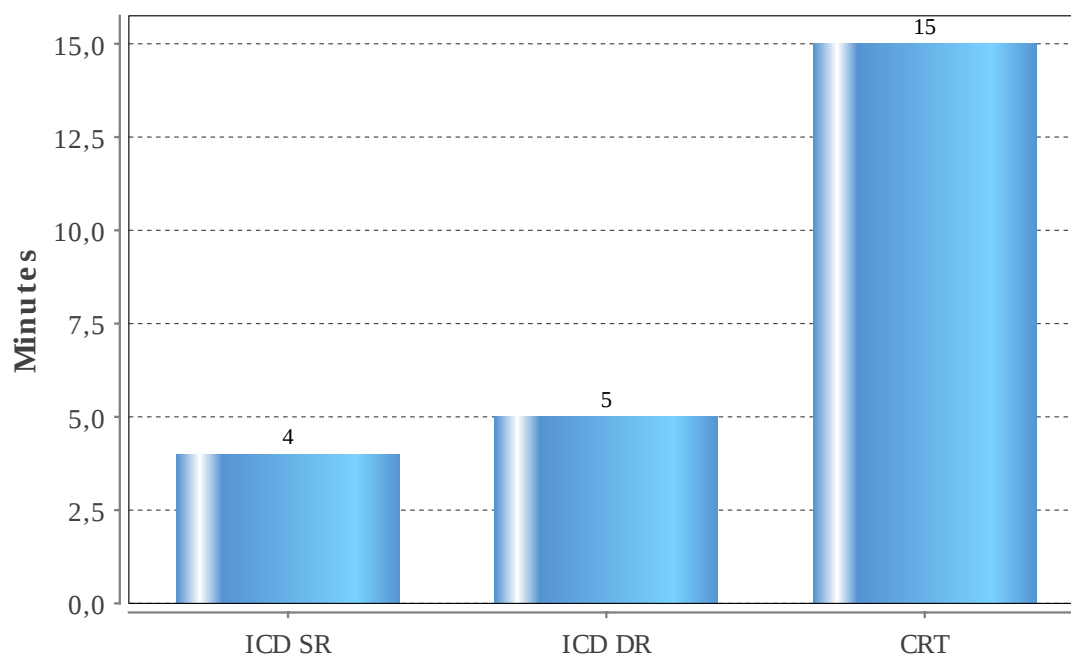
Knife time	Average	Standard deviation
AAI	42	16.7
VVI	44	25.4
DDD	55	28.3
CRT	89	40.7



QUALITY – ICD – FLUOROSCOPY PER SUBTYPE

National mean fluoroscopy duration for a new implant of different subtypes

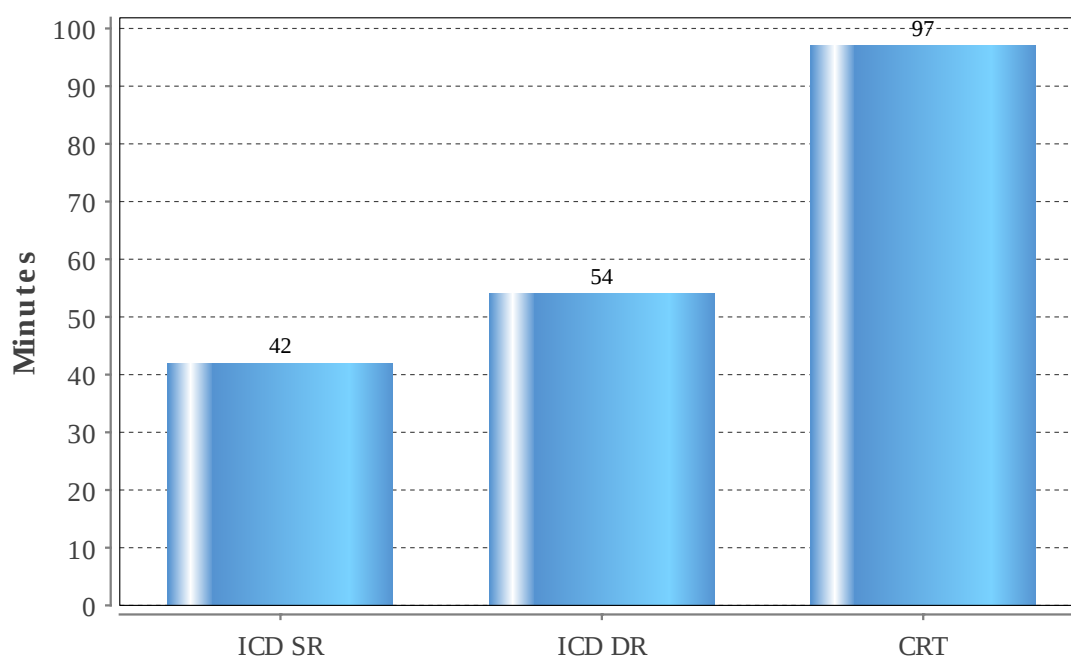
Fluoroscopy time	Average	Standard deviation
ICD SR	4	5.2
ICD DR	5	6.1
CRT	15	12.7



QUALITY – ICD – KNIFE TIME PER SUBTYPE

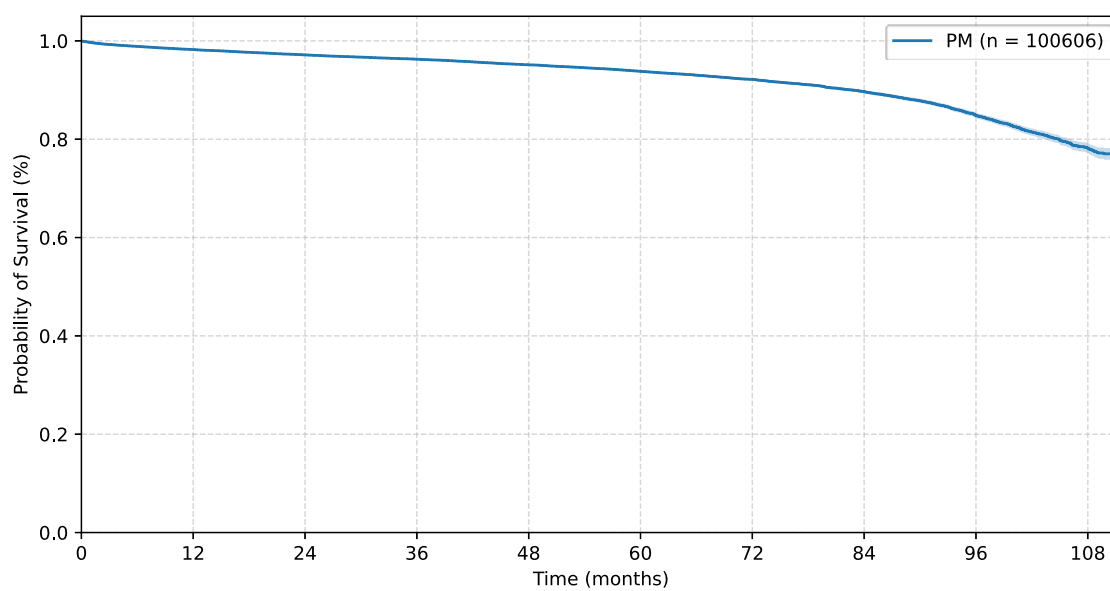
National mean skin to skin duration for a new implant of different subtypes

