Managing the Patient with an AICD

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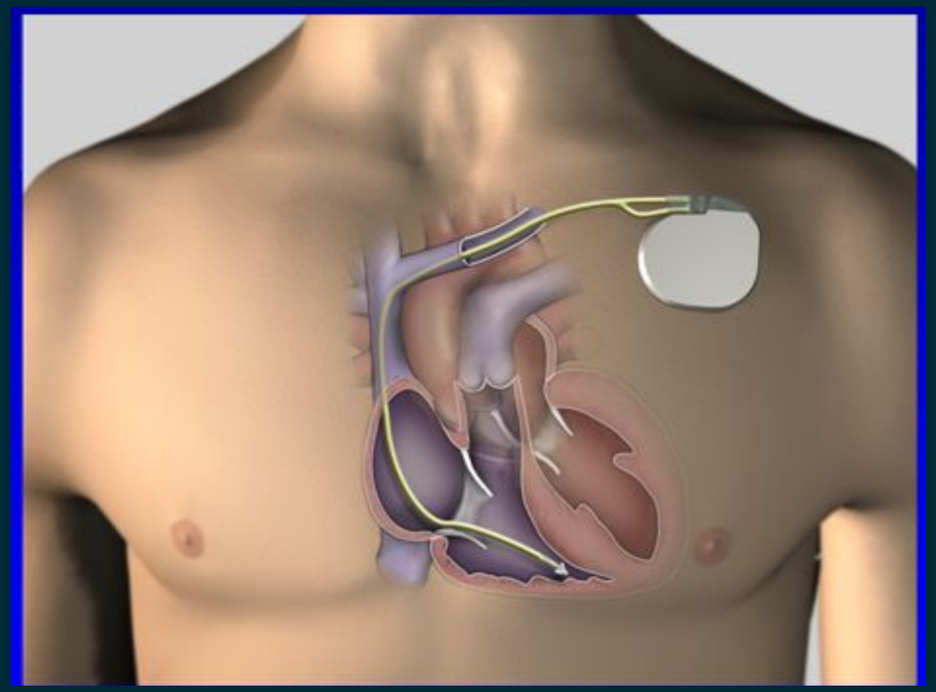
What information do you need to manage the patient with an AICD?

- What is an AICD ?
- Managing ICD related issues
- How does it affect day-to-day life
- How does it affect medical management ?

