



How to Respond to an Implantable Cardioverter-Defibrillator Shock

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The implantable cardioverter-defibrillator (ICD) has consistently demonstrated a life-saving benefit in patients at risk for sudden cardiac arrest. Quality-of-life outcomes with the ICD may be directly related to coping successfully with ICD shocks. Although most people are able to tolerate a shock to some extent, the experience of shock is discomfiting and can prompt feelings of anxiety, depression, or fear. The purpose of this article is to review patient and family preparations and responses to ICD shock to limit its impact on quality of life.

Understanding Shock

The ICD provides continuous monitoring and treatment for cardiac arrhythmias (abnormal heartbeats). The ICD automatically detects an abnormal heartbeat and will deliver small rapid pacing impulses or an electric shock to the heart to restore a normal heart rhythm. During the first year after implantation, the chances of receiving at least one ICD shock can range from one third to one half of all ICD recipients.^{1,2} The shock sensation has been likened to a swift kick in the chest and rated a “6” on a 0 to 10 pain scale.^{1,3}

Nonetheless, quality-of-life research indicates that the ICD is at least equal to or better than antiarrhythmic medications on most indicators of quality of life.^{2,4–8} Most research has pointed to ICD shock as the primary culprit if reductions in quality of life occur.²

Psychological Responses to Shock

ICD-specific fears and symptoms of anxiety (for example, excessive worry, increased muscle tension, sweating, and increased heart rate and respiratory rate) are the most common psychological symptoms experienced by ICD recipients, with approximately 13% to 38% of recipients experiencing significant levels of anxiety. Common ICD-specific fears include the shock experience, device malfunction, and/or concerns of death. Depressive symptoms are reported at rates similar to those of other heart patients (24% to 33%).⁹ Younger age (50 years and younger) and greater frequency of ICD shocks were the two most commonly reported ICD-specific risk factors for psychological distress.

How to Respond to ICD Shock

It is possible that you will experience a shock at some point during your time

with the ICD. As an ICD patient, you cannot control shocks, but you can control your reaction. Although shocks are often startling and discomfiting, they are also an indication that the ICD is doing its job, keeping you protected from life-threatening arrhythmias or a rapid heart rate. Having a plan for shock helps reduce uncertainty and anxiety, so that you and your loved ones know how to handle the shock and in what circumstances you should contact your doctor or go to the emergency room.

Preparing for Shock

- *Educate yourself.* Learn as much as you can about the ICD and how it works. Understanding the purpose of the ICD, how it operates, and how to respond if a shock occurs will help to reduce your anxiety and help you to cope more effectively. Join a local support group of heart patients or ICD patients to learn more about cardiac disease and how your ICD works to keep you safe. Review the additional resources listed below to stay informed.
- *Information control.* Three sources of information are important to have

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Action Plan

Event	Symptoms	Action
Received ICD shock	Feel fine immediately	Call heart doctor to discuss the event and arrange appropriate follow-up
Received ICD shock	Experiencing chest pain/pressure, shortness of breath, rapid heart action. Feel dizzy, confused, or not well	Seek medical attention immediately
Received two or more ICD shocks within 24 hours	Feel fine or ill	Seek medical attention immediately

available at all times: your ICD identification card, a list of your medications, and your doctor's name and telephone number. This information will allow healthcare providers to take the best possible care of you in an emergency. Use an index card to write down all of your medications and your doctor's name, and keep it in your wallet.

- *Action plan.* Preparing for an ICD shock might involve rehearsing what you should do if you were to receive a shock. Your doctor may have a specific plan for you. The Table contains a typical plan for an ICD patient that you may want to use for a discussion with your doctor.

Postshock Coping

Experiencing shock is generally recognized as discomforting, but an organized response can minimize the short- and long-term negative effects. Managing your reaction involves strategies involving both your mind and your actions. The goal of all of these strategies is to maximize your quality of life.

Strategies for Coping With ICD Shock

Relax and Focus

The automatic response to a shock is arousal (a heightened awareness to your body and health). Hyperarousal can occur if you do not take charge of your reaction and focus on relaxing. Allowing yourself to engage in deep-breathing techniques and tension reduction exercises will reduce the effects of arousal. To practice relaxed breathing, do the following:

- Put yourself in a comfortable, reclined position, and place one hand

on your upper chest and the other on your belly, just below your navel (belly button).

- Close your eyes and focus on your breathing. Notice how the hand on your belly moves more than the hand on your chest, indicating that you are using calm, restful breathing.
- Keep your attention on your breathing. It is inevitable that your mind will wander to other topics, but just return your attention to your breathing.
- Practice this exercise for at least 5 minutes twice a day. This will allow you to gain skill and comfort with focusing on your breathing and relaxing your body.

