

Zaterdag 8 oktober 2011 "FEITEN EN FABELS"

Stichting Reanimatie en AED onderwijs Delft en omstreken organiseert voor de tweede maal een symposium voor reanimatie instructeurs

“Als je een AED gebruikt bij iemand met een pacemaker ontploft het hart”

Dr. S.H.J. Monnink, cardioloog RdGG

zie pagina 'links'
Presentaties-Mr. Bean reanimeert



over pacemakers ...

over defibrillatie ...

gaat dit samen ...?

- historie
- *indicaties*
- *implantatie techniek*

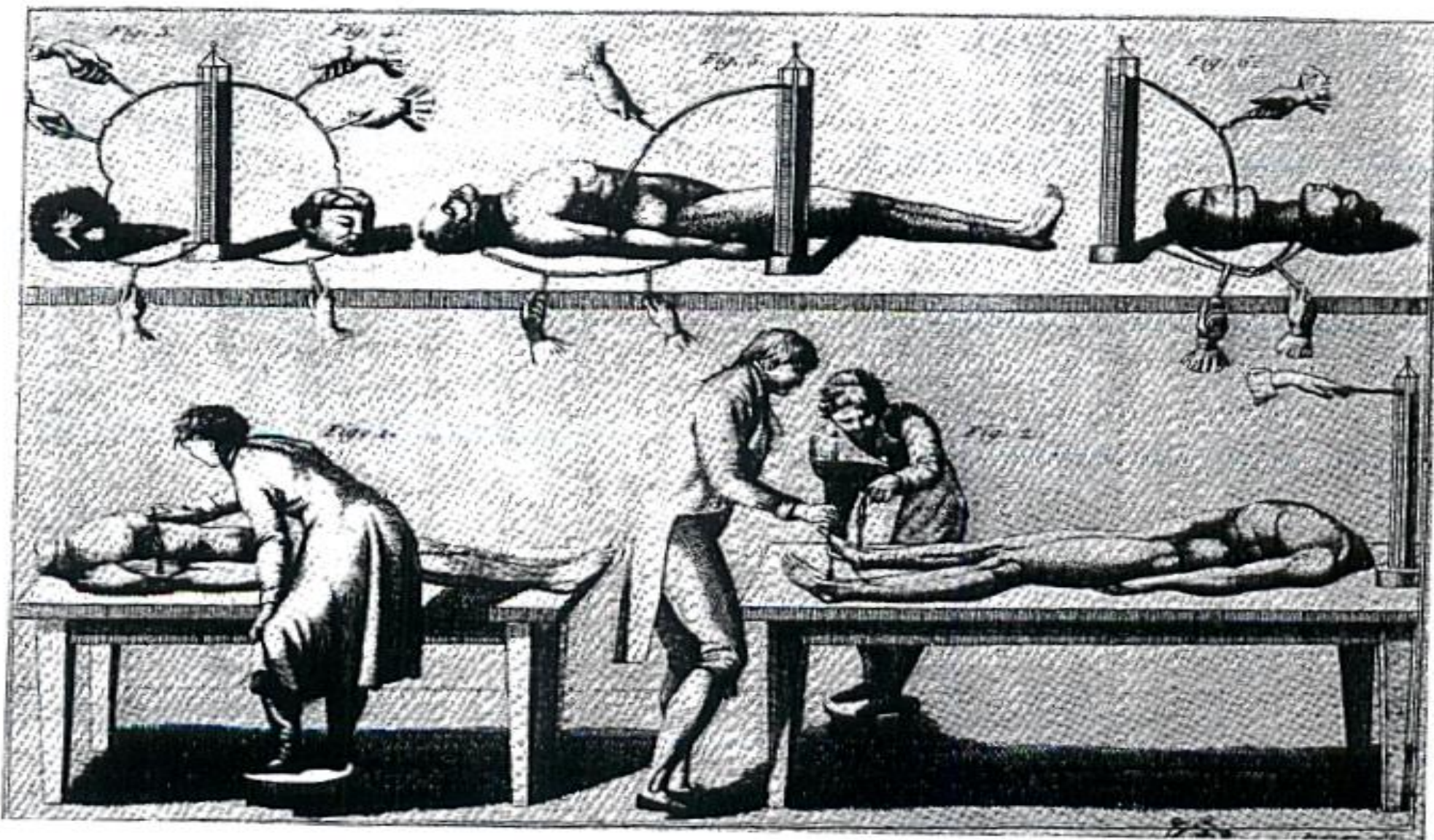
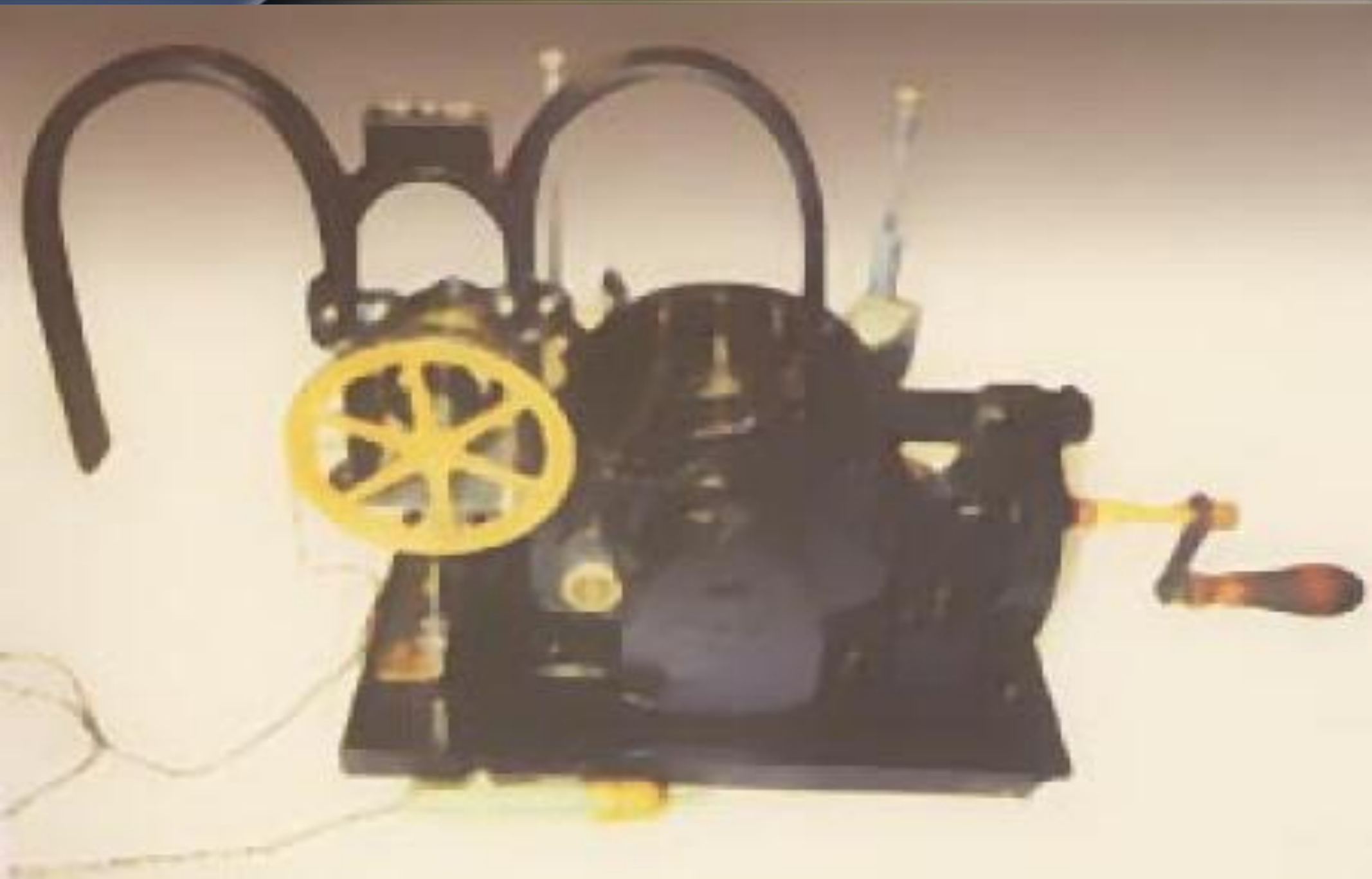
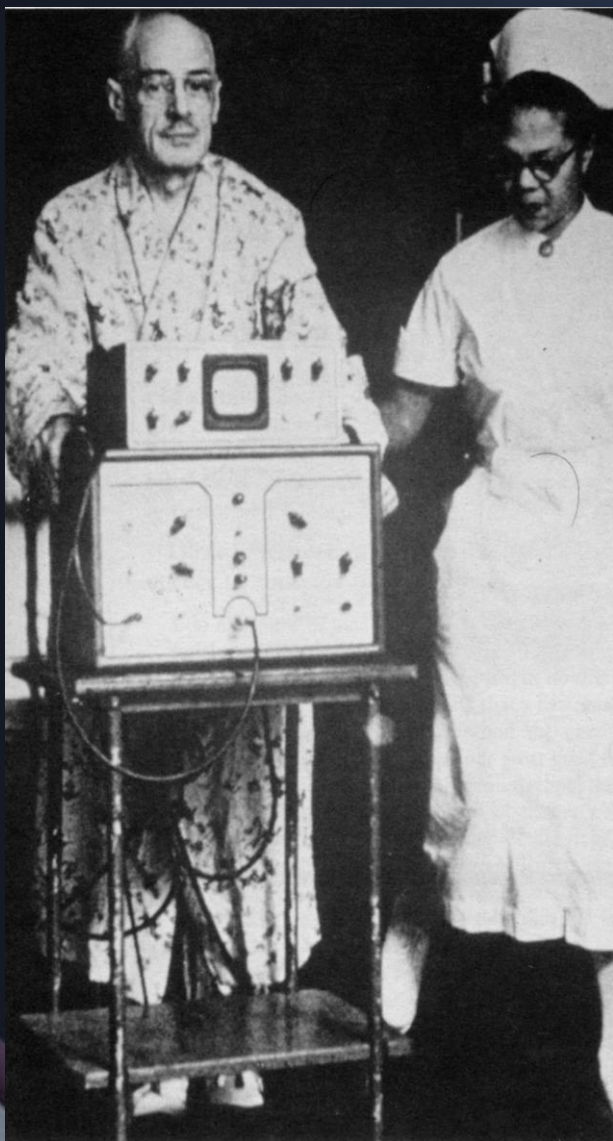


