**1.0 Guideline**

When a patient has an ICD, they may receive a shock, or a series of shocks, if the heart goes into a ventricular tachycardia or ventricular fibrillation. To support patient goals of care, ICD therapy should be reviewed on an ongoing basis.

1.1 Guiding principles of ICDs:

- Is an implantable device that is used to prevent sudden cardiac death caused by malignant ventricular arrhythmias.
- Monitors the heart rhythm, can act as a standard pacemaker, can provide anti-tachycardia pacing and can deliver one or more high energy shocks to terminate potentially lethal arrhythmias such as ventricular tachycardia (VT) or ventricular fibrillation (VF).
- Not all pacemaker devices have ICD capabilities
- Deactivating the ICD will mean that the device will not prevent sudden death in the event of a dangerous arrhythmia (VF or VT). It will not cause the patient’s death. It is simply allowing nature to take its course.
- ICD shocks can cause pain and anxiety and may not prolong a life of acceptable quality, it is important to discuss deactivating the ICD when the patient’s clinical status worsens.
- Deactivation refers to turning off defibrillator function of the device not the pacemaker function.
- For further information, please refer to Deactivation of ICD procedure for further expectations

1.2 Deactivation of ICD:

- Should be discussed multiple times throughout the continuum of care.
- Requires an order from a provider.
The following circumstances may lead to ICD Deactivation:
  o Lead dislodgement, migration, or fracture
  o Inappropriate identification of the rhythm
  o Inappropriate defibrillation threshold
  o No longer meets client goals of care (e.g., palliative clients)

Turning off the ICD defibrillation therapies does not affect the ICD pacemaker function.

1.2.1 Non-urgent/planned Deactivation:
  • May occur if device is not functioning appropriately to ensure safety and prevent harm to the patient.
  • May occur when patient:
    o requests deactivation;
    o status changes; and/or
    o ICD no longer meets goals of care.
  • When ICD is deactivated, ensure that patient’s health care team members are notified.

Note: If temporary deactivation is required for procedures where electromagnetic interference may interfere with device function refer to specific procedures such as Endoscopy, MRI, or Operating Room guidelines.

1.2.2 Urgent/unplanned Deactivation:
  • Occurs when a patient is imminently dying and/or is too frail for transport to a device clinic.
  • For urgent deactivation with a programmer, when possible, a device clinic team member (or qualified team member) will travel to where the patient is located ensuring that the patient’s comfort and well-being is accommodated.
  • For urgent deactivation with a magnet, health care team members will:
    o Obtain a provider’s written order/ Computerized Provider Order Entry (CPOE). If this is not possible, a verbal order is acceptable in urgent situations but must be followed-up by written order/ CPOE or signed pre-printed orders as per Island Health ordering policy;
    o Apply a magnet over the ICD to prevent the delivery of a shock, this will not affect the pacemaker function of the device.
  • When ICD is deactivated, ensure that patient’s primary health care team members (e.g., patient’s general practitioner) are notified and appropriate documentation completed.

1.3 Documentation recommendations:
  • A provider’s written order/ CPOE must be obtained prior to deactivation; in an urgent/unplanned situation a provider may give a verbal order until a written order / CPOE can be obtained.
  • Ensure accurate and timely documentation of patient care, including but not limited to:
    o Date, time, details (e.g., advance care planning, education provided etc.) in electronic health record (EHR) or where applicable in paper chart.
    o Standardized documents to support appropriate documentation include the following:
      ▪ ICD Deactivation Consent Form;
      ▪ ICD Deactivation Referral Form;
      ▪ ICD Deactivation Order Set
2.0 ICD Deactivation Decision Algorithm

- Please refer to Appendix A: ICD Deactivation Algorithm

3.0 Definitions

**Adult:** Is a patient over the age of 17.

**Cardiovascular Technologists (CVT), Pacemaker Technologist, and Cardiac Rhythm Technologist:** Are staff who have specialized qualifications and work in specially trained areas, such as pacemaker clinic, cardiac cath lab or electrophysiology lab.

