

Analysis Of Requirement Of Implantation For Implantable Cardioverter Defibrillator In The Russian Federation

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OBJECTIVES

Sudden cardiac death (SCD) is one of the leading causes of death in people of working age. Implantable Cardioverter Defibrillator (ICD) should be considered as the primary means of preventing SCD. The number of ICD in Russia is 19.4 per 1 million people (2 841 implantations in 2019), but in the countries of Western and Eastern Europe this indicator is approximately 10 times higher. This study aims to estimate the number of patients requiring ICD treatment due to SCD-associated diseases in Russia.

METHODS

The calculations were carried out using information on the population of Russia. Incidence was modelled based on the hospital bills data in 2019 and expert assessment of the proportion of patients with SCD-associated diseases who potentially required ICD. The modelling does not include patients who have already undergone ICD due to SCD-associated diseases.

RESULTS

The incidence rate of SCD-associated diseases was 277,8 cases per 100,000 population over 18 years old. The number of patients requiring ICD treatment in Russia estimated as 86 316 (counting patients who have already undergone ICD – 99 134, Table 1), where 47,9% patients require single-chamber ICD, 46,3% - dual-chamber ICD and 5,8% - triple-chamber ICD. The highest requirement for ICD showed for diagnoses (according to International Classification of Diseases, 10th Revision (ICD-10)): I25.5 – 22,13%, I42.0 – 22,81%, I49.8 – 15,48% (Table 2). The estimate is the one-time implantation requirement as of 2019 and do not represent the annual number of ICD in Russia.

CONCLUSIONS

The modelling showed significant volume of insufficient requirement for ICD compared to actual number of implantations. Ensuring the availability of ICD for the entire target population of patients can be achieved by providing the legislative possibility of ICD treatment to a wide range of hospitals.

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Table 1. Distribution of patients eligible for cardioverter-defibrillator implantation by the type of device and age (2019)

Age group, years	Single-chamber ICD	Dual-chamber ICD	Triple-chamber ICD	Total
18-59	14 039	14 061	1 733	29 833
60-74	20 470	19 673	2 322	42 465
75 and older	12 980	12 176	1 680	26 836
All age groups	47 489	45 910	5 735	99 134

Table 2. Distribution of patients by diagnoses and types of devices recommended for implantation (2019)

ICD-10	Number of persons potentially requiring for implantation (estimated)	of which implantation is recommended:		
		Single-chamber ICD	Dual-chamber ICD	Triple-chamber ICD
E85	10	5	5	0
D86	226	113	113	0
I25.2	12 390	6 195	6 195	0
I25.3	280	149	131	0
I25.5	21 938	10 969	10 969	0
I25.9	5 728	3 819	1 909	0
I42.0	22 609	10 174	10 174	2 261
I42.1	1 444	263	1 181	0
I42.5	16	8	8	0
I42.8	4 358	2 179	2 179	0
I43.1	72	36	36	0
I45.2	76	0	76	0
I45.3	80	0	80	0
I46.0	36	12	12	12
I47.0	374	187	187	0
I47.2	3 036	1 518	1 518	0
I49.0	2 903	1 451	726	726
I49.8	15 350	7 675	7 675	0
I50.0	8 208	2 736	2 736	2 736
Total	99 134	47 489	45 910	5 735