Fig. III-1. Illustration in «Aldini essai théorique et expérimental pour le Galvanism avec planches» (1804), showing the authors experiments with decapitated criminals.



cardiac electrical



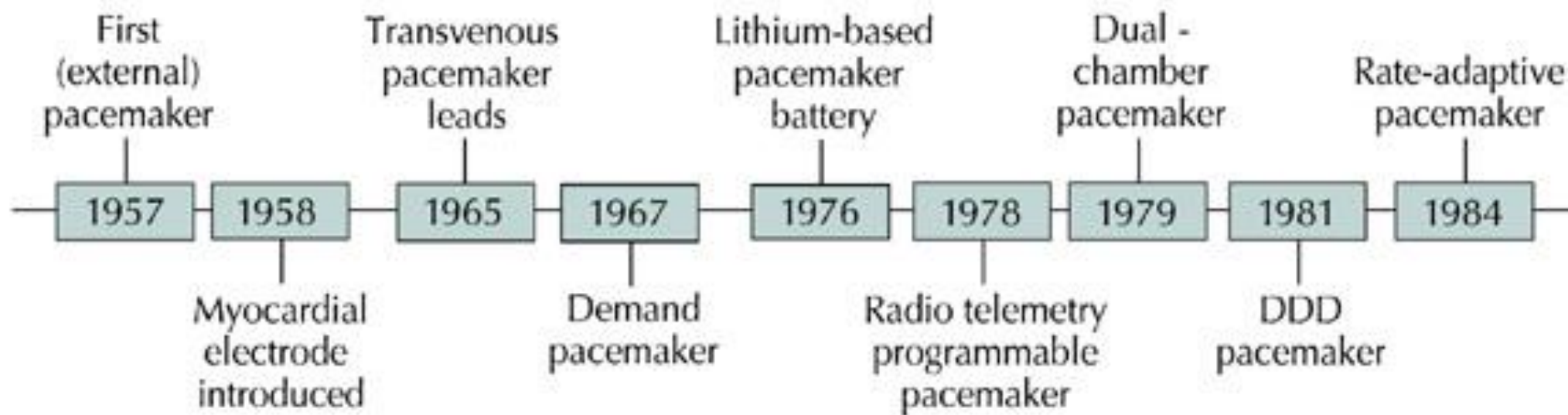
**1958 S. Furman
und
G. Robinson**
transvenous
stimulation

Seymour Furman's
first patient with an
external, transvenous
pacemaker system

1958 8th, October
Implantation of Rune Elmquist's first fully
implantable cardiac pacemaker by Åke Senning
(cardiothoracic surgeon) in the Karolinska Hospital
Solna, Sweden



