



PHILIPS

Automated
External Defibrillator

HeartStart FRx

HeartStart FRx AED

Student Training Guide

Product Training Outline

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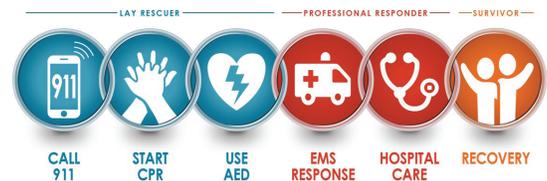
Introduction

The Philips HeartStart FRx is a portable, lightweight semi-automatic external defibrillator that requires minimal training to use and is an essential part of administering first aid immediately to a victim of sudden cardiac arrest (SCA). SCA is a leading cause of death in many countries throughout the world. When SCA strikes, the victim rapidly becomes unresponsive and stops breathing normally.



Ventricular fibrillation (VF) is the most common heart rhythm found in SCA. VF is a chaotic, quivering heart rhythm. The only effective treatment for VF is an electric shock across the heart, called defibrillation.

The goal of defibrillation is to stop VF, allowing a coordinated electrical rhythm and pumping action to resume. The American Heart Association's "Chain of Survival" creates an effective response to SCA. As a defibrillator provider, you are able to implement the first three links in the chain: early access to emergency medical services (EMS), early CPR, and early defibrillation. EMS personnel provide early advanced care when they arrive on scene. If patient is unresponsive and not breathing, apply the pads.



CPR is also an integral part of the care that you deliver to a victim of SCA, buying time for a defibrillator to arrive, potentially reducing brain damage and prolonging electrical activity in the heart.

You can't harm someone with an AED as an electric shock will only be given if necessary. The sooner you apply and AED, the greater the person's chances of survival.

Role of the Defibrillator Provider

- Recognise emergency and activate EMS/emergency plan
- Check for signs of SCA: unresponsive, not breathing normally
- Access HeartStart FRx
- Attach HeartStart FRx and follow voice instructions
- Provide CPR as indicated

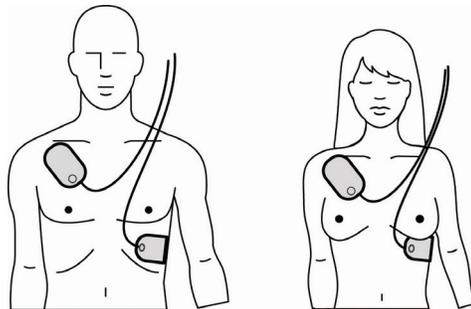
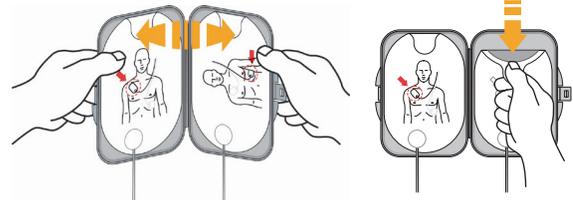
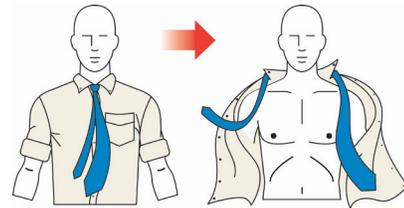
Adult Defibrillation

1. Open the carry case and press the green on/off button



2. Follow FRx voice instructions

- Bare chest.
- Wipe or clip/shave chest hair as necessary.
- Open pre-connected pads case.
- Peel off one pad and look carefully at the pad icons.
- Place pad exactly as shown on icon.
- Repeat with second pad.
- FRx begins rhythm analysis as soon as pads are in place.
- Do not touch the patient during analysis.



3. Press the shock button if instructed

- Visually and verbally clear the patient.
- Press the flashing orange button if instructed.



Blue i-button

- If pressed within first 30 seconds of a CPR interval, FRx provides CPR guidance.
- If pressed at other times, FRx provides information about device status.



