



Statement on Deactivation of Implantable Cardioverter-Defibrillators

Q: Should an order about continuing use or deactivation of an implantable cardioverter- defibrillator (ICD) be included on a POST form?

A: Since the 1980s, the implantable cardioverter-defibrillator (ICD) has become an increasingly important and commonly used therapy for patients with advanced heart failure (1). As a person approaches the end of life, the benefits and burdens of continuing treatment with an ICD may need to be reconsidered. Health care professionals caring for persons with ICDs may wish to review the Heart Rhythm Society's consensus statement endorsed May 3, 2010 to help determine if the use or deactivation of an ICD meets the person's current goals of care (available at http://www.hrsonline.org/Policy/ClinicalGuidelines/upload/ceids_mgmt_eol.pdf). As noted in the consensus statement, "In the last weeks of their lives, 20 percent of ICD patients receive shocks which are painful and known to decrease quality of life and which greatly contribute to the distress of patients and their families."

After an informed consent discussion with the person, instructions regarding the use or deactivation of the ICD may be included in the "Other instructions" line of Section B of the POST form. Persons may wish to request that their physicians indicate on the POST form when in the patient's course their ICD should be deactivated so that they do not receive painful shocks at or near the moment of death.

As part of quality end-of-life care, health care organizations including hospitals, nursing homes, and hospices should implement policies to address deactivation of ICDs (2,3). These policies should explain the ethical rationale for allowing the patient's choice to have an ICD deactivated (4) and include the systematic practice of asking each patient admitted to their organization if they have an ICD, a procedure for identifying the specific device, consultation with appropriate clinical specialists, an informed consent discussion about device deactivation, and a procedure regarding the reprogramming and deactivation of these devices electively and in emergent situations.

Please see the sample policy below for further guidance.

McClellan MB, Tunis SR. Medicare coverage of ICDs. *N Engl J Med* 2005;352:222-224.

Walling AM, Asch SM, Lorenz KA, Roth CP, Barry T, Kahn KL, Wenger NS. The quality of care provided to hospitalized patients at the end of life. *Arch Intern Med* 2010;170(12):1057-1063.

Goldstein N, Carlson M, Livote E, Kutner JS. Brief Communication: Management of implantable cardioverter-defibrillators in hospice: A nationwide survey. *Ann Intern Med* 2010;152:296-299.

Berger JT. The ethics of deactivating implanted cardioverter defibrillators. *Ann Intern Med*. 2005;142:631-634.

SAMPLE ICD DEACTIVATION POLICY (Adapted from reference 3)

This policy is a synthesis of actual policies submitted by hospices. It provides the core elements that should be included in a policy that addresses the management of ICDs for patients receiving hospice care. It will require modification for patients in hospitals or long-term care facilities. A particular concern for long-term care facilities and hospices is the identification of community partners who will assist with the reprogramming of patients' ICDs.

Ethical Rationale for Deactivation

Implantable cardioverter-defibrillators are often multifunctional devices that are programmed to meet an individual patient's cardiac needs. These devices are designed to terminate potentially life-threatening arrhythmias in patients, and one way that they do this is to deliver electrical shocks to the heart. Unlike other treatments these devices may deliver to correct arrhythmias, the patient may experience pain or discomfort when the ICD discharges. That an ICD is present does not automatically mean that it will fire as death approaches. Deactivation of the shocking function is not a requirement for admission to hospice but may be in line with the hospice care goal of preserving quality of life during the dying process. Defibrillators are subject to the same ethical and clinical considerations as any other medical treatment. Similarly, ICDs are subject to an analysis of potential benefits and burdens, and patients or their surrogates have the right to accept or decline its interventions. These should not be isolated decisions but should instead be made in the context of the patient's larger goals of care.

Identification of Device

At the time of evaluation and admission to hospice (regardless of the setting in which care is delivered), all patients or their families will be queried about the presence of a pacemaker or ICD. On physical examination, the chest wall of each patient should be checked for the presence of a cardiac device (devices are usually placed underneath the clavicle and may be visible or palpable). If a device is identified, the patient or his or her family should be asked whether the patient has the card that was provided at implantation, to aid in determining the nature of the device. If this card cannot be located, the hospice nurse should contact the patient's primary care physician or cardiologist to determine the nature of the device.