Arne Larsson and his first pacemaker



indicatie

sick sinus syndrome

aangeboren totaal AV-blok

verworven AV-geleidingsstoornissen

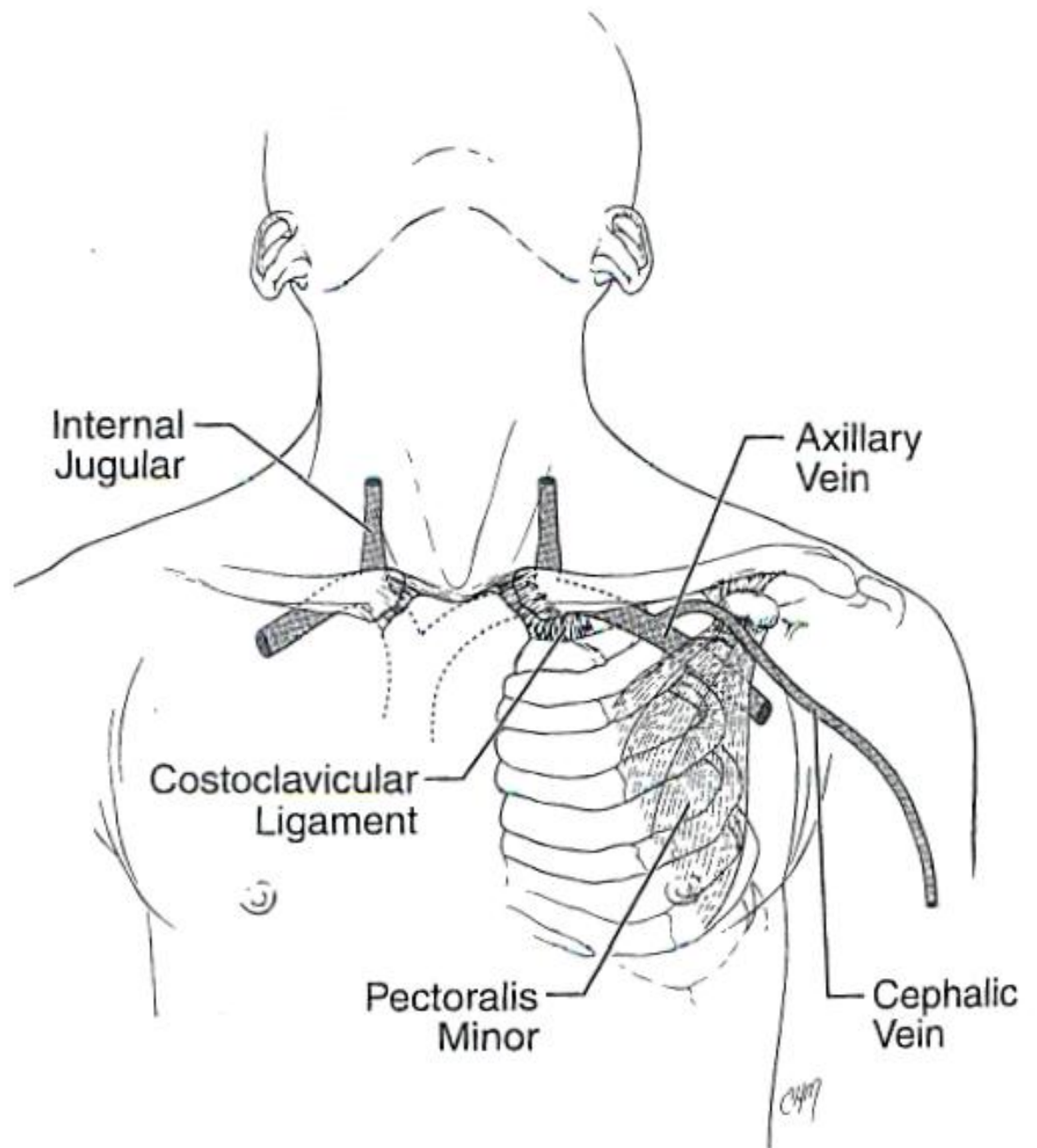
AV-geleidingsstoornissen na hartinfarct

bifasculair en trifasculair blok

neurovasculair syndroom

verlengde QT-syndroom

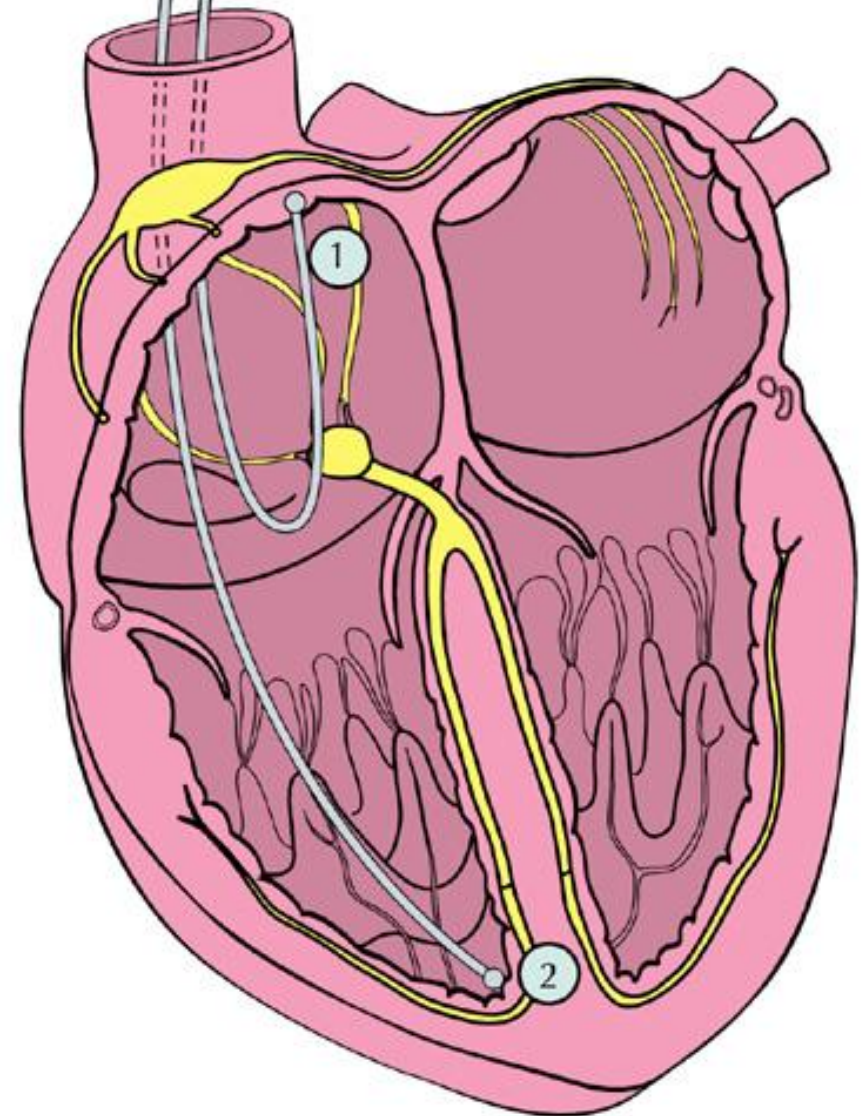
Implantatie techniek



Implantatie techniek

Ventricular lead

Atrial lead



A

over defibrillatie ...