Infant/Child Defibrillation

The HeartStart FRx is designed to be used with the Infant/Child Key on children under 8 years old or 55 lb. With the Key inserted, the FRx provides an attenuated energy level shock suitable for defibrillating these small patients. If the child appears older/larger, do not use the Key. **DO NOT DELAY TREATMENT TO DETERMINE THE CHILD'S EXACT AGE OR WEIGHT.**



1. Bare and prepare the upper body

- Remove all clothing from front and back of patient's upper body.
- Wipe and clean skin as necessary.



2. Insert Infant/Child Key in slot on FRx

- Insert firmly until Key clicks into place.
- When FRx is turned on, pads icons on Key light up to show proper pads position.



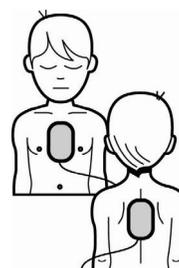
3. Apply defibrillation pads as shown on Key

- Place one pad in the center of the patient's chest between the nipples.
- Place the other pad on the patient's back between the shoulder blades.



Alternative pads position

- For use on larger children under 8 years or 55 lb.
- Be sure that pads do not touch each other.



Standard pads placement



Alternative pads placement

Troubleshooting

Remain calm. Follow HeartStart FRx voice instructions.

During use:

defibrillator says:	possible cause	recommended action
... to replace the battery immediately	The battery is nearly depleted. The FRx will turn off unless a new battery is installed.	Install a new battery immediately.
... to plug in pads connector ... to replace pads	<ul style="list-style-type: none"> The pads connector has been unplugged. The pads have been damaged. The pads have been peeled from the case, but have not been successfully attached to the patient. There may be a problem with the pads. 	<ul style="list-style-type: none"> Plug in the pads connector. Replace the damaged pads. Replace the pads on patient with new pads to continue with the rescue.
... to press the pads firmly to the skin ... to make sure the pads have been removed from the case ... the pads should not be touching the patient's clothing ... to make sure the pads connector is fully inserted	<ul style="list-style-type: none"> The pads are not properly applied to the patient. The pads are not making good contact with the patient's bare chest because of moisture or excessive hair. The pads are touching each other. The pads may not have been removed from the case or may be on the patient's clothing. Pads connector is not fully inserted. 	<ul style="list-style-type: none"> Make sure that the pads are sticking completely to the patient's skin. If the pads are not sticking, dry the patient's chest and shave or clip any excessive chest hair. Reposition the pads. Make sure pads are not in the case or on patient's clothing. Make sure the pads connector is fully inserted. If the voice instruction continues after you do these things, replace the pads set.
... to stop all motion	<ul style="list-style-type: none"> The patient is being moved or jostled. The environment is dry and movement around the patient is causing static electricity to interfere with ECG analysis. Radio or electrical sources are interfering with ECG analysis. 	<ul style="list-style-type: none"> Stop CPR; do not touch the patient. Minimise patient motion. If the patient is being transported, stop the vehicle. Responders and bystanders should minimise motion, particularly in dry environments that can generate static electricity. Check for possible causes of radio and electrical interference and turn them off or remove them from the area.
... the shock was not delivered	<ul style="list-style-type: none"> The pads may not be making good contact with the patient's skin. The pads may be touching each other. The pads may be damaged. 	<ul style="list-style-type: none"> Press the pads firmly to the patient's chest. Make sure the adhesive pads are correctly positioned on the patient. Replace the pads if necessary.
... the shock button was not pressed	Shock has been advised but the shock button has not been pressed within 30 seconds.	When next prompted, press the Shock button to deliver shock.

When not in use:

behavior	possible cause	recommended action
chirps or i-button flashes	<ul style="list-style-type: none"> • The battery power is low or the pads need to be replaced. • The pads may be damaged or the adhesive dried out. • The pads case may be open. • The defibrillator may have been turned off without a pads set installed. • The Training Pads II set has been left in the defibrillator. • The Infant/Child Key may have been left installed. • The defibrillator has been stored outside the recommended temperature range. 	<ul style="list-style-type: none"> • Press the blue i-button. Replace the battery or pads if instructed. • Replace the pads with a new set and do not open the case until pads are needed in an emergency. • Make sure the pads case is closed. • Make sure the pads are properly installed. • Remove the Training Pads II set and replace it with a set of SMART Pads II. • Remove the Infant/Child Key. • Remove the battery for five seconds then re-install it to start the battery insertion self-test. If it fails, insert a new battery to repeat the test. If it fails again, do not use the defibrillator. If it passes, store the defibrillator within the recommended temperature range. • Contact Philips for service if needed.
no chirping and/or i-button does not flash, or no response to pressing i-button	<ul style="list-style-type: none"> • The defibrillator has detected an error during a self-test or cannot perform a self-test, or the Shock button is damaged. • The battery is missing or completely depleted. • The defibrillator may have been physically damaged. 	<ul style="list-style-type: none"> • Remove the battery for five seconds then re-install it to start the battery insertion self-test. If it fails, insert a new battery and repeat the test. If it fails again, do not use the defibrillator. • Contact Philips for service.

Refer to the HeartStart FRx Owner's Manual for additional troubleshooting information.

Other considerations

Implantable Devices

Avoid placing defibrillation pads directly over implanted pacemakers or defibrillators. Such placements may interfere with a defibrillator's ability to deliver therapy to the heart.

Surfaces

The HeartStart FRx can be used in fresh and saltwater environments and on metal surfaces that are wet or dry. Always follow HeartStart FRx recommended safety precautions.

Medication Patches

Remove any medication patches from the patient's chest and wipe the area clean.

Children

Use the Infant/Child Key, if available, when defibrillating patients under 8 years of age or 55 lb.

Hypothermia and Trauma

Local protocols vary for the Defibrillator treatment provided to victims of trauma or hypothermia.

Consult your physician medical director or local regulatory agency for treatment protocols. Refer to the HeartStart FRx Owner's Manual for additional product information.

Data collection and management

Data Storage

The FRx automatically stores data about its last clinical use in its internal memory. The stored data can be conveniently transferred to a personal computer or laptop running the appropriate application in the Philips HeartStart Event Review data management software suite. Event Review software is for use by trained personnel only.



The information automatically stored by the FRx includes a summary of last-use data and detailed data about its last clinical use.

Summary Data

You can get a voice summary of information about the last use of the defibrillator by holding the i-button down until it beeps once. The FRx will tell you how many shocks were delivered and how long it has been since it was turned on. Summary data are available anytime the defibrillator is ready for use (the battery and pads are installed, and the defibrillator is not turned on) or while it is actually in use. Removing the battery erases the summary data for the last use.

Last Use Data

Data about the incident when the defibrillator was last used are stored in its internal memory. This information includes:

- ECG recordings (a maximum of 15 minutes following pads application; if ECG recordings from a previous use have not been erased, the maximum time for new ECG recordings may be less)
- The FRx's status (entire incident)
- The FRx's rhythm analysis decisions (entire incident)
- The elapsed time associated with stored events (entire incident)

NOTE: The FRx automatically stores information about its last clinical use in its internal memory for at least 30 days, so the data can be downloaded to a computer running appropriate Event Review software. (If the battery is removed during this period, the defibrillator retains the files. When the battery is reinstalled, the last-use ECG recording will be kept in defibrillator memory for an additional 30 days.)

After this time, the last-use ECG recordings will automatically be erased to prepare for a future use. You can also erase the last-use ECG recordings prior to this time by using HeartStart Event Review data management software.

Data Review

Follow your local protocol with regard to prompt data transfer for medical review after using the FRx. Details about data transfer and timing are provided in Event Review documentation.

Consult the HeartStart FRx Owner's Manual for more detailed information on data management.

Maintenance

Periodic Self-Tests

The HeartStart FRx automatically performs various daily, weekly, and monthly self-tests. The periodic self-tests check many important functions of the defibrillator, including battery capacity, internal circuitry, and the pads' readiness for use. As long as the self-test is passed, the green Ready light continues to blink as usual. If any part of a test fails, the defibrillator chirps, the green Ready light goes off, and the blue i-button flashes. Press the i-button for information.

Battery Insertion Self-Test

This test is automatically performed when the battery is installed. The test has two parts: an automatic part followed by an interactive part. If the HeartStart FRx fails the self-test, insert a new battery and repeat the self-test. If the HeartStart FRx fails the second self-test, contact Philips customer service or your program administrator.

