



**Title** **Implantable Defibrillator (ICD)**  
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**Reference** SMM Report No. 1/2002. ISBN 82-14-02624-5

## Aim

To evaluate the clinical effect and health economics of treatment using an implantable defibrillator (ICD) compared to drug treatment. Clinical effect includes effect on survival, complications, and quality of life.

## Methods

The report is based upon a systematic review from New Zealand published in 1997. In addition, a literature search was performed in MEDLINE and EMBASE to identify more recent studies. In total, 521 journal articles were retrieved and read by at least two of the investigators. The studies were rated according to study design.

## Results and conclusions

### *ICD as secondary prophylaxis:*

Three randomized studies show that ICD has a significant, beneficial effect on survival of patients who have survived cardiac arrest, ventricular tachycardia or syncope, ventricular tachycardia with seriously affected circulation and concomitant reduced heart function. Annual mortality was reduced from 12.3% to 8.8%. Implantation of ICD in 29 patients would prevent one death per year of followup.

Observational studies indicate benefit among patients with syncope with concurrent structural heart disease and inducible ventricular tachycardia, with tachycardia seriously affecting the circulation without syncope or cardiac arrest and with good heart function. There is limited knowledge of the effect of such treatment on patients with ventricular tachycardia and few symptoms, but there is probably a beneficial effect on those with reduced heart function.

### *ICD as primary prophylaxis:*

Two randomized studies show a significant, beneficial effect on patients with coronary heart disease, reduced cardiac function, non-sustained ventricular tachycardia, and inducible ventricular tachycardia. In these studies, ICD had to be implanted in 10 and 20 patients, respectively, to prevent one death per year of followup. One randomized study showed no effect on total survival among patients with coronary heart disease and planned coronary surgery, ejection fraction less than 36%, and positive late potential ECG.

## Cost effectiveness

Treatment with ICD is expensive. The units cost about NOK 250 000, and total annual expenses of ICD treatment in Norway can be estimated at approximately NOK 30 million. In high-risk patients the cost effectiveness of this treatment is acceptable. If ICD is used in low-risk patients the cost effectiveness becomes less favorable.