Anti-tachy pacing: re-entry circuit na MI

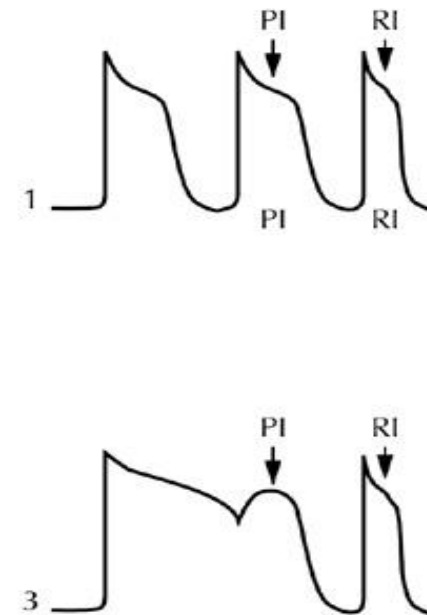
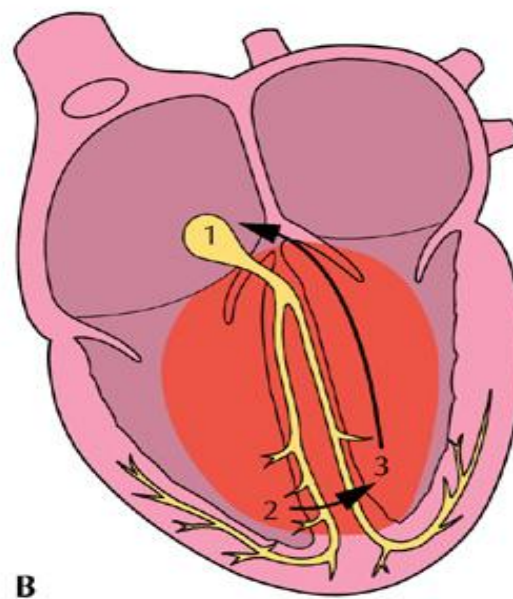
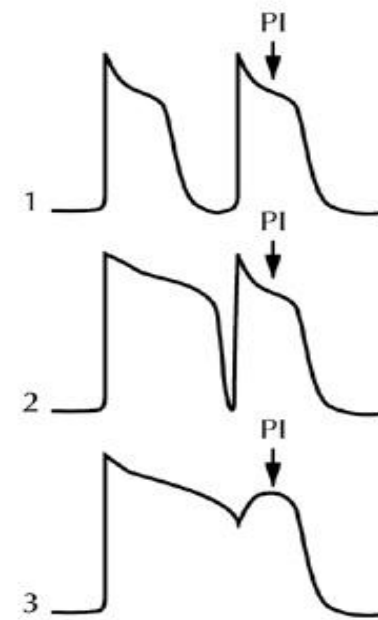
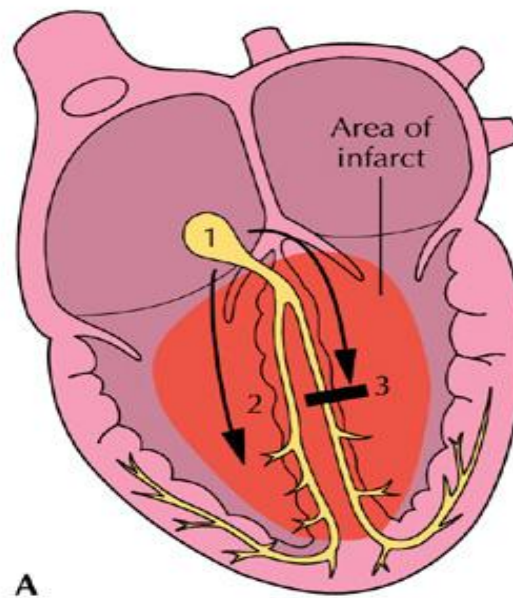
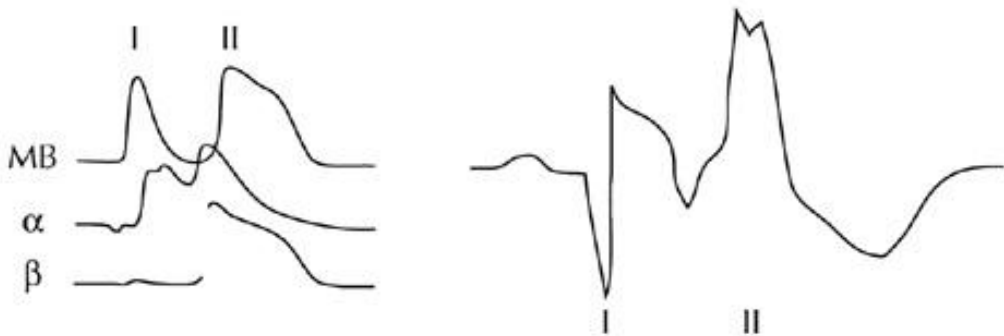
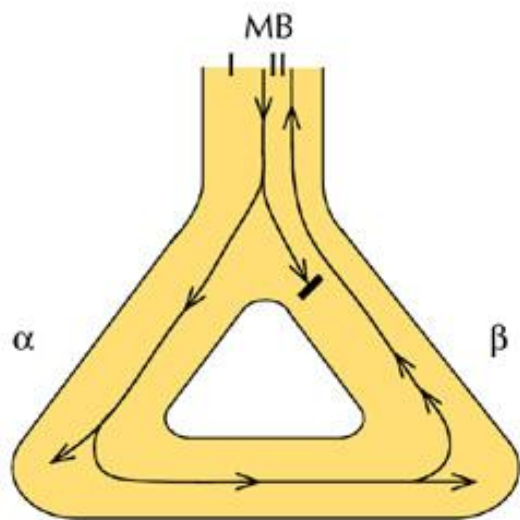
Shocking circuit ICD

ICD preventie

dissynchronie

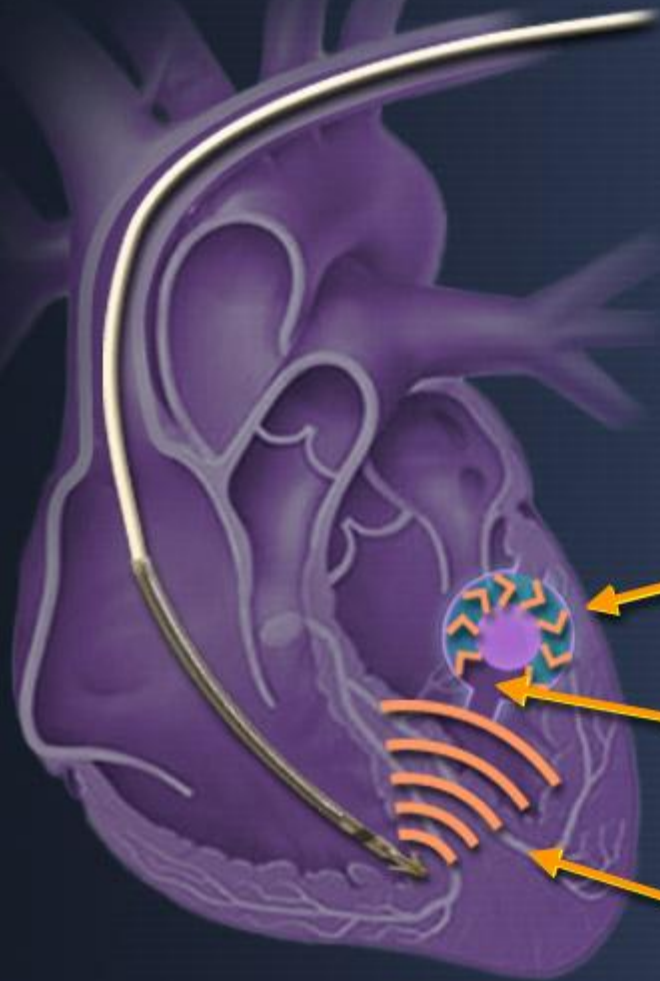
CRT (cardiale resynchronisatie therapie)