Positive Thinking

Recent research has highlighted how the attitudes of ICD patients are among the best predictors of quality of life.^{10,11} Shock can reduce your faith in your safety and your future or could serve as a reminder of your commitment to living. Therefore, actively reminding yourself about the positive aspects of your life, your relationships, your activities, and your future can provide you with hopeful ideas and rewarding plans for the future. You may want to make a list of the people and activities that give you quality of life so that you can remind yourself of how important your positive outlook is to recovery.

- *Debriefing.* The desire to avoid a shock is universal. Only regular medical follow-up and medications are related to preventing shock at this time. Therefore, the best plan is to discuss the reasons for a shock with your doctor. Your doctor will

take every action possible to avoid a future shock by possibly adjusting your medications or the settings of your ICD.

- *Return to life.* Quality of life usually involves engaging in activities that are rewarding, pleasant, peaceful, or exciting. Many ICD patients try to avoid a future shock by avoiding any action that has ever preceded a shock, but this can reduce your quality of life. Preventing a shock is not possible by our actions alone. Because shock can occur during any part of daily life, fearfulness about shock can trick you into trying to prevent it by reducing activities. A step-by-step plan can allow you to eventually return to all of the activities that you did before shock. Start a "Coping To-Do List" that highlights both everyday activities that reduce stress (for example, take a warm bath, watch a sunset) and long-term goals (take a vacation or trip, attend an important event) that can provide you with future activities that are motivating to remain healthy.

Conclusions

Experiencing an ICD shock can be an unwelcome reminder about your heart condition. However, the ICD remains the best treatment option to keep you safe from cardiac arrhythmias. Desirable quality of life can also be achieved despite the experience of shock. Collectively, you, your family and significant others, and your healthcare team can plan for shock, engage in preshock and postshock coping strategies, and resume a desirable quality of life.

Additional Resources

- Medtronic home page. Available at: <http://www.Medtronic.com>. Accessed January 14, 2005.
- Guidant Corporation home page. Available at: <http://www.Guidant.com>. Accessed January 14, 2005.
- St. Jude Medical home page. Available at: <http://www.sjm.com>. Accessed January 14, 2005.
- Heart Rhythm Society home page. Available at: <http://www.hrspatients.org>. Accessed January 14, 2005.

References

- Pelletier D, Gallagher R, Mitten-Lewis S, McKinley S, Squire J. Australian implantable cardiac defibrillator recipients: quality-of-life issues. *Int J Nursing Pract*. 2002;8:68–74.
- Schron EB, Exner DV, Yao Q, Jenkins LS, Steinberg JS, Cook JR, Kutalek SP, Friedman PL, Bubien RS, Page RL, Powell J. Quality of life in the Antiarrhythmics Versus Implantable Defibrillators Trial: impact of therapy and influence of adverse symptoms and defibrillator shocks. *Circulation*. 2002;105:589–594.
- Ahmad M, Bloomstein L, Roelke M, Bernstein AD, Parsonnet V. Patients' attitudes toward implanted defibrillator shocks. *Pacing Clin Electrophysiol*. 2000; 23:934–938.
- Wathen MS, DeGroot PJ, Sweeney MO, Stark AJ, Otterness MF, Adkisson WO, Canby RC, Khalighi K, Machado C, Rubenstein DS, Volosin KJ. Prospective randomized multicenter trial of empirical antitachycardia pacing versus shocks for spontaneous rapid ventricular tachycardia in patients with implantable cardioverter-defibrillators: Pacing Fast Ventricular Tachycardia Reduces Shock Therapies (PainFREE Rx II) trial results. *Circulation*. 2004;110:2591–2596.
- Arteaga WJ, Windle JR. The quality of life of patients with life-threatening arrhythmias. *Arch Intern Med*. 1995;155:2086–2091.
- Herbst JH, Goodman M, Feldstein S, Reilly JM. Health-related quality-of-life assessment of patients with life-threatening ventricular arrhythmias. *Pacing Clin Electrophysiol*. 1999;22(pt 1):915–926.
- Sears SF, Conti JB. Current views on the quality of life and psychological functioning of implantable cardioverter defibrillator patients. *Heart*. 2002;87:488–493.
- Irvine J, Dorian P, Baker B, O'Brien BJ, Roberts R, Gent M, Newman D, Connolly SJ. Quality of life in the Canadian Implantable Defibrillator Study (CIDS). *Am Heart J*. 2002;144:282–289.
- Sears SF, Conti JB, Curtis A, Saia TL, Foote R, Wen F. Affective distress and implantable cardioverter defibrillators: cases for psychological and behavioral interventions. *Pacing Clin Electrophysiol*. 1999;22:1831–1834.
- Godeman F, Butter C, Lampe F, Linden M, Werner S, Behrens S. Determinants of the quality of life in patients with implantable cardioverter defibrillators. *Qual Life Res*. 2004;13:411–416.
- Sears SF, Serber ES, Lewis TS, Walker RL, Conners N, Lee JT, Curtis AB, Conti JB. Do positive health expectations and optimism relate to quality of life outcomes in ICD patients? *J Cardiopulm Rehab*. 2004;24: 324–331.