

ICDs – The “Shocking” Truth & an Action Plan

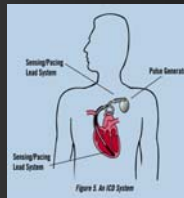
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Outline

- Introduction - the ICD
- Incidence of Shock Therapy
- Psychological Impact of Shock Therapy
- Preparation & an “Action Plan”
- Conclusion

What is an ICD?

- A small electrical device, designed to detect & treat life-threatening episodes of VT & VF.
- **ICD Therapies:**
 - bradycardia pacing – back-up pacing
 - Anti-tachycardia pacing for VT
 - Cardioversion lower energy shock to treat VT
 - Defibrillation for VF



Implant Rate Growth

Region	2000	2001	2002	2003	2004	2005	2006
USA	185	211	241				
Europe	32	37	41				
Australia	37	45	62	87	132	149	175
NZ	18	22	30	34	47		60

Medtronic estimates of total ICD Implants per million population

ICD Shock Therapy

Incidence of:

- Appropriate therapy
- Inappropriate therapy
- Multiple shocks/ electrical Storm
- Phantom shocks

Incidence of ICD therapy/shocks

Appropriate ICD therapy is defined as the delivery of ATP or shocks for VT or VF.

Analysis of ICD therapy in the AVID Trial J Card Elec, 14:940-948, 2003

- 53% received an appropriate shock within 2 years
- 68% = ATP therapy
- Primary arrhythmia: VT - 63%, VF - 13%, SVT - 18%
- +/- 30% - no symptoms prior to therapy, 10% report pre-syncope or syncope
- Most arrhythmias were not precipitated by any specific physical activity

J Card Elec, 14:940-948, 2003

Anti-tachycardia Pacing - ATP

Numerous studies have demonstrated that ATP can terminate 78-94% of VT <188-200bpm with a 2-4% risk of acceleration.

PainFREE Rx II

- ATP can terminate VT up to 250 bpm without the need for painful shocks.
- **Compared ATP versus shocks for FVT (188-250bpm)**
- 634 pts randomised to ATP (n=313) or shock (n=321)
- Mean f/up - 11+/- 3 mths

PainFREE Rx II

Circ 2004;110:2591-2596

Conclusions

- FVT (188-250bpm) comprised 76% of all ventricular arrhythmias conventionally programmed to shock
- FVT - ATP can terminate 3 of 4 episodes
- ATP did not increase negative outcomes in terms of acceleration, syncope and mortality.
- Patients treated by ATP have improved QOL score as compared to patients treated with shock

PainFree Rx II; Circ 2004;110:2591-2596

Inappropriate ICD Therapy

Research suggests that 25-35% of ICD patients may suffer from inappropriate ICD therapies

Common Causes

- SVT/AF – most common
- Electromagnetic interference
- Lead fracture
- Most inappropriate therapies occur within first year post implant
- Can be pro-arrhythmic and reduce battery longevity

Am J Cardiol 2006;97:1255-1261, J Cardiovasc Electrophysiol: 2003; 14 940-948, Circ. 2005;111:2898-2905, NEJM: 2005; 352:225-37

Electrical Storm

Defined as >3 episodes of VT/VF requiring ICD therapy in 24 hr period

- Recurrent arrhythmias occur in 40-60% of ICD recipients over 3 year f/up
- **Electrical Storm** occurs in approx 10%-20% of patients
- Mean number of shocks – 17; range 3-50 (Credner et al, J Am Coll Card:1998;32:1909-1915)
- VT more likely to be index arrhythmia, VT = 86%, VF= 14%
- Recurrent episodes of VT/VF – ? prognostic significance

Exener DV, Sergio L et al; Circ 2001, Dunbar et al, Am J Crit Care; 2005
Credner et al, J Am Coll Cardiol 1998

Electrical Storm & the sequelae

Experience of multiple shocks is particularly traumatic & is associated with significant psychological distress (PTS)

Number of ICD shocks may serve as a "sickness scoreboard"
(Sears et al; J Cardiopulmonary Rehab;2004;24:209-215)

Higher levels of anxiety ? An independent predictor of subsequent arrhythmia events (Dunbar et al, 1999)

Routine psychological assessment and support aimed at preventing avoidance behaviour & facilitating positive return to activities (Sears et al, ClinCardiol, 2003;26:107-111)

Use of anti-arrhythmic drugs & treat potential causes

Phantom Shocks - described anecdotally since 1993

Phantom Shocks – shocks reported by patients, but not confirmed on interrogation of the ICD

Incidence of Phantom Shocks:

- +/- 6-9%
- Occur most often in first 6 months - ? Nocturnal
- No relation to age, gender, ejection fraction
- ? Maladjustment to the device - major psychological complication
- Manifestation of anxiety or depression
- ? Related to multiple shock experience

Kowey et al:1993; Swigman CA-NASPE 1998; AHA 2002; Maleki et al; Prudente LA; J CV Nursing; 2006

Common Fears & Emotions

- Common ICD specific fears: **"the shock experience"** device malfunction, fear of the unknown, embarrassment & death
- Lack of control, unpredictability, the future
- Fear of returning to physical activity, work, driving
- Hyper-vigilance, avoidance
- 13-38% experience significant levels of anxiety
- 24-33% report depressive symptoms
- Shock therapy is universally stressful – reputation of the ICD as a "shock box"

