

TACHYARRHYTHMIA Management

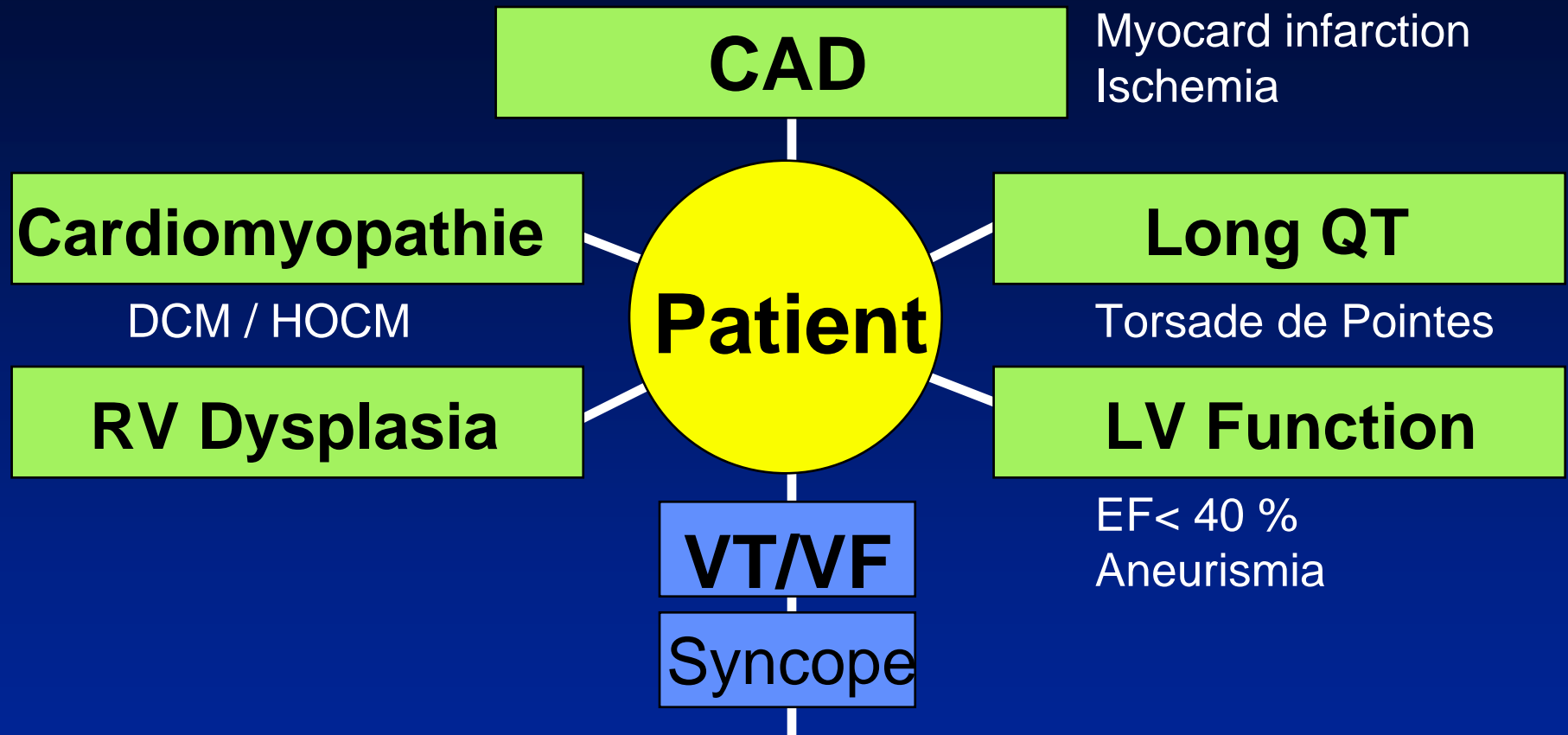
with the

**Implantable Cardioverter
Defibrillator
(ICD)**

1. Current Indications for ICD Implantation

Sudden Cardiac Death

- Risk patients
- Therapeutic basics
- ICD-Indications
- Therapy success



Sudden Cardiac Death

100,000 SCD per year in Germany
450,000 SCD per year in USA

Sudden Cardiac Death

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Statistics

100,000 SCD per year in Germany
450,000 SCD per year in USA

10-20 %

**bradycardiac
arrhythmias**

80-90 %

**ventricular
tachyarrhythmias**

■ Incidence

- 400,000 - 500,000/year in the USA