Knife time	Average	Standard deviation
ICD SR	42	20.3
ICD DR	54	32.1
CRT	97	41.9



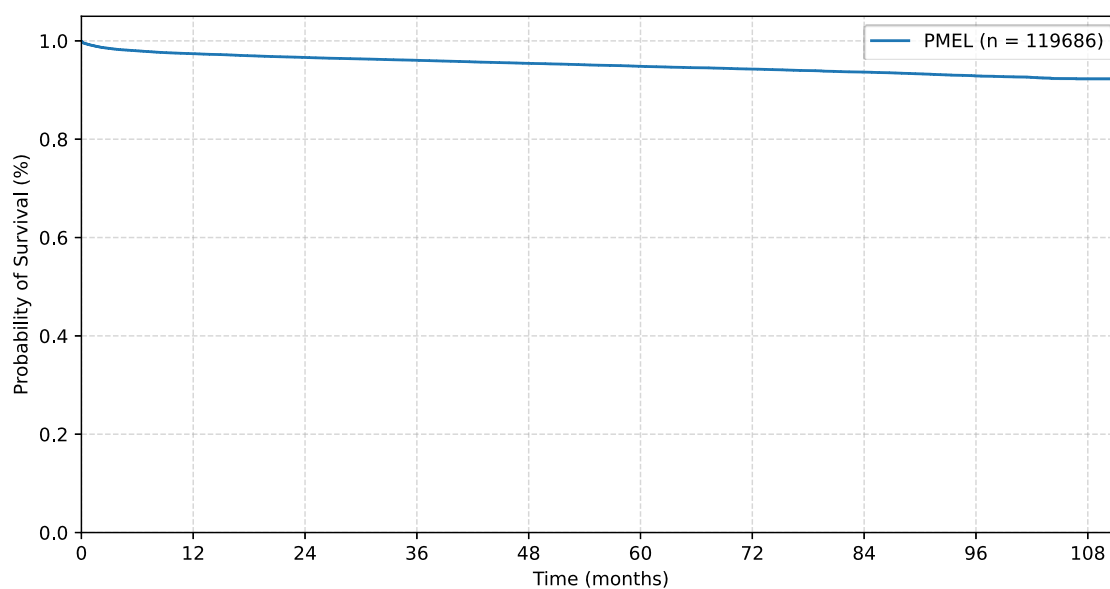
QUALITY – PACEMAKER – GENERATOR SURVIVAL

Year	Survival probability %	Risk	Events	Censored
0	100.0	0	0	100606
1	98.2	17729	1638	81215
2	97.1	15371	807	65078
3	96.3	14113	526	50427
4	95.1	12069	520	37825
5	93.8	10152	444	27230
6	92.2	7993	404	18820
7	89.7	6992	402	11408
8	84.9	5556	429	5418
9	78.2	4072	251	1108



QUALITY – PM – LEAD SURVIVAL

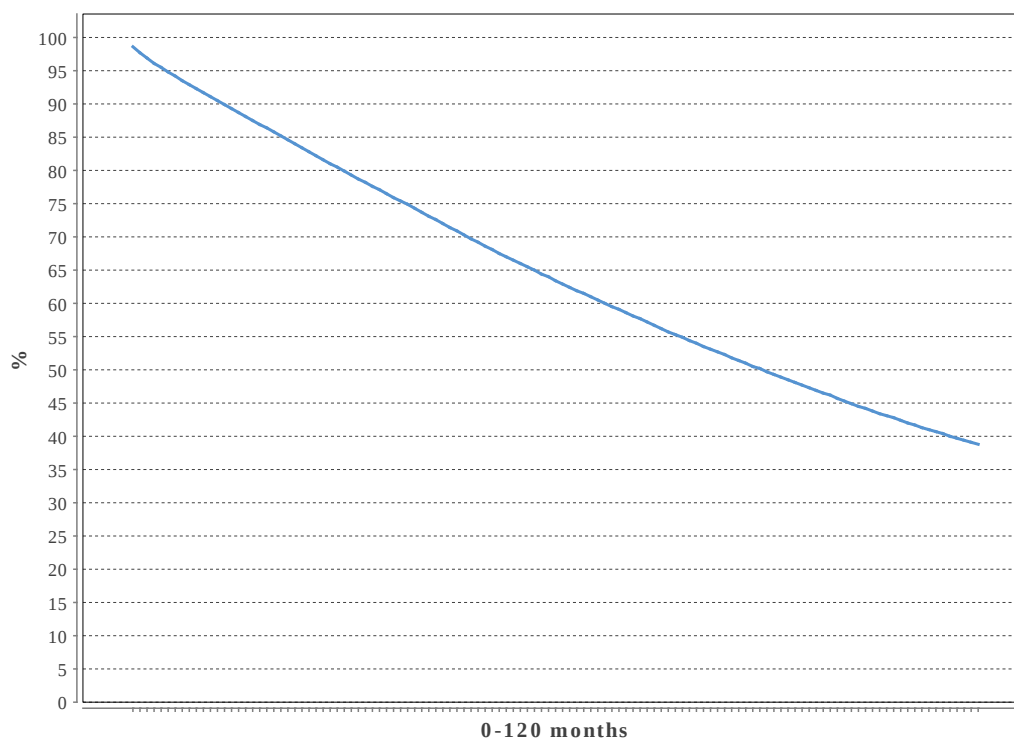
Year	Survival probability %	Risk	Events	Censored
0	99.9	0	0	119686
1	97.4	20386	2884	96314
2	96.6	17483	687	78186
3	96.0	15818	420	61948
4	95.4	13860	358	47698
5	94.8	12041	259	35418
6	94.3	10039	178	25176
7	93.7	8910	133	16108
8	92.9	7746	100	8260
9	92.3	6315	32	1942



QUALITY – PACEMAKER – PATIENT SURVIVAL

Based on all implants after 1990

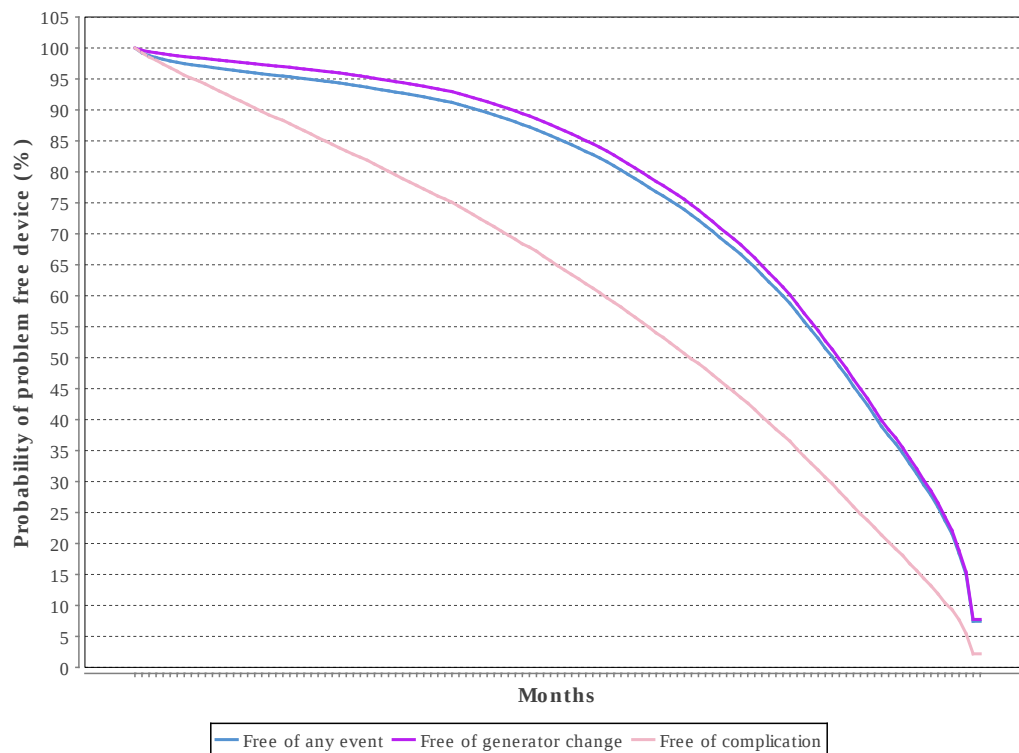
Year	At risk	Survival probability %
1	192070	98.6
2	164866	90.5
3	141180	83.4
4	119655	76.5
5	100224	69.7
6	83184	63.4
7	68325	57.7
8	53613	52.3
9	39122	47.3
10	26357	42.8



