

Cost-effectiveness of Implantable Cardioverter Defibrillators (ICDs) after Myocardial Infarction in the Russian Federation

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1 OBJECTIVE

The estimated number of people requiring ICD implantation for sudden death prevention in Russia amounted 86 thousand patients in 2019. Around 10 thousand projected implantations were attributed to patients after myocardial infarction (MI). Current levels of overall ICD use after MI cover eleven percent of projected demand. We evaluated cost effectiveness of single/dual chamber ICDs for patients after MI with LVEF<30% at level of current reimbursement prices.

3 RESULTS

By year eight of modelling, 51% and 38% of patients remained alive in ICD and drug therapy group, respectively. On average patients gained 0.53 years of life and 0.44 QALY with incremental costs of RUB1.16 million (\$16 189) between groups. ICER per life-year saved constituted RUB2.18 million (\$30 284), while ICER per QALY saved amounted at RUB2.63 million (\$36 544).

4 CONCLUSIONS

Russia lacks determined willingness-to-pay threshold, thus it is challenging to conclude on cost-effectiveness of ICDs. Nevertheless, our results may guide decision-makers on wider ICD adoption in Russia.

2 METHOD

Partitioned survival model consisting of two states (without fatal events/death) was developed with modelling horizon of eight years. ICD effect was drawn with digitalized 8-year Kaplan-Mayer curve in comparison with appropriate drug therapy from MADIT II follow-up trial. Drug therapy comprised of antiarrhythmic drugs class I/III and beta-blockers according to the national standard of care for ventricular arrhythmias. ICD patients received identical drug mix alongside device, AEs of drug therapy were neglected for both groups. Costs included ICD (re-/de-) implantation and routine calibration, drug therapy, ICD AEs relief, routine specialists' visits. We accounted for costs of hospitalization prior to death based on the death classification analysis of MADIT II. Quality of life was equal in both groups in line with published literature. Costs for other heart diseases beyond ventricular arrhythmias were omitted. Costs and effects were discounted at 5% yearly.