Anti-tachy pacing: re-entry circuit na MI



Anti-tachy pacing (ATP-ICD)

How it works



Reentry Circuit

Excitable Gap

Depolarizing Wavefront
from ATP Stimulus

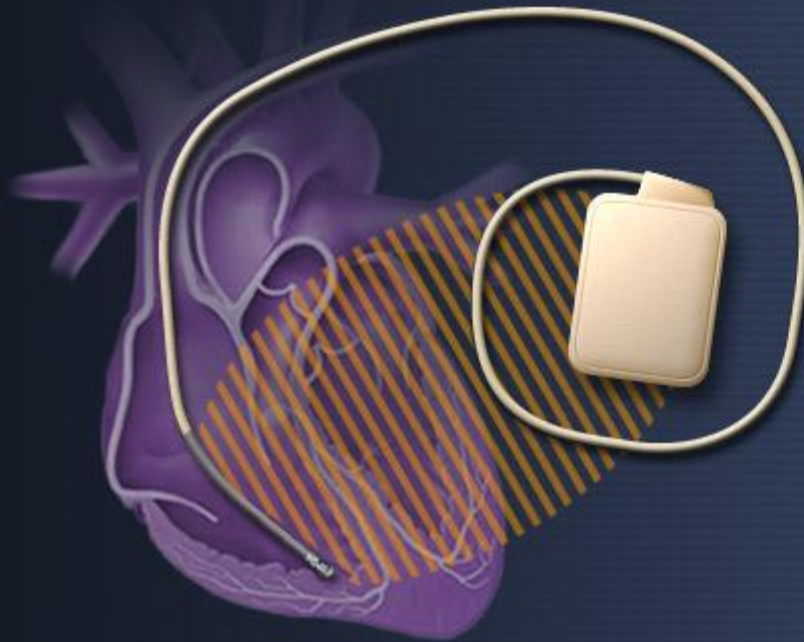
Zie pagina 'links'
Presentaties- Anti-tachy pacing (ATP-ICD)