- 100,000/year in Germany
- Hospital admission for only 2% - 15% of patients
- 50 % of them die during the hospital stay

■ High recurrence rate

Ventricular Tachycardia

Arrhythmic substrate + trigger

Tachyarrhythmias are present if there are more than 3 consecutive intervals with rates higher than 100 bpm at rest.

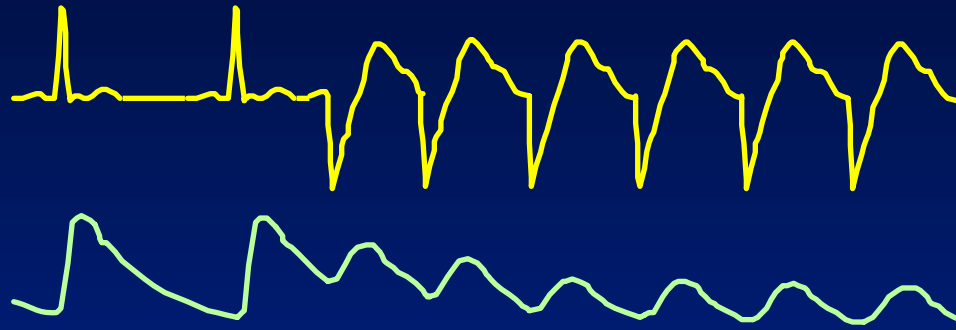


DANGER TO LIFE !
dependent on the primary cardiac disease

Hemodynamics

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VT (170/min)



Cardiac Output



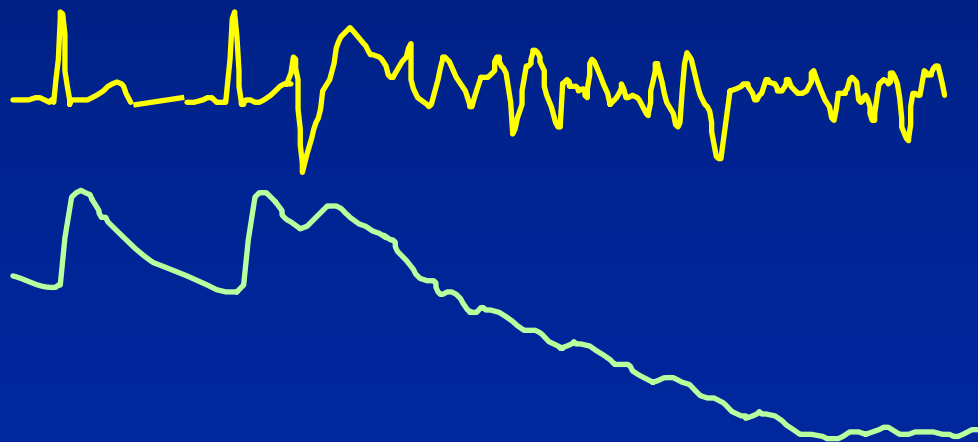
difference of blood pressure



average blood pressure



VF (300/min)