QUALITY – ICD – FREE OF EVENT

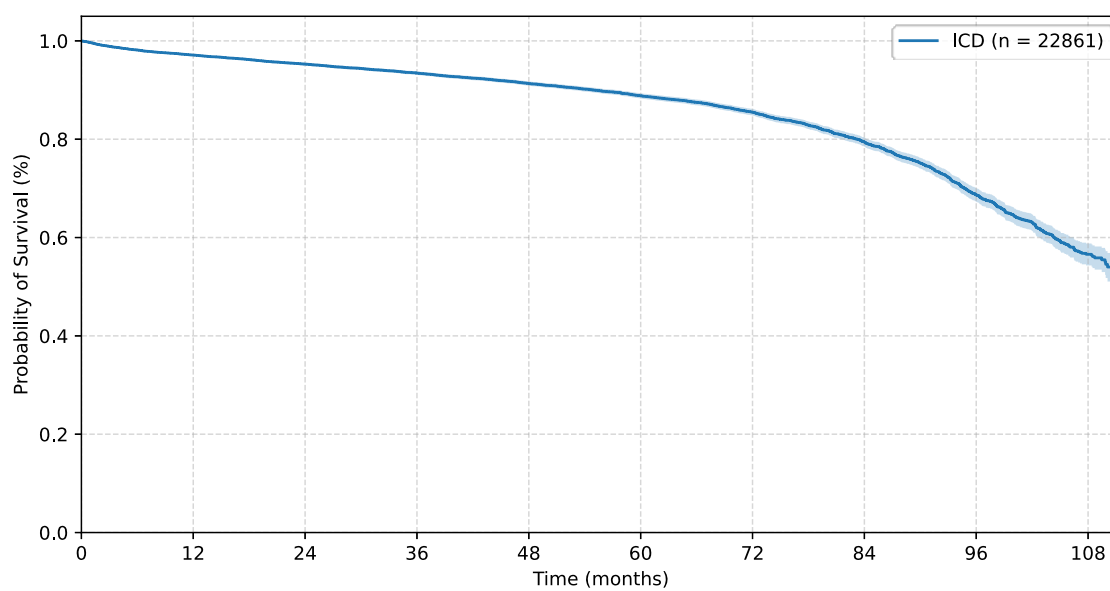
Probability of event free ICD-device

Year	At risk	Free of any event %	Free of generator change %	Free of complication %
1	49753	96.7	98.0	93.0
2	44218	95.1	96.6	86.7
3	38877	93.1	94.8	80.1
4	33459	90.2	92.0	73.1
5	27200	85.4	87.1	64.9
6	20682	78.2	79.9	55.7
7	14224	68.5	70.1	45.4
8	7930	54.5	55.8	33.0
9	2921	36.1	37.1	19.1
10	147	7.4	7.7	2.2



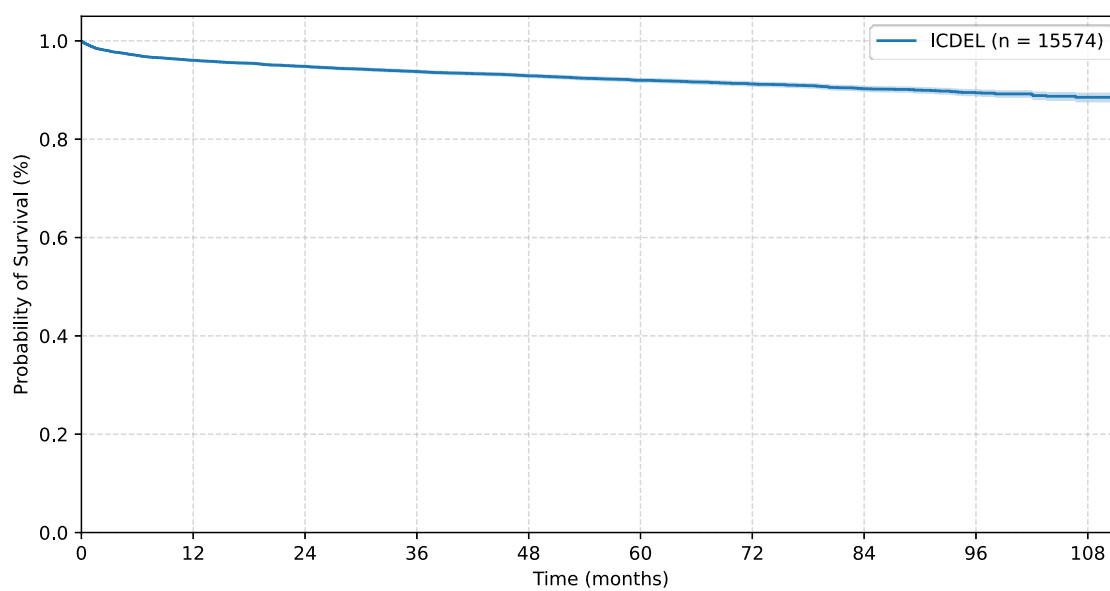
QUALITY – ICD – GENERATOR SURVIVAL

Year	Survival probability %	Risk	Events	Censored
0	100.0	0	0	22861
1	97.1	3228	621	19008
2	95.3	3126	326	15563
3	93.4	2763	273	12530
4	91.3	2496	253	9778
5	88.8	2296	231	7254
6	85.5	1942	228	5077
7	79.5	1620	293	3161
8	68.7	1421	310	1430
9	56.6	1002	152	277