Shocking Circuit ICD

Vectors

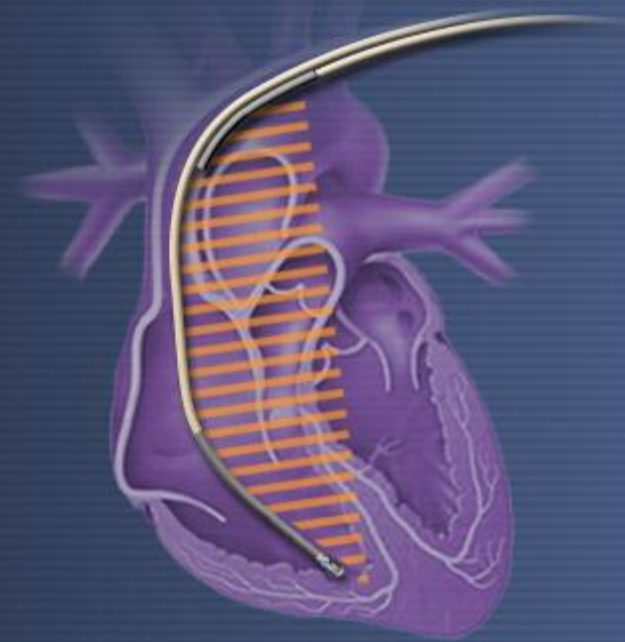
Active Can

$$A > B$$



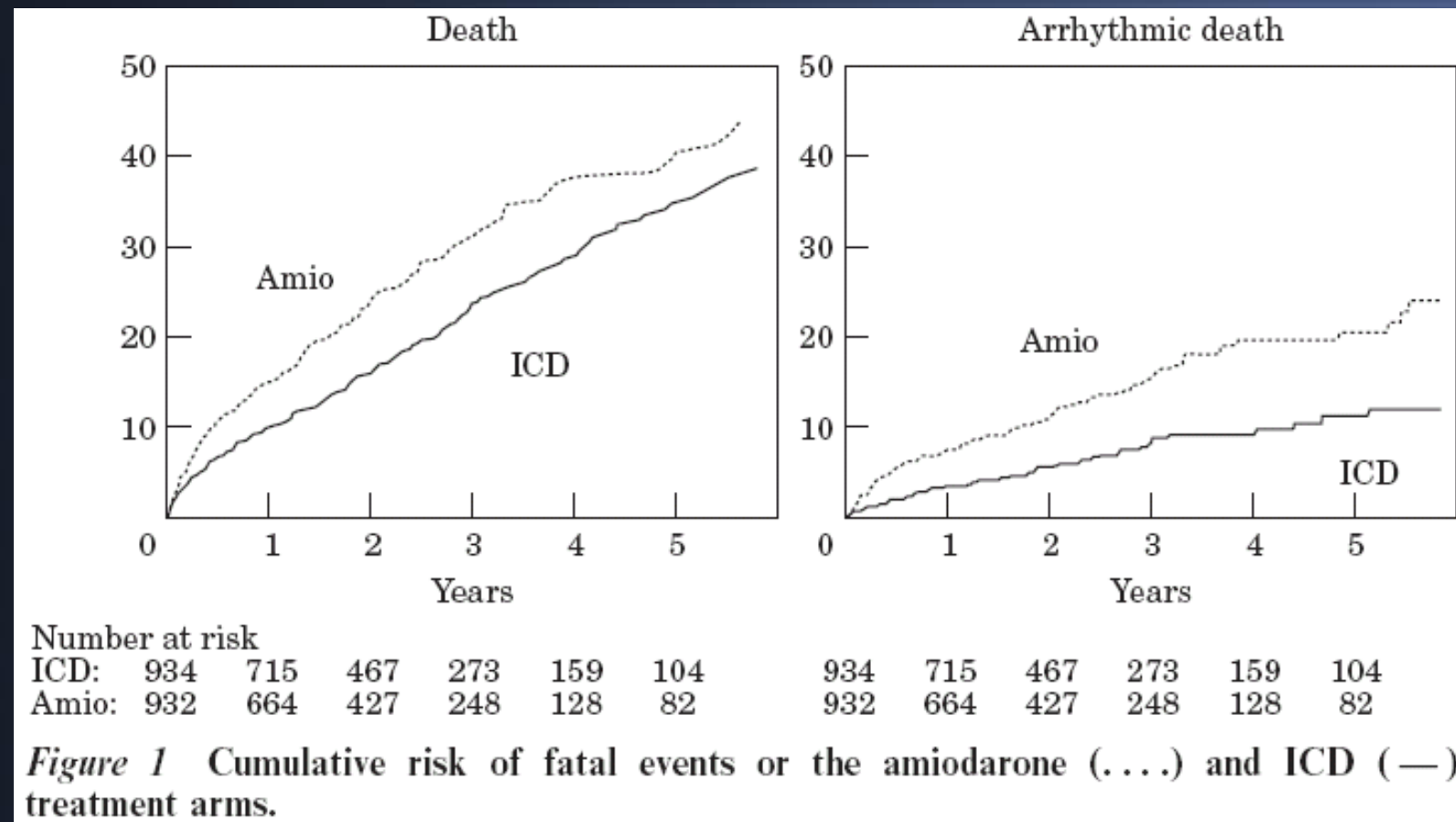
Non Active Can

$$AX > B$$



Meta-analysis ICD secondary prevention

- Connolly (EHJ 2000)
 - AVID, CASH, CIDS
 - ICD vs amiodarone



28% RR reduction death; 50% reduction arrhythmic death

Primary prevention IHD

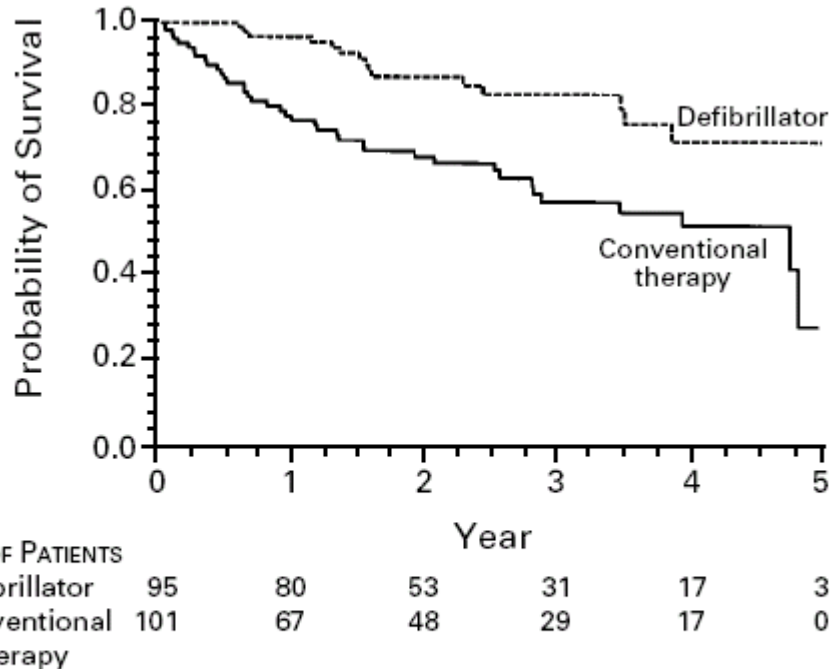


Figure 2. Kaplan–Meier Analysis of the Probability of Survival, According to Assigned Treatment.

The difference in survival between the two treatment groups was significant ($P = 0.009$).

MADIT I (NEJM 1996)

RR ICD 0.46

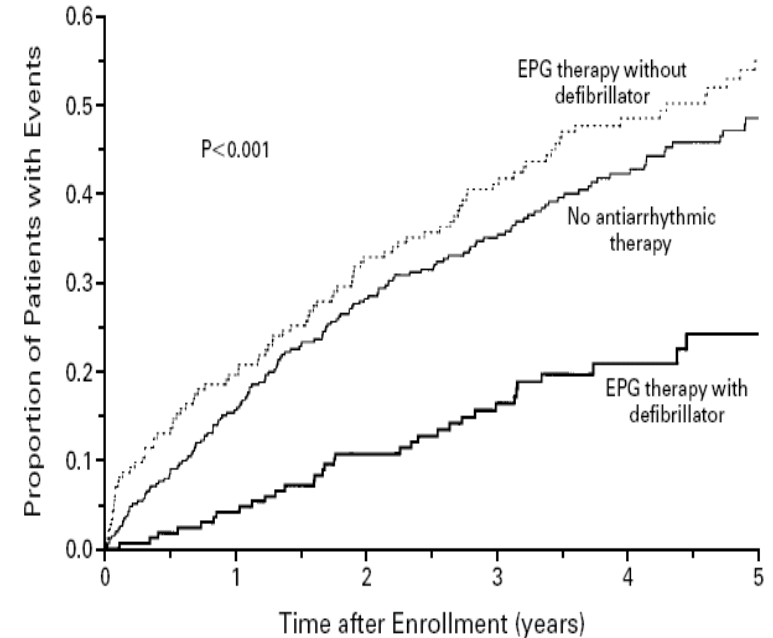


Figure 4. Kaplan–Meier Estimates of the Rates of Overall Mortality According to Whether the Patients Received Treatment with a Defibrillator.

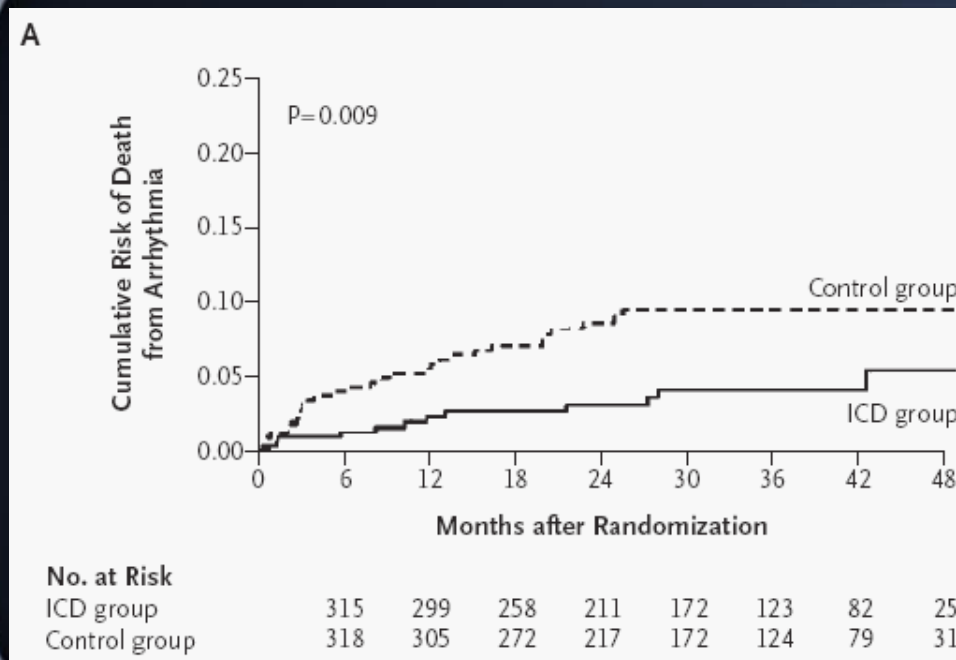
The P value refers to two comparisons: between the patients in the group assigned to electrophysiologically guided (EPG) therapy who received treatment with a defibrillator and those who did not receive such treatment, and between the patients assigned to electrophysiologically guided therapy who received treatment with a defibrillator and those assigned to no antiarrhythmic therapy.