Cardiac Output

0

difference of blood pressure

0

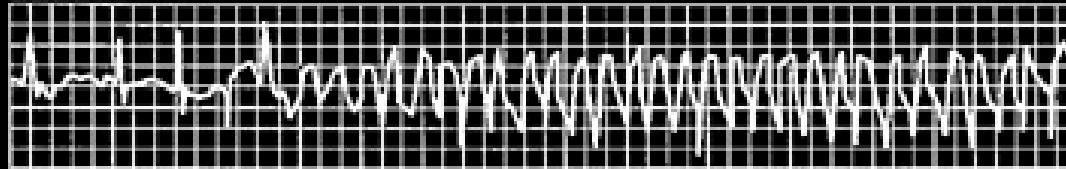
average blood pressure

0

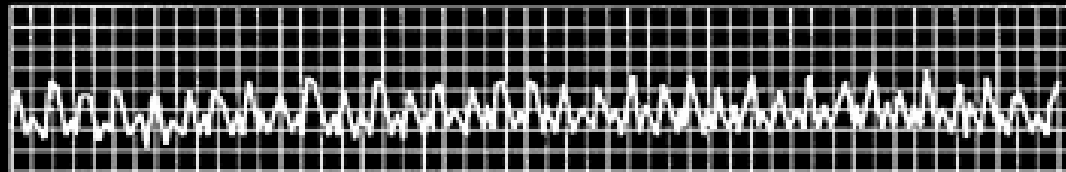
Sudden Cardiac Death

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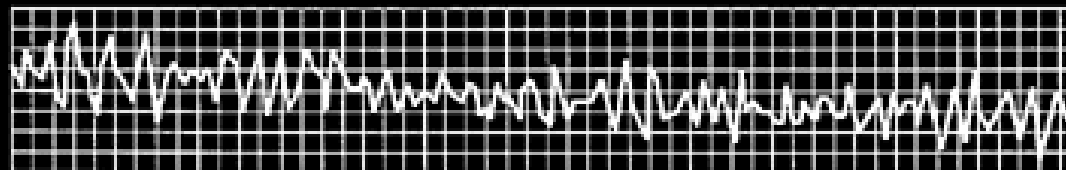
6:02 AM



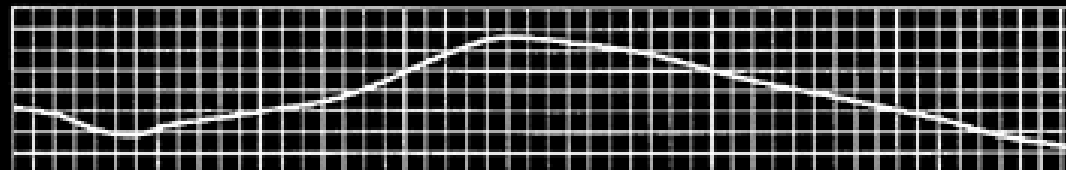
6:05 AM



6:07 AM



6:11 AM



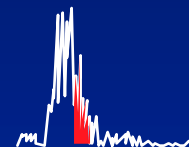
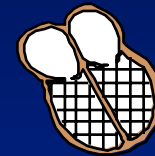
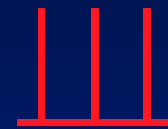
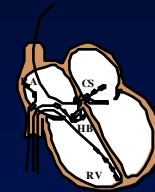
Diagnostic Methods BIOTRONIK

Electro-
Physiological
Study

Intracardiac EGM

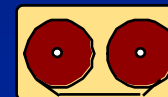
Programmed
Stimulation (PES)

Mapping

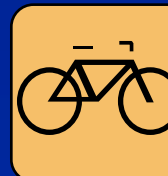


Ventricular Late Potentials

Long-term-ECG (Holter)



