

**IS THERE A NEED FOR  
NON-CARDIAC LEAD OR NON-LEAD  
ICD DEVICES !**

# **ADVANTAGES of TV-ICD DEVICES**

- **Easiness to implant**
- **Optimal sensing for arrhythmia detection, diagnosis and counting**
- **Pacing, including LV pacing (CRT)**
- **ATP functions**

**TV-ICD : current gold standard in ICD therapy ... BUT !**

# Many ICD Patients only need shock therapy w/o ATP capability, and have no need of Pacing

- CHF w/o CRT indication: *SCD-HeFT*
- Non-obstructive hypertrophic cardiomyopathy
- Ion-channel abnormalities: Brugada > long QT
- Idiopathic VF
- ...

## **TV-ICD: Cumulative Risk of Specific Lead-Related Complications**

- **Lead failure** due to intrinsic lead fragility and mechanical constraints: fracture, insulation defect by abrasion...
  - *Incidence: 1-2 % per year (AVID, MADIT...) ?*  
*but probably overestimated: difficulties of diagnosis*
  - *Severe consequences: 40% of deaths occurring in patients implanted with an ICD, are possibly due to lead fracture or insulation defect (FDA database: R Hauser. Heart Rhythm, 2004)*
- **Lead infection:** 1% at 1-yr (*AVID study, PEOPLE study in France*)
- **Chronic vein occlusion...**

***Particularly relevant in the setting of young patients to be treated for decades***

**YES:** There is a Real Need for  
Non-cardiac Lead ICD Systems,  
in particular S-ICD's

# S-ICD: Clinical Relevance

- Pure technical feasibility study, with data limited to defibrillation energy testing
- Very first but important step towards implantable S-ICD systems

# S-ICD: Study Limitations

- Acute study with temporary leads  
*What would happened with chronic leads ?*  
*Favourable (DFT stability) long-term results with SC leads additional to TV-systems (K Kittering, 2004)*
- High « DFT's »:
  - Mean: 36.6 J, x 3 vs TV-ICD
  - > 35 J in 40 % pts
  - Tolerability (pain) ?
- Quality of sensing and tachycardia detection:  
*No data*

# S-ICD: Preliminary Conclusions and Future Perspectives

- S-Defibrillation is acutely feasible
- Need to improve lead technology, positioning and stability for substantially lowering DFT's and energy requirement
- What about the box: volume, place ?

*Many technical obstacles will have to be surmounted before S-ICD be used in clinical practice*

# ICD STORY : a BRIEF SUMMARY

- 1980 (M Mirowski)-1993: Epicardial leads
- 1993- ....: Transvenous leads,  
*a Key progress*
- Future:  
Non-cardiac lead or non-lead systems ?