QUALITY – ICD – LEAD SURVIVAL

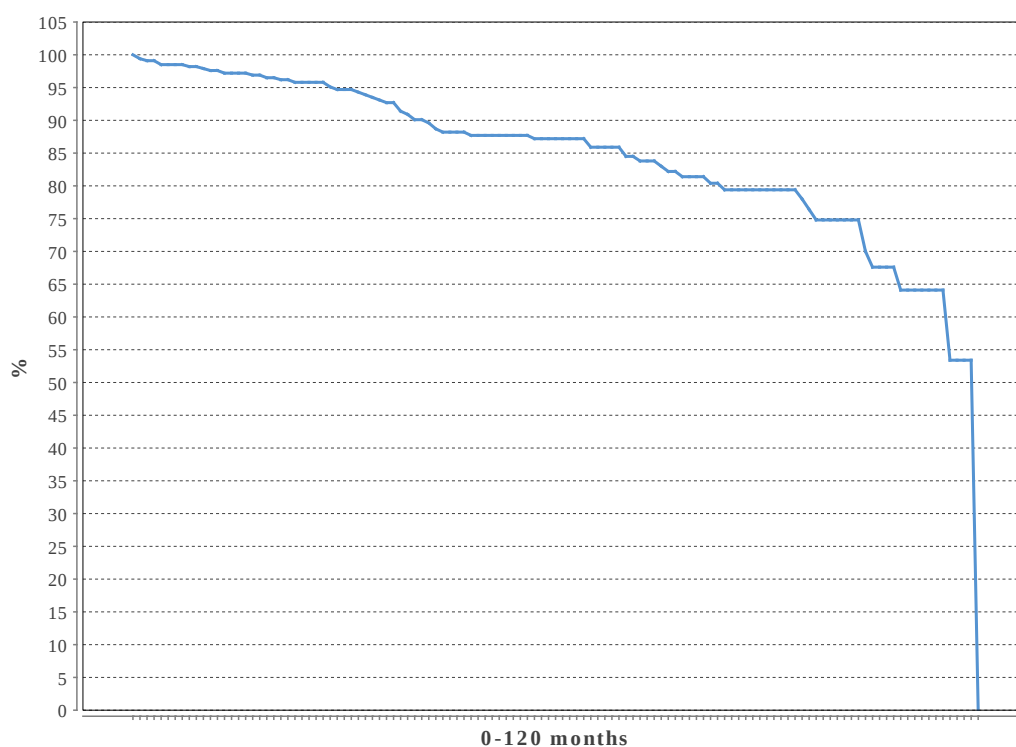
Year	Survival probability %	Risk	Events	Censored
0	100.0	0	0	15574
1	96.1	2070	584	12915
2	94.8	1970	154	10794
3	93.8	1829	109	8859
4	92.9	1721	75	7060
5	92.0	1617	61	5387
6	91.2	1450	37	3894
7	90.3	1271	33	2587
8	89.4	1207	17	1362
9	88.5	1041	8	318



QUALITY – ICD – SURVIVAL MEDTRONIC SPRINT FIDELIS

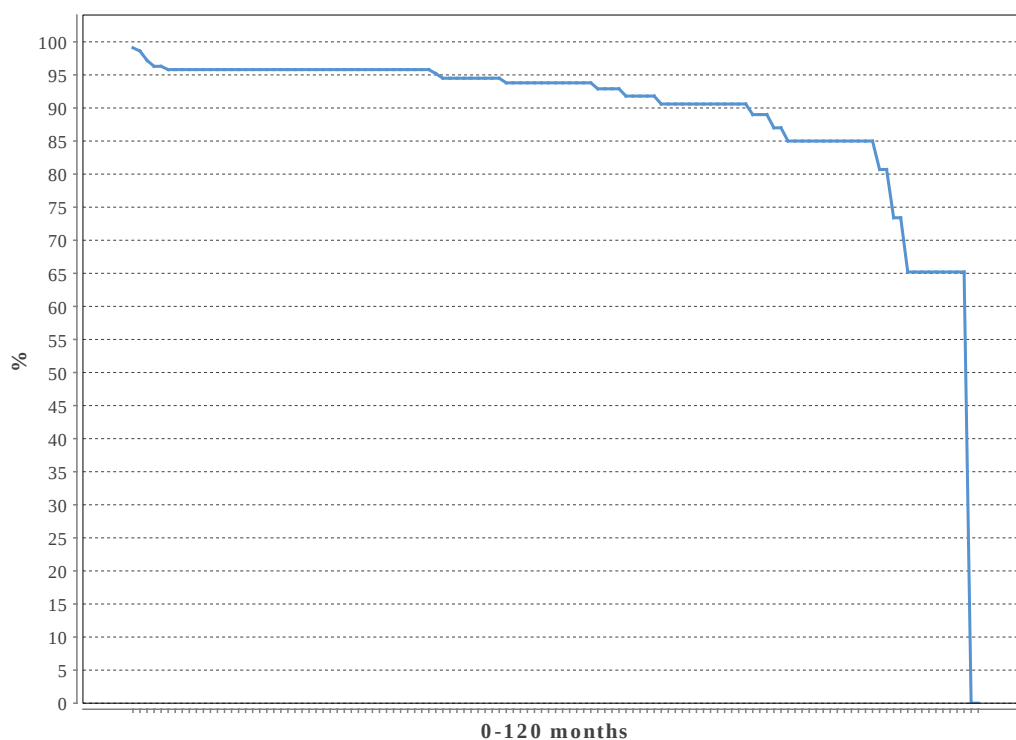
Survival probability for ICD lead Medtronic Sprint Fidelis. Elective replacement and replacements due to infections and system changes have been considered as censored events.

Year	At risk	Survival probability %
1	345	100.0
2	301	97.6
3	269	95.8
4	221	92.7
5	181	87.7
6	152	87.2
7	116	83.8
8	80	79.4
9	49	76.4
10	23	67.6



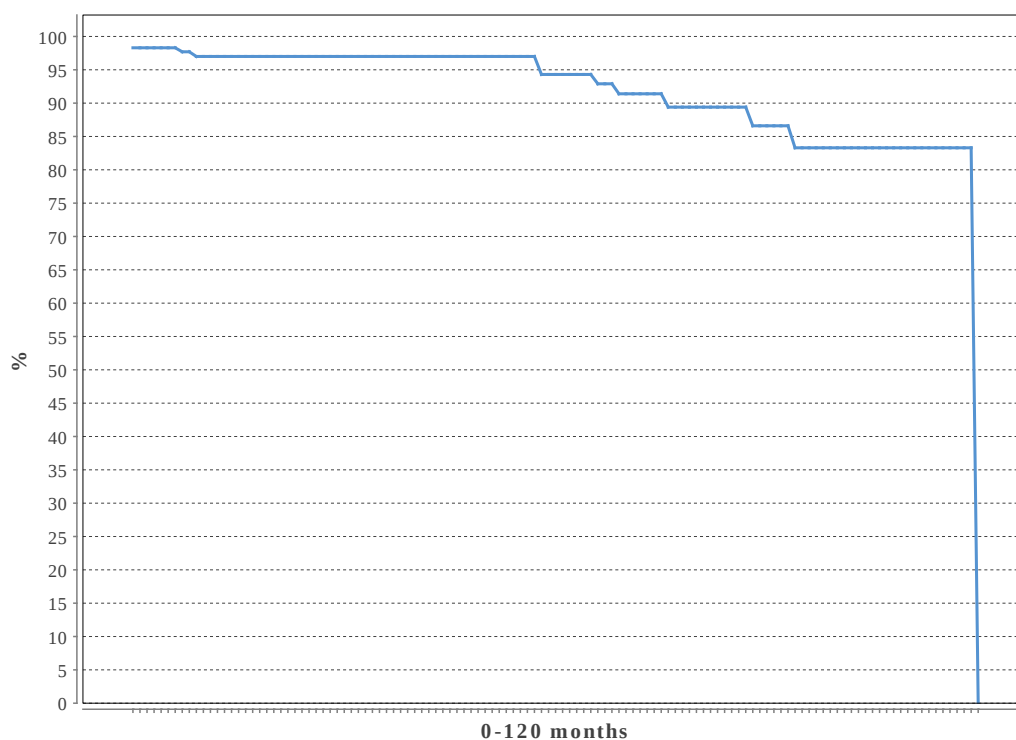
Survival probability for SJM lead type 1561,1570,1571,1572,1580,1581,1582,1591. Elective replacement and replacements due to infections and system changes have been considered as censored events.

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.