MUSTT (NEJM 1999)

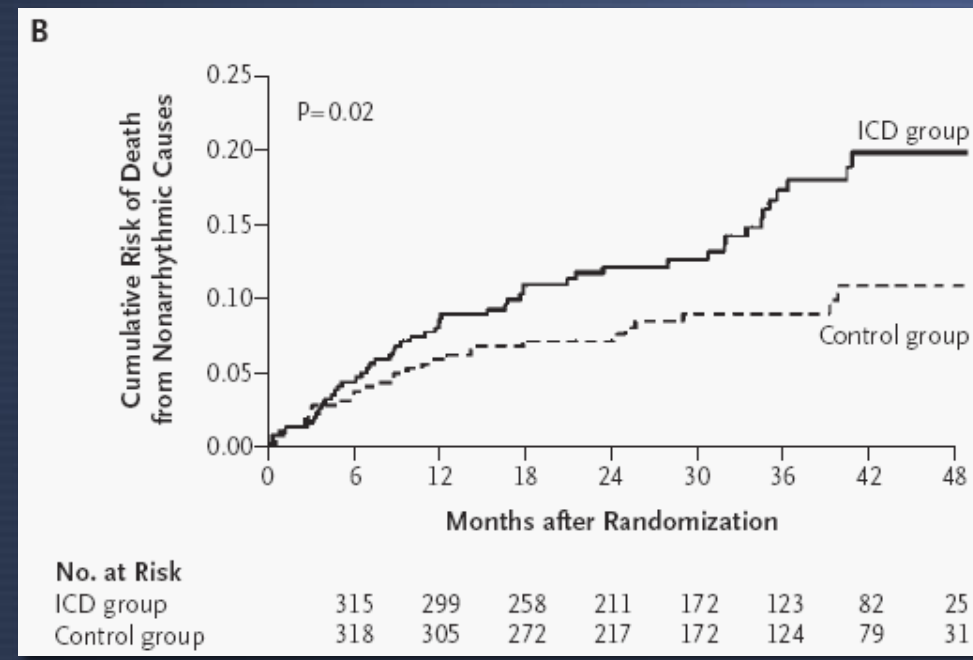
RR ICD 0.24

Primary prevention IHD

- DINAMIT (NEJM 2004)



hazard ratio ICD
0.42 (p=0.009)

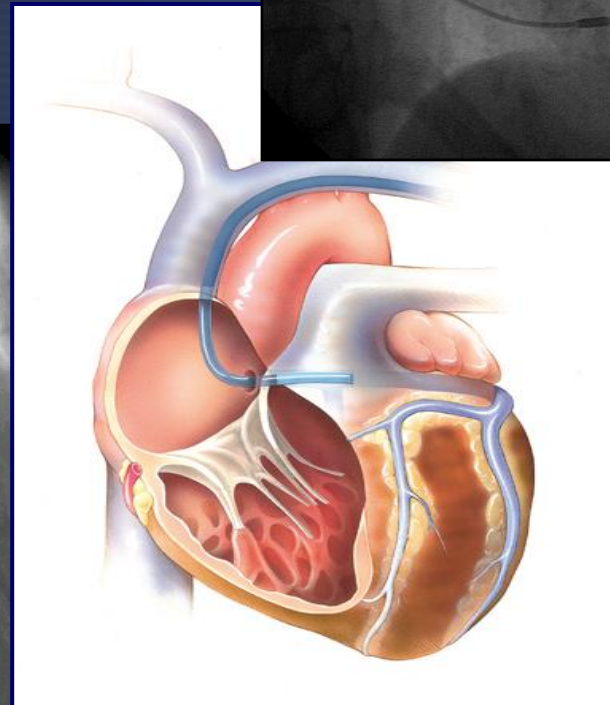
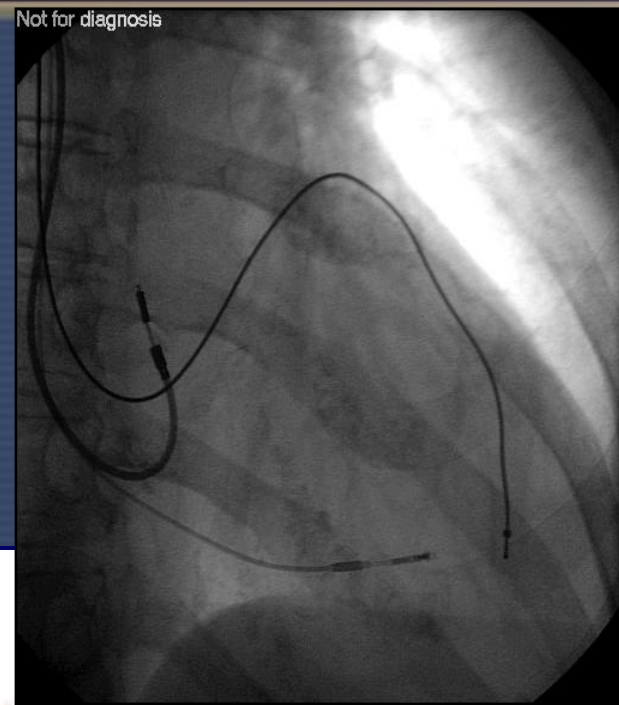
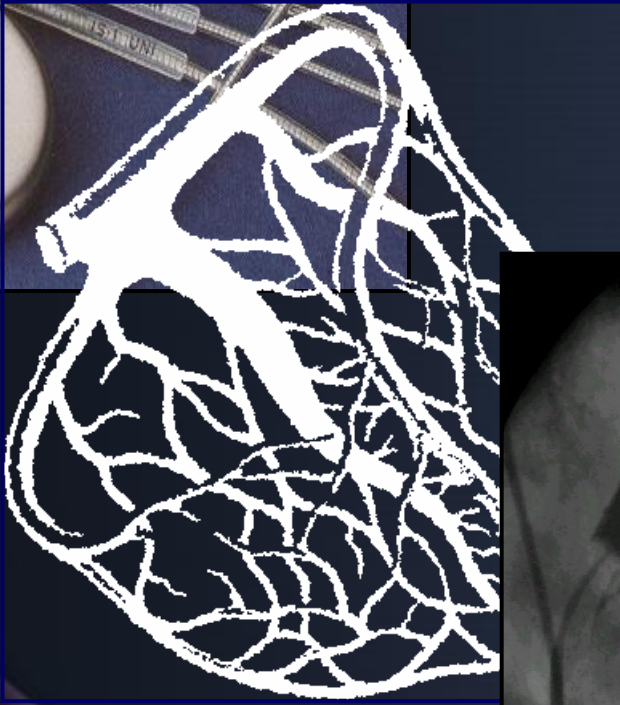


hazard ratio ICD
1.75 (p=0.02)