**Electronic Health Record (EHR):** Is the collective electronic medical record of a patient or a population of patients.

**Implantable Cardioverter Defibrillator (ICD):** Is a small battery powered device implanted into patients upper chest which monitors heart rhythm can act as a standard pacemaker, can provide anti-tachycardia pacing, and if required, can deliver one or more high energy electrical shocks, to terminate potentially lethal arrhythmias such as ventricular similar to defibrillator used during cardioversion. All ICDs also function as back-up pacemakers.

**Nurse:** Includes Registered Psychiatric Nurse (RPN), and Registered Nurse (RN) populations.

**Pacemaker:** Is a small battery powered device which provides small electrical impulses to certain areas of the heart muscle to mimic the natural electrical impulses of the heart. Patients who require pacemakers have hearts that do not provide a fast enough electrical impulse or have a block in the heart’s electrical conduction system. Pacemakers can pace the atrium, ventricles or both.

**Patient:** Includes clients, residents and persons in care in Island Health facilities and programs.

**Provider:** Includes Physician; Nurse Practitioner; and/or whose name appears in the patient’s chart designed as the most responsible provider (MRP) and who has overall responsibility for directing and coordinating the care and management of an individual patient.

**Non-urgent/planned Deactivation:** A planned deactivation of the ICD device in a controlled setting such as the local device clinic or an emergency department.

**Urgent/unplanned Deactivation:** An unplanned deactivation of the ICD device due to imminent death or a sudden deterioration in the patient’s condition, when non-urgent deactivation is not feasible.

3.0 Related Island Health Standards

- Implantable Cardioverter Defibrillator Deactivation Procedure
- ICD Deactivation Consent Form
- ICD Deactivation Referral Form
- ICD Deactivation Order Set
4.0 References

- Elsevier http://mns elsevier performance manager.com/Nursing Skills/Content Player/ Skill Content Player I Frame.aspx? KeyId= 60& Id= CC_046& Is Connect= False& bcp= Search Op~ 0~ ICD~ False& Section= 7 (search words: implantable cardioverter defibrillator)

5.0 Resources

- British Columbia Heart Failure Network End of Life Tools webpage (http://www.bcheartfailure.ca/for-bc-healthcare-providers/end-of-life-tools/)
- End of Life intranet webpage (https://intranet.viha.ca/departments/eol/Pages/default.aspx)
- Heart Health intranet webpage (https://intranet.viha.ca/departments/heart_health/Pages/default.aspx)
- 24.3.20PR Safe Care for Patient with an Internal Cardiac Defibrillator (ICD) in Endoscopy. Vancouver Island Health Authority. Reviewed: June 4, 2012.
- Phases 1.C.1 Safe Care for Patient’s with an ICD in the Operating Room –VGH and RJH. Vancouver Island Health Authority. Reviewed: June 2011.
Appendix A

Implantable Cardioverter Defibrillator (ICD) Information Sheet for Health Care Professionals

An implantable cardioverter defibrillator (ICD) is a device implanted in a patient’s upper chest which monitors the heart rhythm, can act as a standard pacemaker, can provide anti-tachycardia pacing if required, and can deliver one or more high energy shocks to terminate potentially lethal arrhythmias such as ventricular tachycardia (VT) or ventricular fibrillation (VF). Receiving a shock can be painful and psychologically traumatic and is often described by patients as feeling like a kick in the chest.

Limitations of an ICD

Although ICDs reduce sudden cardiac death, patients will ultimately die from either heart failure or another disease. As a patient’s disease progresses, physiologic changes may cause more arrhythmias and increase the frequency of shocks. Because ICD shocks can cause pain and anxiety and may not prolong a life of acceptable quality, it is important to consider deactivating the ICD when a patient’s clinical status worsens and death is near.