Stress-ECG

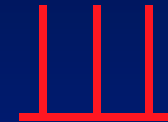


Therapeutical Methods BIOTRONIK

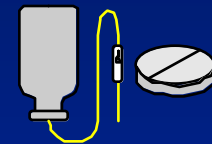
Electrotherapy

**Defibrillation
Cardioversion**

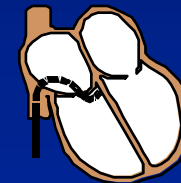
**Antitachycardiac
pacing**



Drug therapy



Katheter ablation

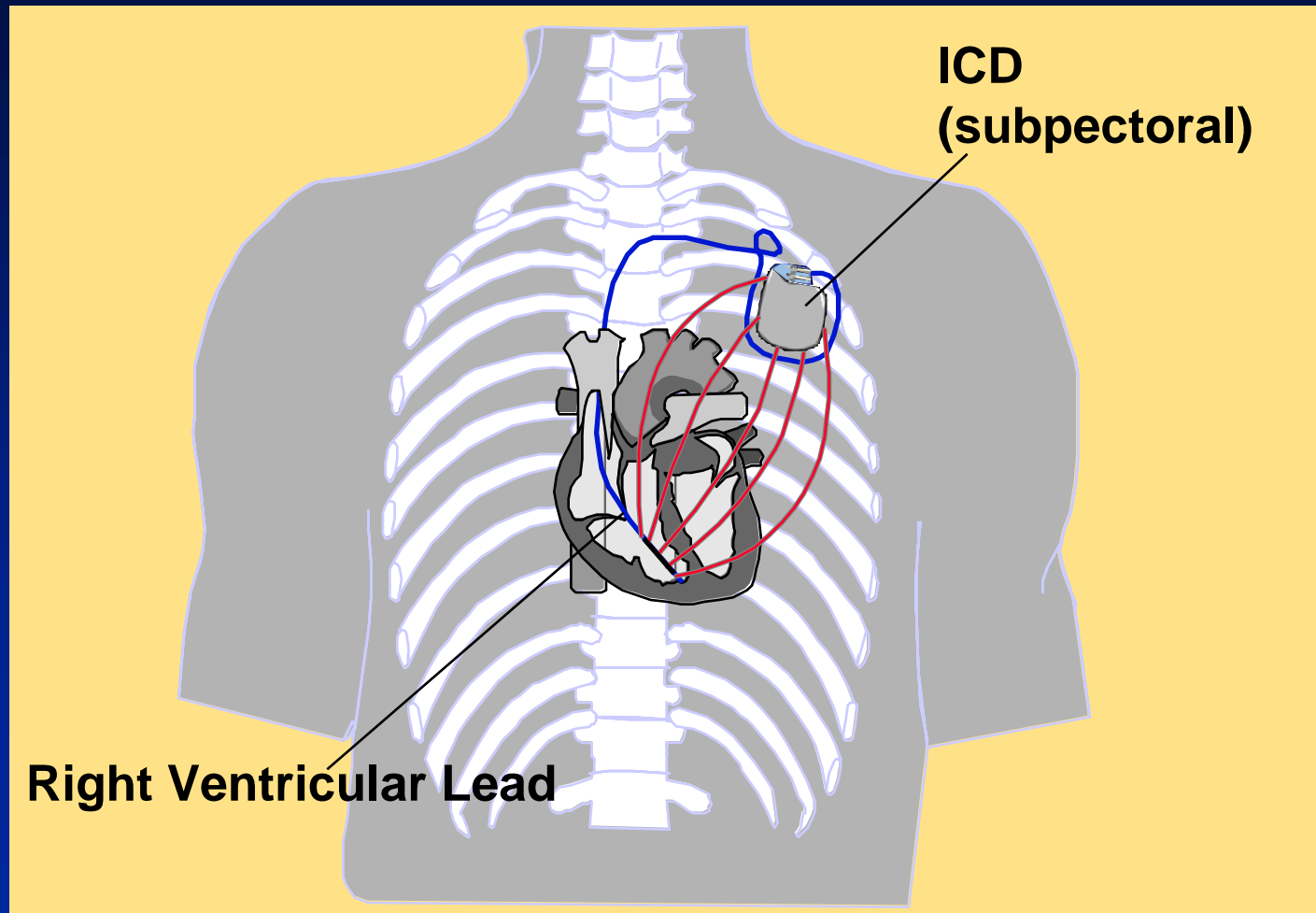


Surgical therapy



ICD-Implantation

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Aims of ICD-Therapy

1. Prevention of SCD

2. Prolongation of life

**3. Automatic termination of VTs
(prevention of rhythm acceleration)**

4. Improvement of quality of life

ICD Indication

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Privileged Indication

- **Hemodynamically symptomatic, sustained ventricular tachycardias or ventricular fibrillation**
 - non-recurring or recurring , inducible by EPS
 - non-inducible by EPS, but recurring
 - non-recurring, non-inducible by EPS, but LVEF < 40%