- **Class III-B**

Zie pagina 'links'
Presentaties- dissynchronie

Resynchronization Therapy for Chronic Heart Failure: Technique of Implantation



CRT indication

NYHA \geq III

Optimal pharmaceutical therapy

LVEF \leq 35%

LVEDD \geq 55mm

SR

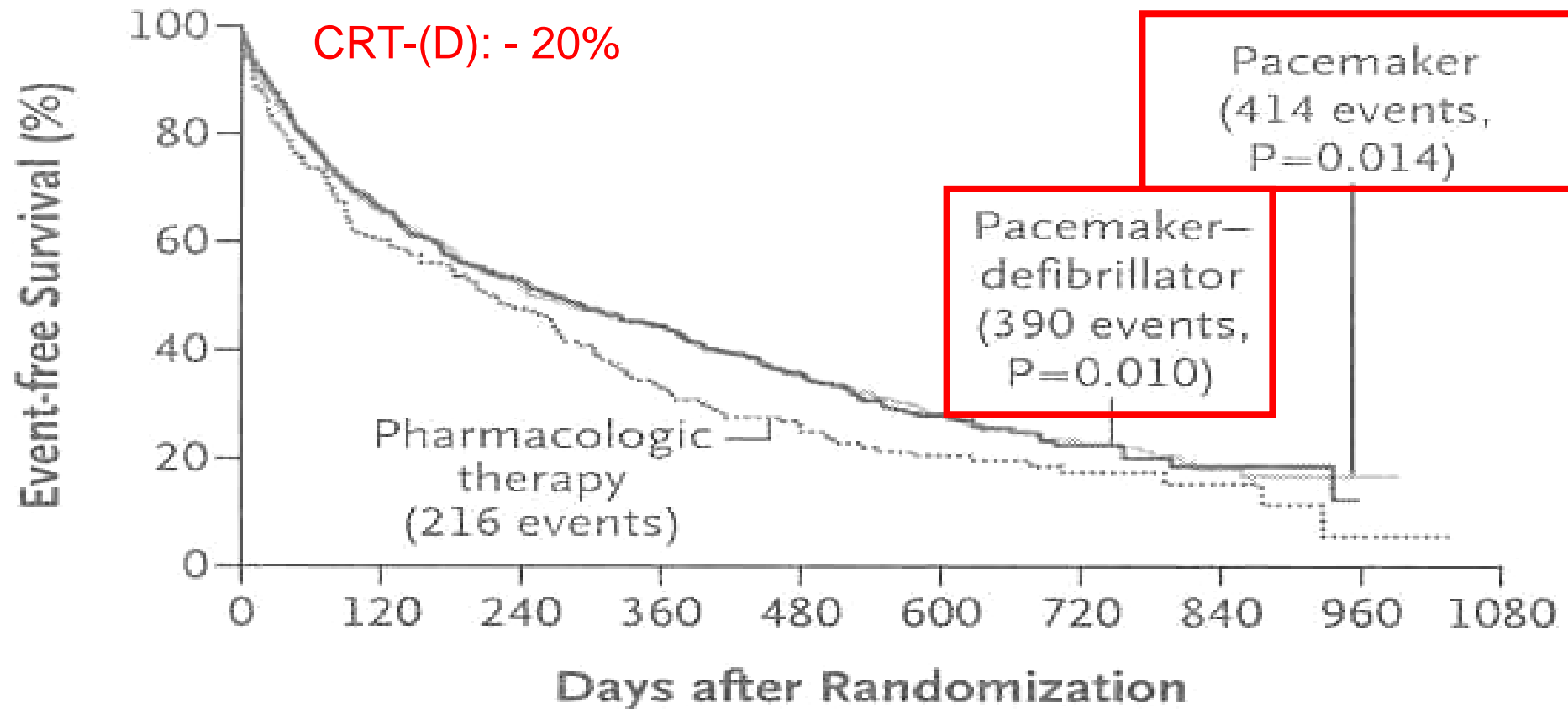
Wide QRS \geq 120ms

- Class I -

COMPANION: Primary prevention

Death or hospitalization for any cause

A Primary End Point



No. at Risk

Pharmacologic therapy	308	176	115	72	46	24	16	6	1
Pacemaker	617	384	294	228	146	73	36	14	3
Pacemaker-defibrillator	595	385	283	217	128	61	25	8	0

External Electric Therapy

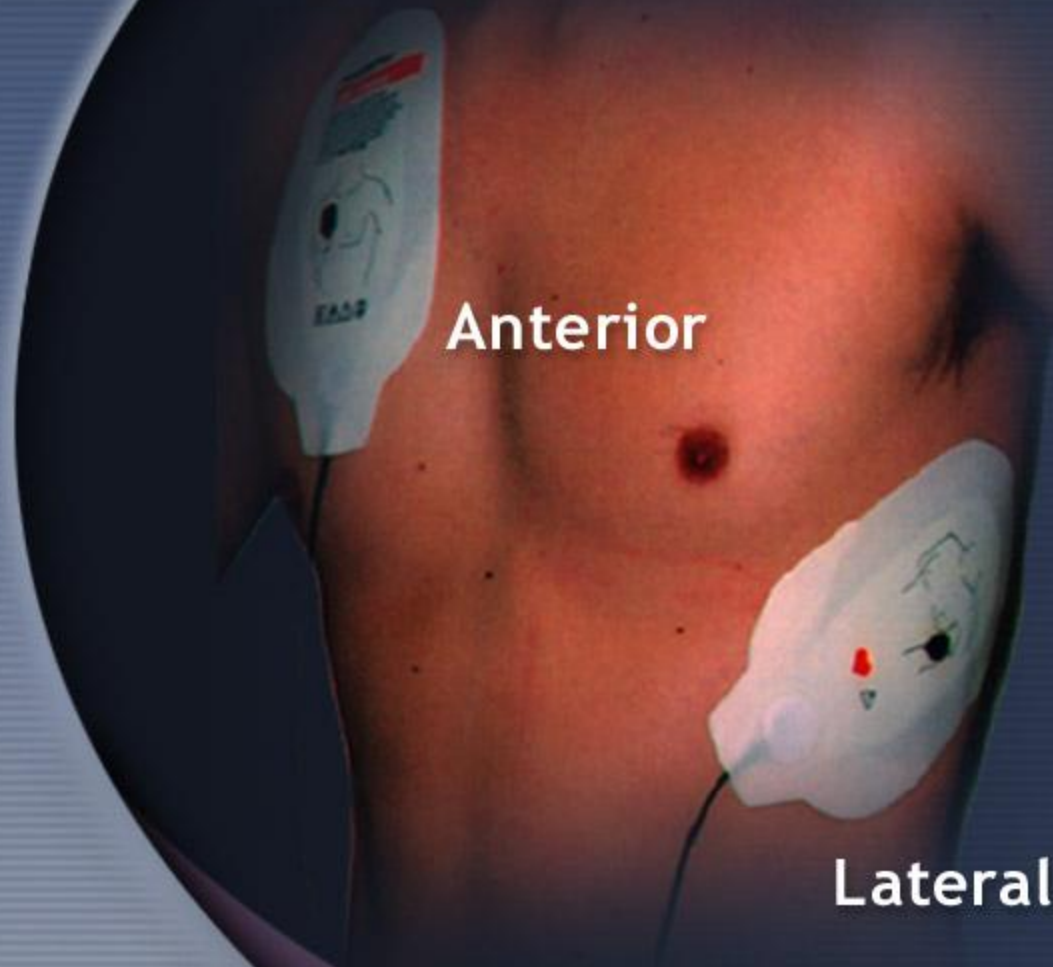


- Electrical current (shock) delivered through external paddles positioned on patient's chest
- Used for emergency rescue of VT/VF or planned therapy for AF
- Usually painful or uncomfortable for patient

External Electric Therapy

Electrode Placement

Anterior-Lateral



External Electric Therapy

Electrode Placement



Correct electrode position



Incorrect electrode position

- Correct electrode position optimizes the amount of current flowing through the ventricles

A Magnet over an ICD...

- **May prompt tones from the ICD** (varies by manufacturer)
- **Has no effect on pacing**
- **Temporarily suspends detection/therapy**
 - **Function resumes upon removal of magnet**