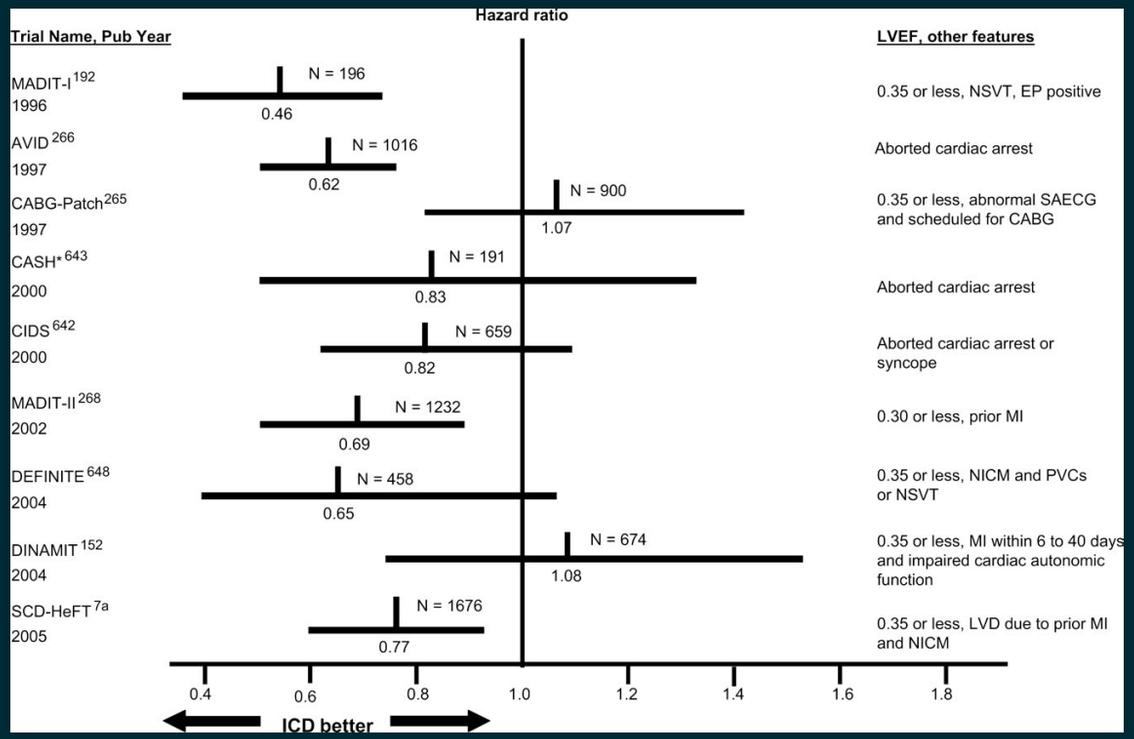
What is an AICD



What is an AICD

- A miniaturized battery powered device
- Tracks the heart rate and rhythm
- When there is a tachyarrhythmia, it attempts to correct the rhythm

What does it do?

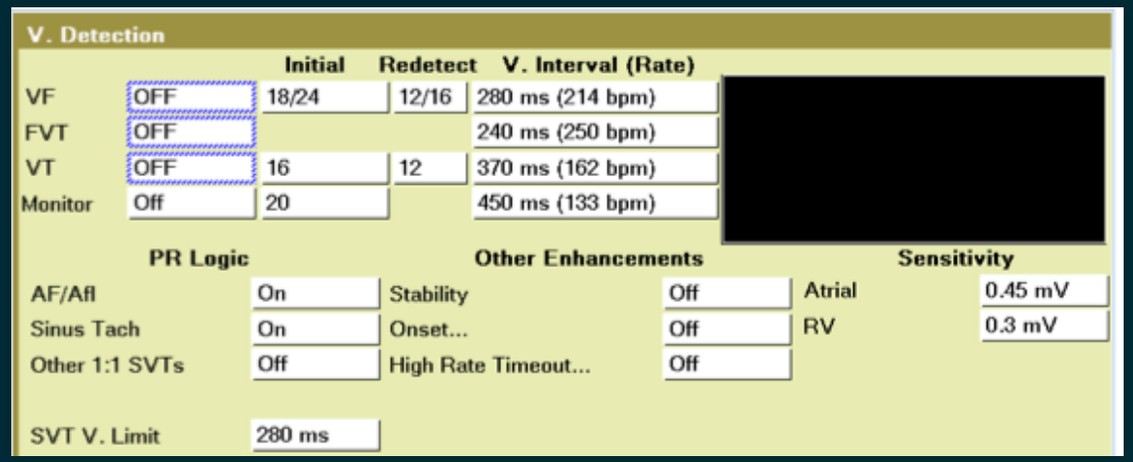


What it is not

- Does not improve the function of the heart
- Not a treatment for ventricular tachycardia
- Does not prevent tachy-arrhythmias

How does it differentiate an arrhythmia from normal rhythm

- At simplest level, discrimination is rate based
- Other clues are used
  - Relation of atrial and ventricular activity
  - Morphology of the electrogram



How does it correct the rhythm

- By delivering a biphasic DC shock
- By overdrive pacing

Follow up

- Usually required every 6 months to a year
- Device longevity is generally 5-10 years
- After this needs to be changed (lead retained)

ICD issues

Shock from the device

- Usually felt like a blow on the back / being punched in the chest
- Patient perception varies
- Phantom / inappropriate / appropriate shocks

Need for consultation at specialist center

- One shock + feeling well - early elective device check
- Immediate visit
  - More than one shock
  - Feeling unwell

Alert from device

- Audible / vibratory alert
- If no other issues, wait one day to confirm alarm (same time each day)
- If repeat alarm, consult at specialist center

Patient who presents with repeated shocks

- Determine if appropriate / inappropriate
- Appropriate - treat arrhythmia
- Inappropriate - may use strong magnet to inhibit therapies