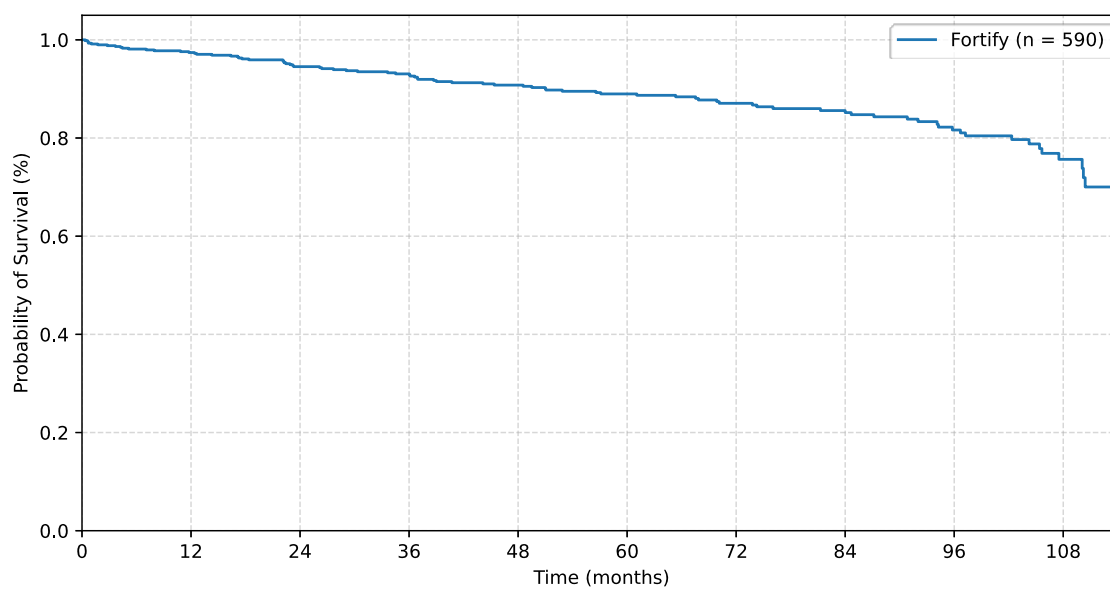
Year	At risk	Survival probability %
1	177	98.3
2	141	97.0
3	129	97.0
4	115	97.0
5	93	97.0
6	71	94.3
7	55	91.4
8	39	89.4
9	23	83.3
10	13	83.3



QUALITY – ICD – SURVIVAL SJM Fortify

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

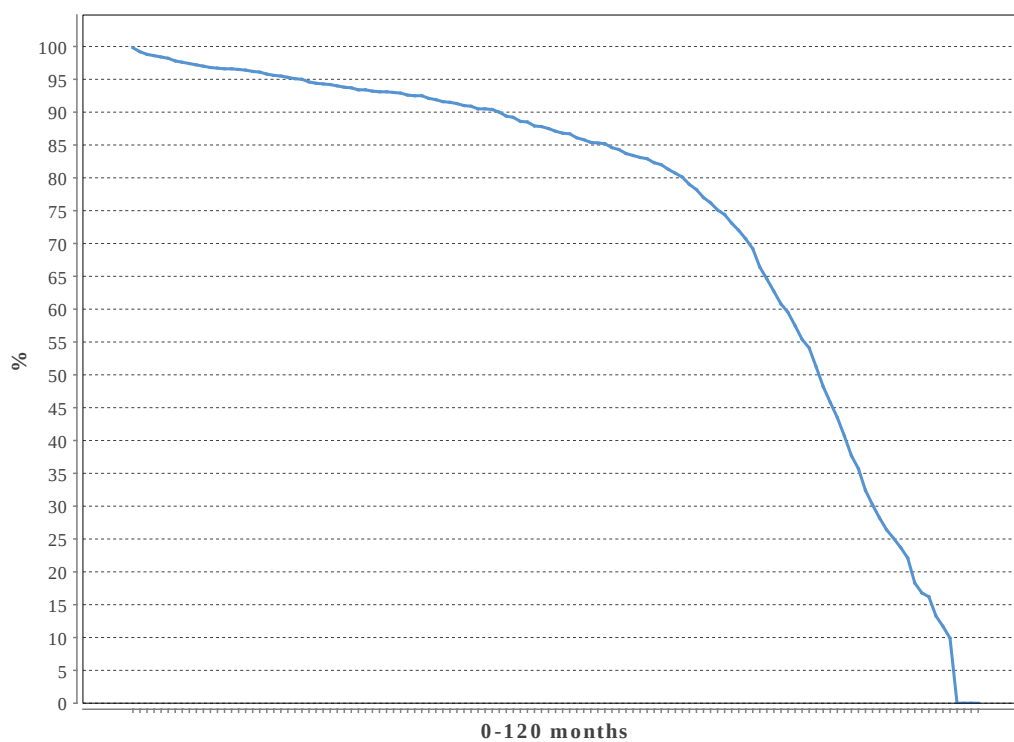
Year	At risk	Survival probability %
1	2101	99.7
2	1920	97.2
3	1734	94.9
4	1552	92.1
5	1340	88.3
6	1129	84.5
7	932	80.5
8	749	75.9
9	567	70.9
10	317	59.8



QUALITY – ICD – SURVIVAL SJM Unify

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

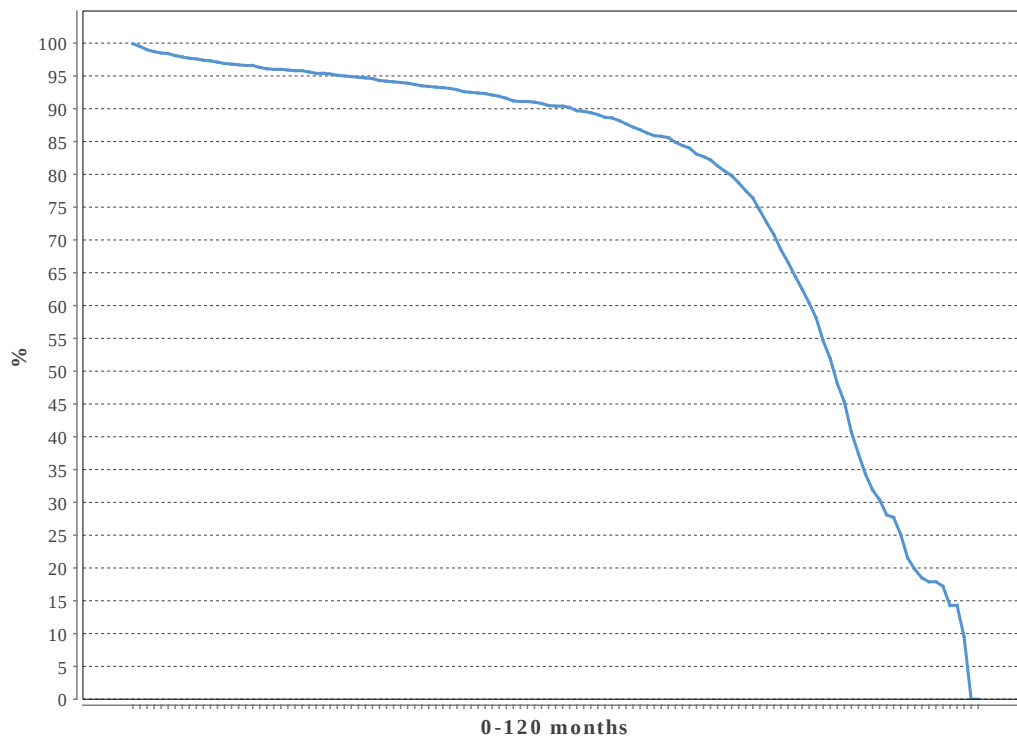
Year	At risk	Survival probability %
1	2557	99.8
2	2238	96.7
3	1993	95.0
4	1748	93.1
5	1533	90.9
6	1286	87.1
7	1084	83.1
8	797	74.4
9	392	54.1
10	82	25.1