Deactivating an ICD with a programmer

MUST have a physician’s order and a qualified health care provider to apply the magnet

Deactivating an ICD refers to turning off the defibrillator function of the device, not the pacemaker function. Deactivating an ICD is not a difficult procedure; however it does require the use of a programmer - a laptop computer specifically made by the device manufacturer. Typically an ICD is deactivated by a health care provider who is familiar with the programmer and is competent in adjusting the settings of an ICD.

It is possible to turn off the pacemaker function of the ICD; however this is generally not something that is done. While deactivating the defibrillator function prevents painful shocks, deactivating the pacemaker does not prevent pain and may actually worsen the patient’s heart failure symptoms by reducing the amount of blood pumped out of the heart.

Deactivating an ICD with a magnet

MUST have a physician’s order and a qualified health care provider to apply the magnet

The preferred method of deactivating an ICD is to use a programmer; however one may not always be available, particularly in urgent situations. If a programmer is not available, it is possible to prevent the delivery of a shock with the use of a magnet. Placing a large magnet (the size of a doughnut) over the device will temporarily suspend the arrhythmia detection function of the ICD and prevent the delivery of a shock. The site of magnet placement is important, as a poorly placed magnet may not inhibit shock therapy. Magnets are best placed directly on top of the ICD. When the magnet is removed, the ICD will return to its previous settings.

Things to keep in mind

- Deactivating the ICD will not cause the patient’s death; it is simply allowing nature to take its course.
- Deactivating the ICD will not cause the patient’s death to be more painful.
- Deactivating the ICD will mean that the device will not prevent sudden death in the event of a dangerous arrhythmia.
- Patients may reach a point in their lives when their goal of care is to be comfortable during their remaining time and an active ICD is not congruent with that goal.
- It is not morally or legally wrong to stop any medical treatment if it no longer meets the patients’ needs.

December 2014
Appendix B

Provincial Heart Failure End of Life
Implantable Cardioverter Defibrillator (ICD) Deactivation Decision Algorithm

Questions to ask yourself to help you determine if a patient is transitioning to an EOL trajectory which should trigger the use of this algorithm
1) Is the patient in the end of life trajectory?
2) Is the patient in the ICU or a hospital setting?
3) Is the patient in a hospice or palliative care setting?
4) What is the patient's end of life care plan?
5) Are the patient's goals of care met?

Decision made by patient and physician to deactivate the ICD after goals of care have been discussed (if patient known to a specialist include nurse in the discussion)

Does the ICD therapy meet the patient's goals of care?

Yes

No

Reassess at next visit

Is the ICD deactivation urgent?

Yes

No

Planned/Non-Urgent
1. Complete the ICD deactivation referral form and fax to appropriate device clinic.
2. Patient to complete ICD deactivation consent.
3. Physician to sign the ICD deactivation pre-printed order or write the order.

Physician order for ICD Deactivation:
- Written or signing of pre-printed order.
- Verbal orders accepted in urgent situation if unable to write order but must follow-up by written order or signing of pre-printed orders.
- If appropriate - patient to complete ICD deactivation consent form

Do you have access to both a programmer and a qualified health care professional to use the programmer?

Yes

No

Best practice is:
1. ICD deactivation is done by a programmer.
2. Provider has the competencies to utilize a programmer or magnet.
3. The location for the ICD deactivation is chosen by the patient.
4. Physician order is written or pre printed order signed prior to the ICD deactivation.

Use of magnet is only temporary until a programmer can come to the patient to deactivate the pacemaker functions.

Applying the magnet

Magnet can only be over a magnet home care program when the patient is in the home setting only.

Documentation: It is highly recommended that a written order or signing of a pre printed order occur prior to deactivation in an emergency situation whereby a written order cannot be provided a verbal order will be accepted but must be accompanied by a written or signed pre-printed order.

The details of the advance care planning discussion and subsequent deactivation must be recorded by the physician in the patient's progress notes and by other health care providers in the nursing notes.