Daily Life

Minimal impact on day to day life

- Diet
- Exercise
- Pregnancy / delivery
- Determined by underlying disease

Driving

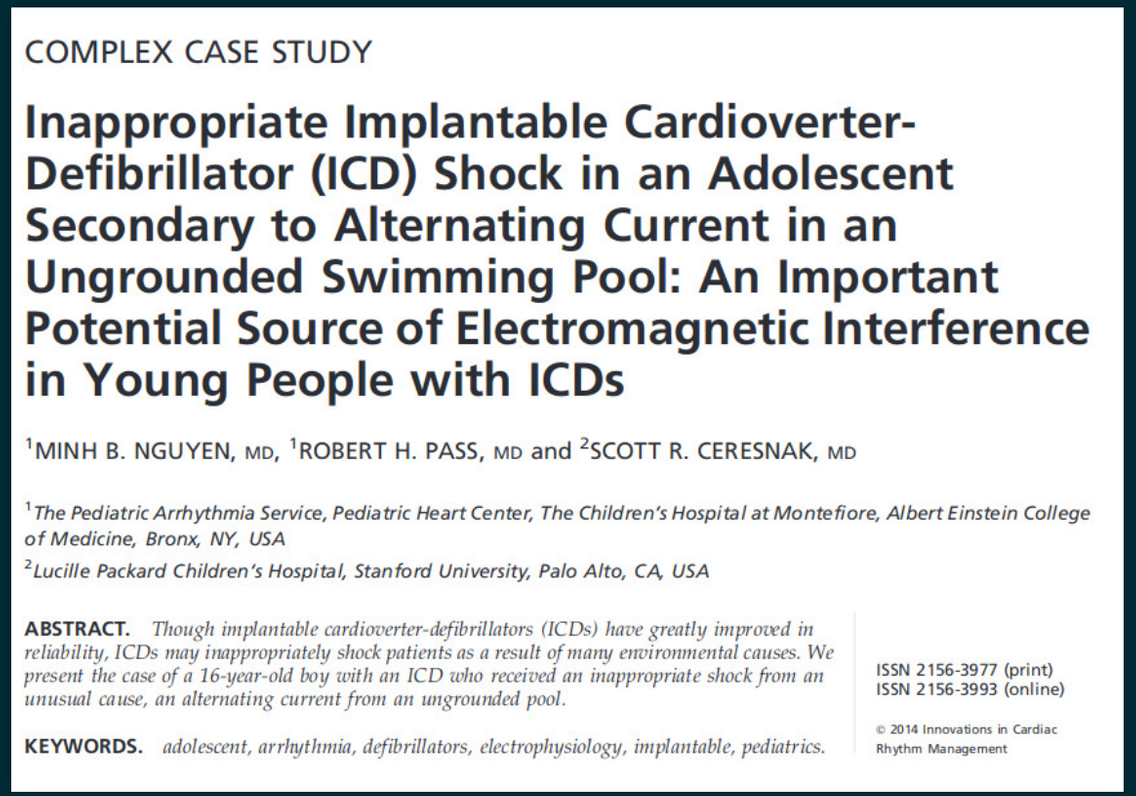
- Avoid driving public transport vehicles
- 6 weeks after implantation - Primary prevention
- 6 months without events - Secondary prevention

EMI

- No interference from majority of household devices
- Remote control / microwave / electric switches / Walk through scanners at airports
- Mobile phones - 6 inches away - opposite ear / not in shirt pocket
- Music players - headphones 6 inches away
- Anti-theft systems - avoid leaning on / prolonged proximity
- Avoid strong magnets

Suspect EMI

- Shock / symptoms
- Related to place / device
- When in doubt - check in specialist center



COMPLEX CASE STUDY

Inappropriate Implantable Cardioverter-Defibrillator (ICD) Shock in an Adolescent Secondary to Alternating Current in an Ungrounded Swimming Pool: An Important Potential Source of Electromagnetic Interference in Young People with ICDs

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ABSTRACT. *Though implantable cardioverter-defibrillators (ICDs) have greatly improved in reliability, ICDs may inappropriately shock patients as a result of many environmental causes. We present the case of a 16-year-old boy with an ICD who received an inappropriate shock from an unusual cause, an alternating current from an ungrounded pool.*

KEYWORDS. *adolescent, arrhythmia, defibrillators, electrophysiology, implantable, pediatrics.*

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Medical management

Drugs

- Most ailments can be treated as usual
- Underlying disease dictates drugs that are safe to use
- Anti-arrhythmic drugs may affect defibrillation threshold

Scans

- CXR / ultrasound - safe
- CT scan - Can sometimes be associated problems when device is directly in scanning field
- MRI - MRI conditional devices - take specialist opinion

Radiotherapy for cancer

- Can damage the device circuitry
- Shield if possible
- Move device if it is in the field

Others

- Extracorporeal shock wave lithotripsy - Avoid
- Transcutaneous electrical nerve stimulation - Avoid on torso, rare interaction when used in limbs
- Electro convulsive therapy - no EMI, but avoid inappropriate therapy for sinus tachycardia
- External defibrillation - keep distance

Surgical procedures

- Cautery can produce EMI
- Bipolar cautery / short bursts / away from device
- Magnet over device / deacivate device

Summary

- AICD implants increasing in number
- More such patients will be cared for by cardiologists / physicians
- Many aspects of care related to underlying disease than the ICD
- Understanding of basic aspects of AICD helps manage the patient