QUALITY – ICD – SURVIVAL SJM Quadra

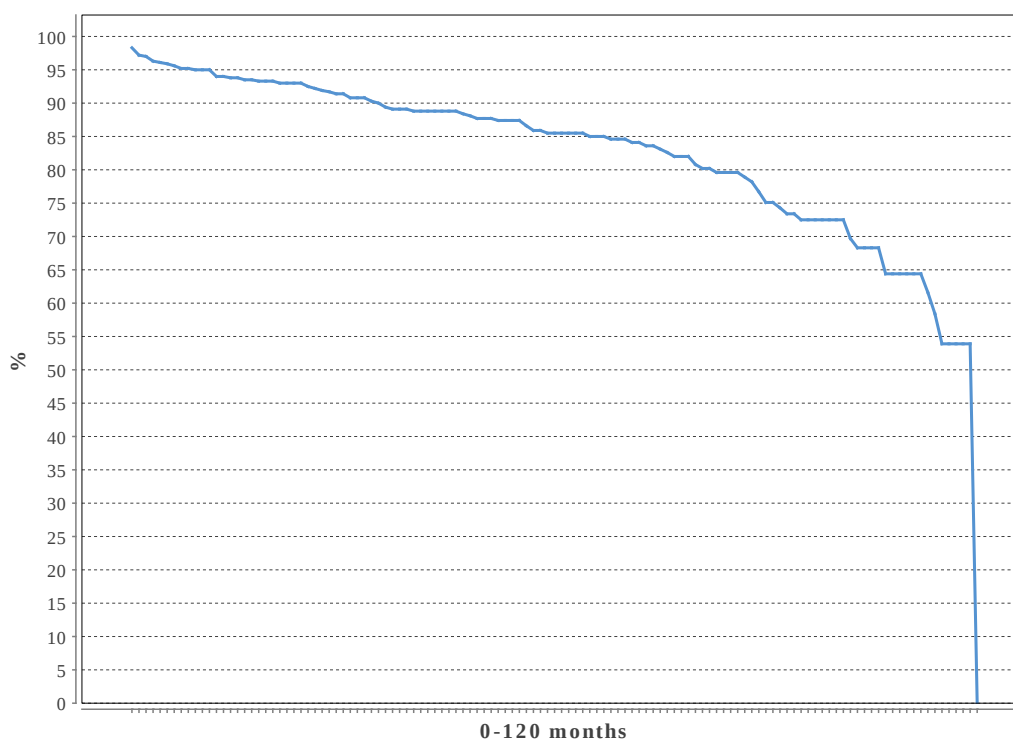
Survival probability for SJM ICD Quadra. Elective replacement and replacements due to infections and system changes have been considered as censored events.

Year	At risk	Survival probability %
1	3381	99.9
2	3011	97.1
3	2709	95.8
4	2436	94.2
5	2124	92.5
6	1777	90.4
7	1365	86.8
8	971	80.5
9	452	60.4
10	78	27.7



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

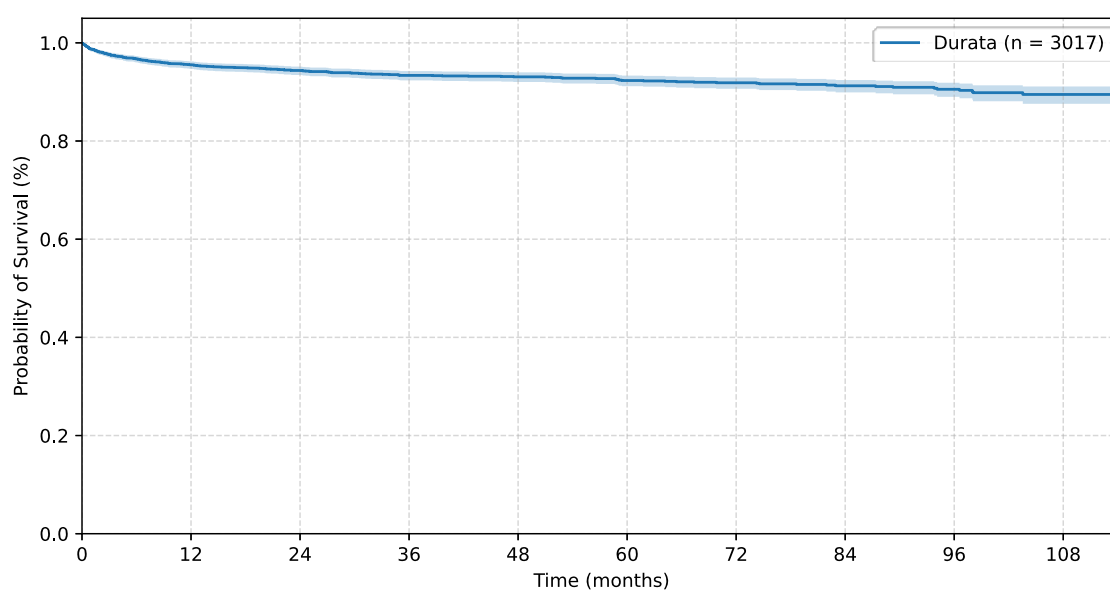
Year	At risk	Survival probability %
1	466	98.3
2	396	94.0
3	359	93.0
4	298	89.4
5	261	88.1
6	214	85.5
7	175	84.1
8	128	79.6
9	76	72.5
10	34	64.4



QUALITY – ICDLEAD – SURVIVAL SJM Durata

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

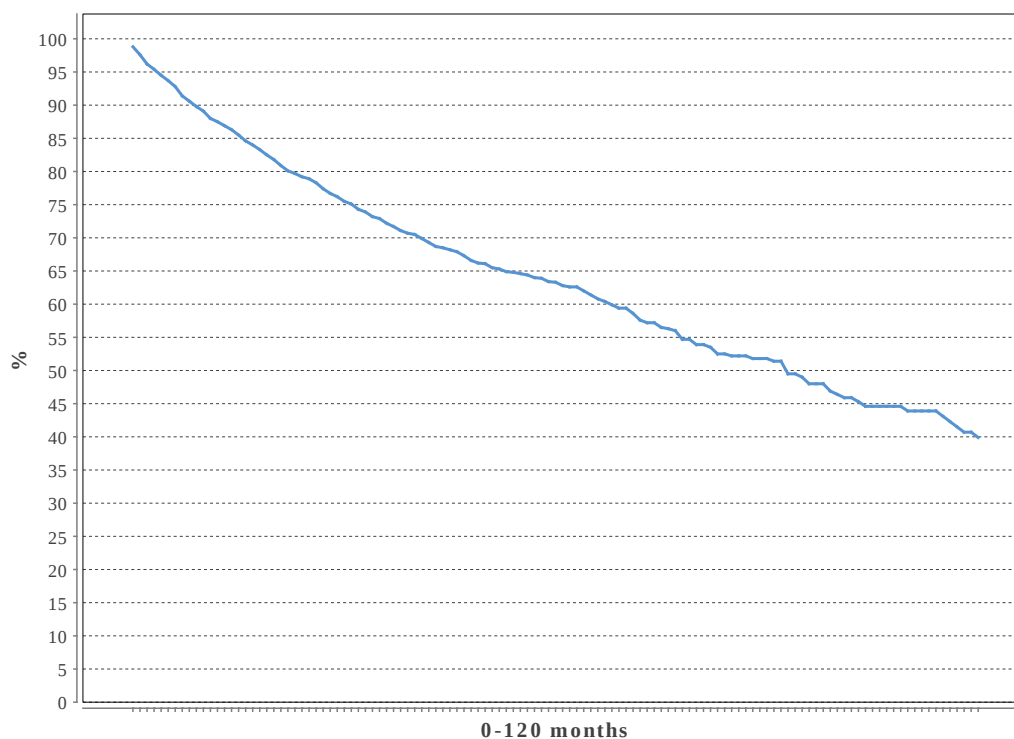
Year	At risk	Survival probability %
1	5466	98.8
2	4623	94.6
3	3965	93.1
4	3331	92.1
5	2786	91.3
6	2258	90.4
7	1759	88.8
8	1320	87.2
9	879	85.7
10	408	82.5