ICD Indication

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Accepted Indication

- **Patients with primary VF and consecutive cardiac arrest or patients with hemodynamically not tolerated VT and one of the following aspects:**
 - a) VT is inducible without AA, but drug refractory**
 - b) VT is not inducible without AA, but LVEF < 40 %**
 - c) successful ATP therapy**

Exclusion Indication BIOTRONIK

- **VT is caused by an acute MI (within 48 h)**
- **Reason for VT is treatable** (intoxication, electrolytic imbalance)
- **Suitability and practicability of other treatments** (ablation, rhythm-surgery)

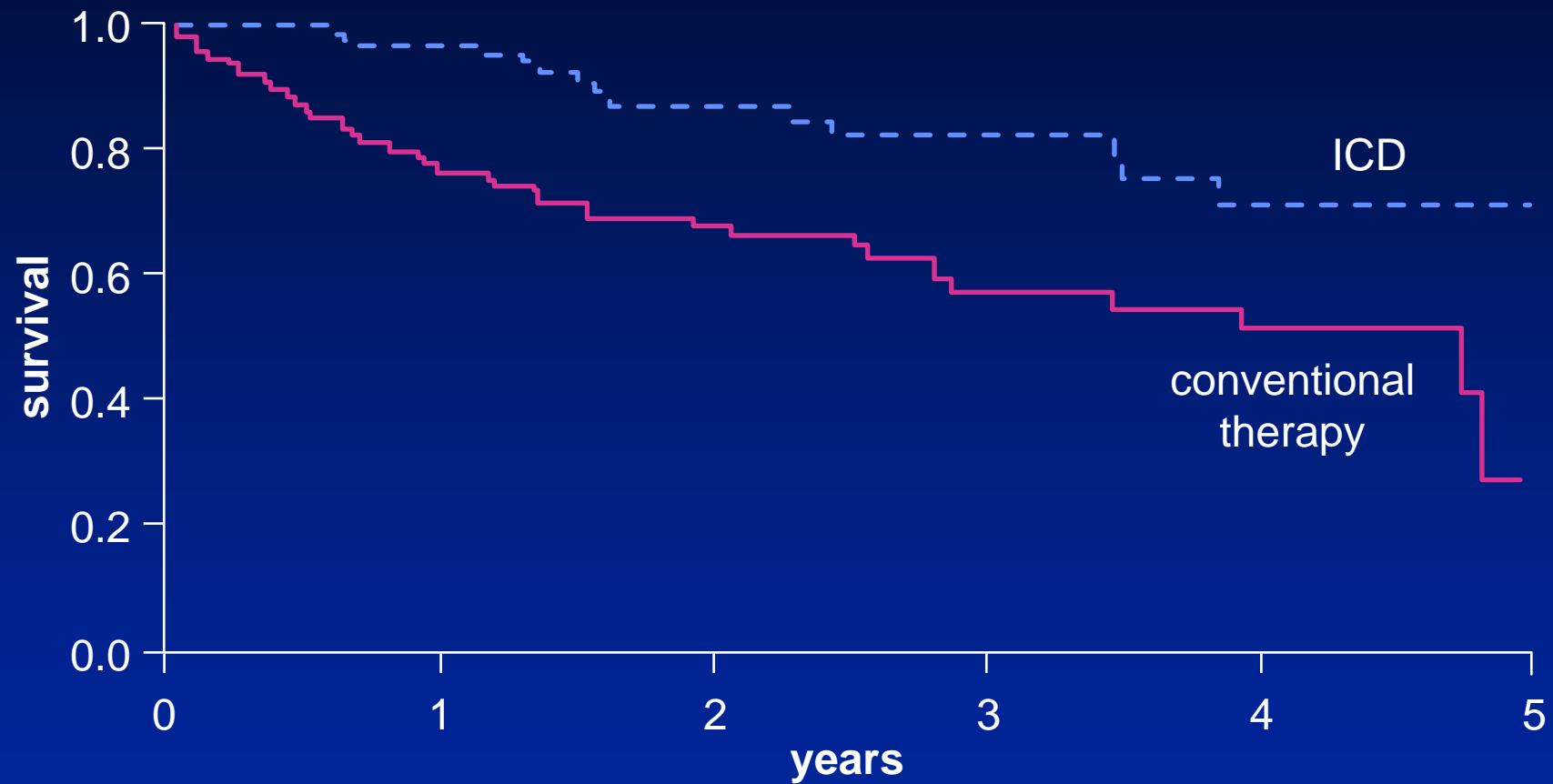
Contraindications

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- VT without symptoms
- non-sustained VTs
- drug induced VT/VF
- incessant VT
- causes of VT/VF can be suppressed
- limitation for prognosis by other diseases
- NYHA IV

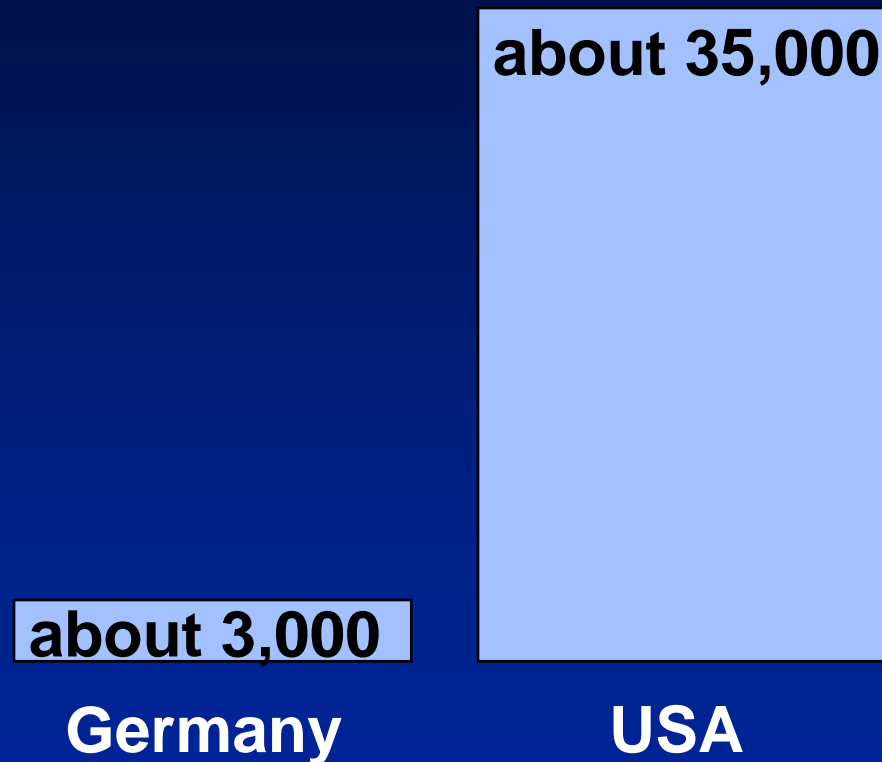
MADIT

BIOTRONIK



Moss AJ. New Engl J Med. 1996;335:1933-1940.

ICD Implantations 1997



Sudden Cardiac Death: 100.000 SCD p. a. in Germany
450.000 SCD p. a. in USA