Informed Consent Discussion About Device Deactivation

After an ICD has been identified, the hospice nurse should engage in an informed consent discussion with the patient, family, or surrogate about the potential benefits and burdens of the device at this point in the patient's illness. To make a truly informed choice about whether to deactivate the shocking function, the nurse should emphasize the following points during the discussion:

1. Leaving the defibrillation function on could potentially cause the patient to experience pain if the device delivers shocks near the end of life.
2. Turning off the shocking function means the device will not be able to provide all of the available methods of life-saving therapy in the event of a potentially fatal heart rhythm. Leaving the shocking function active does not guarantee, however, that the heart will return to a normal pattern of beating after an arrhythmia.
3. Turning off the ICD will not cause death.
4. Turning off the ICD will not be painful, nor will a patient's death be more painful if it is turned off.
5. Decisions about deactivating a pacemaker are often made separately from the decision to turn off a defibrillator, and they depend on the indication for the pacemaker and the patient's underlying intrinsic cardiac rhythm. Both are justifiable on ethical grounds, however, depending on the patient's overall goals of care. Deactivating a pacemaker may result in changes in a patient's symptoms. Consultation with a cardiologist or electrophysiologist before deactivation is often advisable to ensure that appropriate treatments are readily available if the pacemaker is deactivated.

Process for Reprogramming the ICD

If a decision has been made to deactivate the shocking function of the ICD, the hospice nurse will inform the medical director that the decision has been made to reprogram the device so it will no longer deliver shocks. *Note:* Reprogramming an ICD in this manner will stop it from ever delivering shocks. Placing a magnet over the ICD will stop it from sensing the rhythm and delivering a shock, but only while the magnet is physically present over the device.

If the patient is ambulatory, the nurse will contact the patient's cardiologist or electrophysiologist to arrange for the patient to come to the office to deactivate the shocking function. If the patient cannot leave his or her place of residence, then the hospice nurse will develop a plan with the attending physician for reprogramming the patient's ICD, which may include one of the following processes:

1. The patient's cardiologist or electrophysiologist or a member of his or her team will be contacted to come to the patient's place of residence to reprogram the device.
2. A member of the hospice team with special training in the deactivation of ICDs will arrange to borrow the equipment (similar to a small laptop computer) from the cardiologist or electrophysiologist and bring it to the patient's place of residence to reprogram the device. Equipment may be manufacturer-specific, so this team member must know which manufacturer made the patient's ICD.
3. A representative from the device manufacturer, after appropriate consultation with the hospice medical director or the patient's cardiologist or electrophysiologist, will come to the patient's place of residence to reprogram the ICD. If the patient is not ambulatory, the hospice nurse will be present in the place of residence during the reprogramming process to provide emotional support to the patient, family, and surrogate.

Process for Deactivation of an ICD in an Emergent Scenario

If the decision is for the shocking function of the ICD to remain active, a magnet designed for cardiac devices should be left in the patient's place of residence in the event of an emergent scenario in which the patient is being repeatedly shocked. It should be explained to the family that if a patient is receiving repeated shocks from the ICD, then placing the magnet over the device will stop it from sensing the cardiac arrhythmia. The magnet will need to be taped in place because it only stops the ICD from sensing. (An ICD that does not sense will not deliver treatments.) Once the magnet is removed, the ICD will again begin sensing and may again deliver shocks.* The magnet is heavy and may not be comfortable if left in place for an extended period. If the family is not comfortable performing this procedure themselves, the magnet should still be left in the place of residence so that a hospice nurse who arrives in an emergent situation will have the necessary tools to suspend the shocking function of the device.

Postmortem Care

After a patient has died, the ICD will not deliver a shock. If a magnet has been taped to the chest, it can be removed as soon as a nurse has verified that the patient no longer has cardiac function. If the body is to be cremated, the funeral director should be notified of the presence of an ICD, because incinerating the battery can cause it to explode.

* At the time this protocol was written, one ICD on the market would be permanently reprogrammed to completely deactivate its shocking function when placed in the presence of a magnet for a brief period. If one is not sure of the exact specifications of a patient's ICD, the best practice is to keep the magnet in place.