QUALITY – ICD – PATIENT SURVIVAL

Based on all implants after 1990

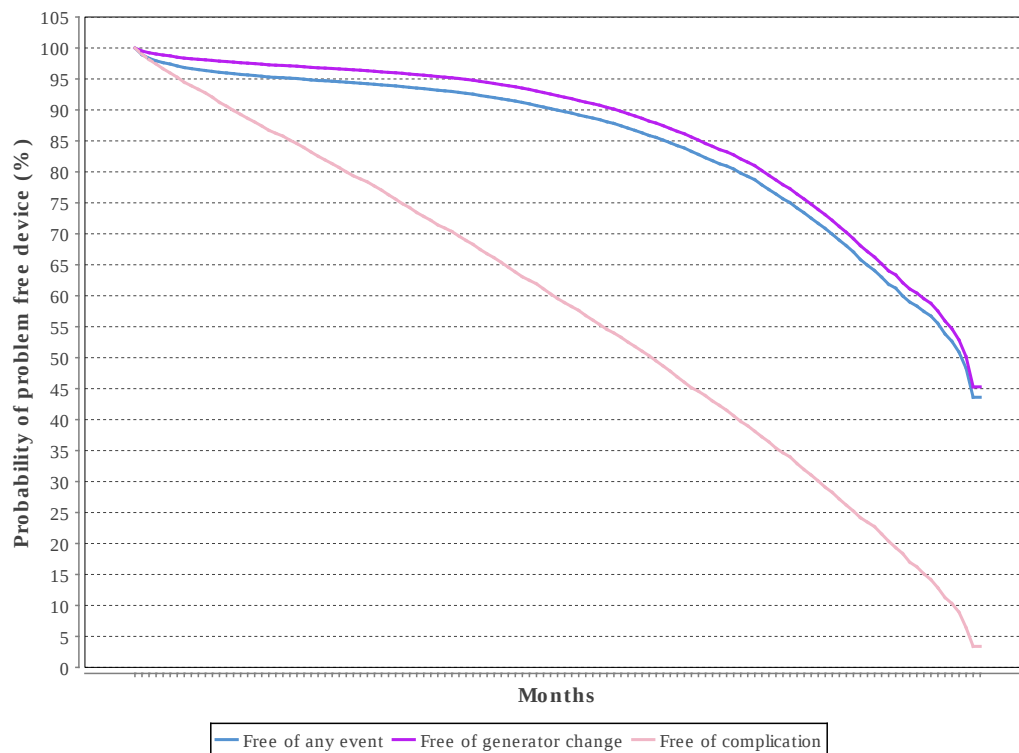
Year	At risk	Survival probability %
1	1906	98.8
2	1603	87.5
3	1386	79.2
4	1101	72.2
5	787	66.6
6	497	63.3
7	289	57.6
8	156	52.5
9	98	48.0
10	69	44.6



QUALITY – CRT – FREE OF EVENT

Probability of event free CRT-device

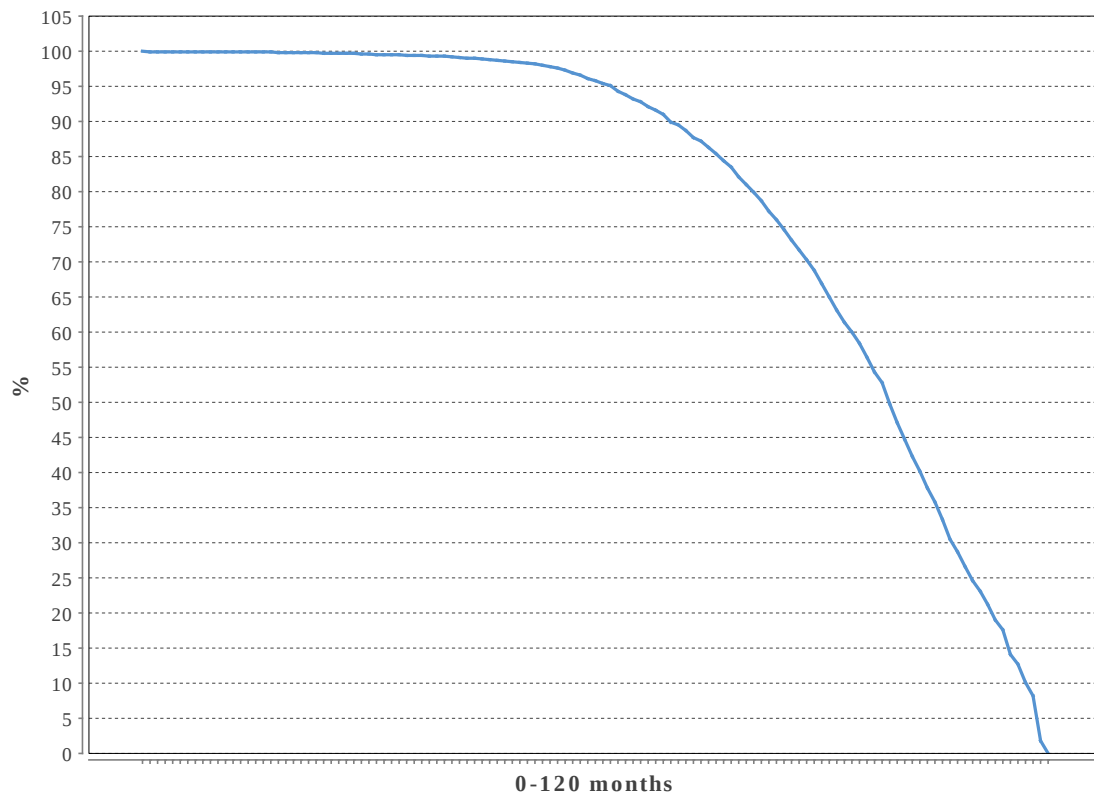
Year	At risk	Free of any event %	Free of generator change %	Free of complication %
1	66630	96.1	97.9	91.2
2	56446	95.0	97.0	83.9
3	47351	94.0	96.1	76.3
4	38518	92.6	94.8	68.3
5	29960	90.0	92.3	59.6
6	22398	86.3	88.6	51.1
7	15096	81.0	83.2	41.5
8	8632	72.5	74.8	31.1
9	3518	61.2	63.4	19.3
10	248	43.6	45.3	3.4