Sears et al; Heart, 2002; 87:488-493
Kamphuis HCM; 2004; Gallagher et al; 1997

Psychological impact of ICD therapy

- Most research has shown the ICD shock to be the primary culprit for reductions in QOL
- **Key issues:** unpredictability, lack of control, aversive nature of shock therapy, mortality
- Kick in the chest, like a spark plug, like a bolt of lightning, a jolt from an electric socket
- Rated 5-6/10 on the pain scale – escalates following repeated shocks (Gallagher et al; Am J Crit Care; 1997)
- ↑ Shocks are associated with ↓ QOL & ↑ levels of anxiety

Kamphuis et al; Eurpace; 2003; Sears FS, Conti JB; Heart 2002; Dougherty et al; Heart & Lung; 1995; Sears SF et al; J Cardio Pulm Rehab 2004;

ACTION - Preparing for a Shock:

- An **organised response** can ↓ the short and long term negative effects
- **Preparation:** education and information pre & post implant (NB: "hospital memory")
- **Support Network:** Family, friends, Health team, Cardiac Rehab, ICD Support Groups etc
- Establish a **"Action Plan"** – pre & post shock

Sears SF; Circ 2005; 111:380-2
Dougherty CM et al; Heart & Lung 2004

The infographic titled "ICD Action Plan" provides a clear, step-by-step guide for patients. It includes a checklist of preparation steps, a numbered list of actions to take during a shock, and a section for general advice. A small table at the bottom right is intended for recording contact information for the doctor and cardiologist.

ICD ACTION PLAN

- Have an emergency plan with the relevant contact phone numbers
- Carry this information on you
- Keep a second copy in a central spot eg: by your phone or on the fridge door
- Always carry your ICD patient ID card

What to do if you receive a shock from your ICD?

1. Stay as calm as possible
2. Move to a comfortable place where you can sit or lie down.
3. One shock from your ICD - providing you are feeling OK there may not be any need for immediate medical assistance.
4. BUT it is important to inform your Doctor and/or Cardiologist as soon as possible following ICD shock therapy.
5. More than one shock in 24 hours or if you are feeling unwell - call an ambulance DIAL 999
6. Series of shocks or symptoms persist, call an ambulance DIAL 999

Many people receiving shock treatment from their ICD for the first time will feel upset and anxious. Make use of all available support services - contact your Doctor, ICD Clinic and Support Group for help, reassurance and support.

This information is general advice only; it must not replace specific instructions given to you by your Doctor or hospital.

Doctor:	Ph:
Cardiologist:	Ph:

ACTION: Post-shock coping strategies

Experiencing an ICD shock is stressful; shocks affect the whole family.

"You cannot control the shock, but you can control the impact"

Post-shock coping strategies:

- Review by medical team
- De-brief – avoid "analysis paralysis"
- Relaxation techniques
- Positive thinking – "Survivor vs Victim"
- Gradual return to activities, goal setting
- Support

Sears SF; Circ 2005; 111:380-2

How should we manage ICD patients & maximise clinical outcomes?

- Surveillance / Psychological Vital Signs; Four A's:
 - Ask Assess concerns
 - Advise Anticipate psychosocial impact
 - Assist Practical support, education
 - Arrange Appropriate referrals
- Behavioral Prescriptions: help patients take QOL actions, "focus on living;" use of CBT etc
- Multi-disciplinary approach - Cardiac Rehab (Fitchet, A et al; Heart 2003;89:155-60)

Sotile & Sears 1999, You Can Make a Difference; Sears FJ, Conti JB; Heart 2002; Dunbar et al; Am J Crit Care, 2005

Cardiac Rehabilitation

Cardiac Rehab can improve survival, QOL & functional ability in patients with CHD (Lewin et al; Heart 2001;85:371-372)

Rehabilitation for ICD recipients: (Fitchet, A et al; Heart 2003;89:155-60)

N = 16, Cardiac Rehab (12 weeks) vs. Usual Care

◆ Cardiac Rehab: Ex, Ed & psychological support

◆ **Results:**

◆ Exercise Time: Improved 16%

◆ Anxiety/Depression Scores: Improved 25-30%

◆ Deemed Safe: No VT or shocks

Strategies for living well with an ICD

- Develop a positive outlook – a “Survivor vs Victim”
- Be “Heart Smart” - knowledge is power
- Be prepared “Action Plan”
- Building a support network
- QOL planning
- Beware of “Hyper-vigilance”
- Relaxation time & stress management
- Enjoy the moment!

Sears SF et al; Circ 2005
Sears SF 2004; Coping with Cardiac Illness & the ICD (Presentation)

Summary

- ICD's provides life-saving technology – primary & secondary prevention
- +/- 50% of ICD recipients will receive shock therapy
- Shock therapy is associated with reduced psychological well-being
- Use of ATP to terminate fast VT has the potential to ↓ shock therapy (PainFREE Rx II, Circ;2004;110:2591-2596) & ↓ QOL
- Psycho-social issues - importance of developing a positive outlook, effective strategies & “action planning.”

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