QUALITY – CRT-P – GENERATOR SURVIVAL

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

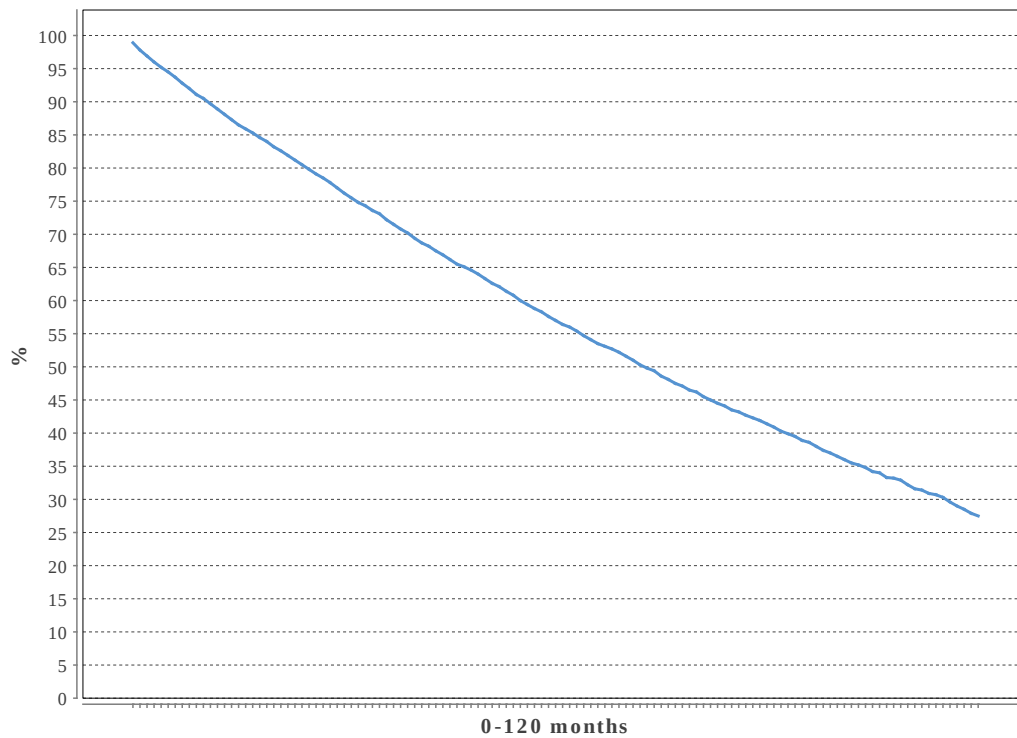
Year	At risk	Survival probability %
1	12047	100.0
2	10057	99.9
3	8267	99.7
4	6643	99.4
5	5233	98.6
6	3962	95.8
7	2864	88.7
8	1807	76.0
9	924	56.4
10	279	28.7



QUALITY – CRT-P – PATIENT SURVIVAL

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

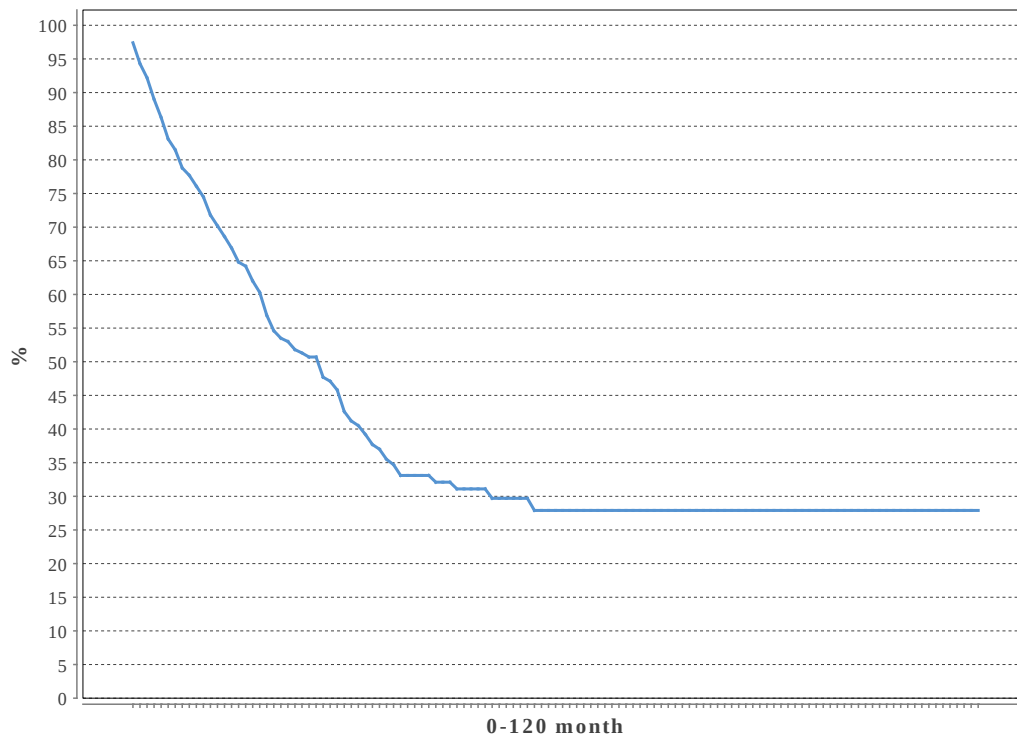
Year	At risk	Survival probability %
1	12329	98.9
2	10239	88.9
3	8421	80.5
4	6795	72.2
5	5372	64.6
6	4111	57.0
7	3004	50.3
8	1942	44.1
9	1059	38.6
10	417	33.2



QUALITY – CRT-D – PATIENT SURVIVAL

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

Year	At risk	Survival probability %
1	196	97.4
2	134	70.2
3	93	51.3
4	50	35.5
5	28	31.1
6	14	27.9
7	11	27.9
8	10	27.9
9	9	27.9
10	9	27.9



QUALITY – DEAD WITHIN ONE YEAR FROM IMPLANT

Ratio of patients being dead one year after implantation

Type	Implants in 2025	Death within year	%
PM	11476	729	6.4
ICD	2584	86	3.3
CRT-P	725	39	5.4
CRT-D	558	16	2.9

QUALITY – INTERVENTION RATIO

Intervention ratio (primary/correction)

Region	Hospital	PM	ICD
Norra Sverige	Norrlands Universitetssjukhus, Umeå	291	67
	Örnsköldsviks sjukhus	71	24
	Östersunds sjukhus	134	36
	Skellefteå sjukhus	59	8
	Sollefteå sjukhus	24	0
	Sunderby sjukhus	325	62
	Sundsvalls sjukhus	171	47
Södra Sverige	Blekingesjukhuset, Karlskrona	250	70
	Centrallasarettet Växjö	183	38
	Centralsjukhuset Kristianstad	412	78
	Hallands sjukhus, Halmstad	85	0
	Helsingborgs lasarett	295	38
	Skånes universitetssjukhus, Lund	407	169
	Skånes universitetssjukhus, Malmö	506	106
	Varbergs sjukhus	272	90
Stockholm/Gotland	Danderyds sjukhus	640	92
	Karolinska Huddinge	318	84
	Karolinska Solna	422	186
	Södersjukhuset	444	79
	St Görans sjukhus	484	77
	Visby lasarett	62	14
Sydöstra Sverige	Länssjukhuset Kalmar	202	66
	Länssjukhuset Ryhov	331	67
	Linköpings universitetssjukhus	640	141
	Västerviks sjukhus	72	0
	Vrinnevisjukhuset, Norrköping	1	0
Uppsala/Örebro	Akademiska sjukhuset	428	130
	Centralsjukhuset Karlstad	250	76
	Falu lasarett	388	88
	Gävle sjukhus	283	82
	Hudiksvalls sjukhus	91	9
	Mälarsjukhuset	308	68
	Torsby sjukhus	43	0
	Universitetssjukhuset Örebro	328	67
	Västmanlands sjukhus, Västerås	275	89
	Ålands centralsjukhus	31	4
Utland	Reykjavik	310	43
	Utland	15	6
	Alingsås lasarett	83	0
Västra Sverige	Drottning Silvias Bus	9	0
	Kungälv sjukhus	144	1
	Sahlgrenska universitetssjukhuset	495	153
	Sahlgrenska universitetssjukhuset /Östra	152	15
	Skaraborgs sjukhus, Skövde	251	57
	Södra Älvsborgs sjukhus, Borås	256	58
	Trollhättan, NÄL	366	82