Because the battery insertion self-test is very detailed and uses battery power, running it more often than necessary will drain the battery prematurely. It is recommended that you run the battery insertion self-test only:

- When the defibrillator is first put into service.
- After each time the defibrillator is used to treat a patient.
- After each time the defibrillator is used for training.
- When the battery is replaced (after a previously installed battery was low).
- When the SMART Pads cartridge is replaced.
- When the defibrillator may have been damaged.

Periodic Maintenance

The defibrillator's extensive automatic self-test features eliminate the need for any manual calibration. It has no user-serviceable parts. User maintenance is limited to periodic performance of the following tasks:

- Check the green Ready light.
- Check supplies and accessories for damage and expiration dating. Replace any used, damaged or expired items.
- Check the outside of the defibrillator for cracks or other signs of damage. If you see signs of damage, contact Philips for technical support.

Temperature

The HeartStart FRx is designed for use and storage in standby mode (battery installed, pads connected) at temperatures of 0° to 50° C and 10 to 75% relative humidity. The FRx can be safely shipped or stored with its battery and pads case at temperatures of -20° to 60° C for up to 1 week; 0% to 85% RH (non-condensing) for up to 2 days, thereafter 65% RH maximum.

See the HeartStart FRx Owner's Manual for additional maintenance information.



Knowledge review

1. The two signs of sudden cardiac arrest that indicate rescuers should use the FRx are:
 - A. _____
 - B. _____
2. What preparation is required before putting pads on the patient?
 - A. Remove all clothing covering the chest, wipe off any water or moisture, and clip or shave chest hair (if excessive).
 - B. Measure the distance from the patient's left collarbone to his or her breastbone.
 - C. Moisten the pads so they adhere to the patient's chest better.
 - D. None of the above.
3. What should you do when a "SHOCK NOT ADVISED" message is given?
 - A. Turn the HeartStart FRx Defibrillator off.
 - B. Provide CPR unless the patient is breathing or moving.
 - C. Make sure the pads are adhering securely to the patient's chest.
4. What is a Battery Insertion Self-Test?
 - A. A comprehensive self-test that assesses HeartStart FRx readiness for use.
 - B. A method for recharging the battery.
 - C. A method of determining the "Install Before" date of the battery.
5. Which Status Indicator shows that the HeartStart FRx is ready to use?
 - A. The flashing blue i-button.
 - B. The blinking green Ready light.
 - C. The flashing orange Shock button.
6. You have delivered the first shock to your patient. How do you know if a second shock is needed?
 - A. Press the On/Off button.
 - B. After providing a CPR interval, the FRx automatically analyzes the heart rhythm again.
 - C. Press the blue i-button.

7. When the green Ready light is not blinking, the HeartStart FRx is not ready for use. What corrective action should you perform?
 - A. Send the HeartStart FRx in for service.
 - B. Press the blue i-button.
 - C. Have your biomedical engineer do diagnostic testing.

8. What does a "SHOCK NOT ADVISED" message mean?
 - A. The heart rhythm is treatable with defibrillation.
 - B. Someone is touching the patient.
 - C. The patient has a pacemaker.
 - D. The heart rhythm is not presently treatable with defibrillation.

9. What should you do if a friend or family member is touching the patient just as a "DELIVER SHOCK NOW" message is given?
 - A. Go ahead and deliver the shock.
 - B. Have someone move the friend or family member away, then press the Shock button.
 - C. Turn the HeartStart FRx off.

10. Which of the following are part of the HeartStart FRx's periodic maintenance?
 - A. Ensuring that all supplies, accessories and spares are present and in operating condition.
 - B. Checking the HeartStart FRx's green Ready light.
 - C. Checking the outside of the HeartStart FRx for cracks or other signs of damage.
 - D. All of the above.

Skill check

Name _____ Date _____

Skill	Satisfactory	Needs Review
Assess the patient for unresponsiveness and no normal breathing.		
Turn on the HeartStart FRx. Simulate proper skin prep prior to pads placement.		
Correctly place defibrillation pads.		
Ensure no one touches the patient when HeartStart FRx is analyzing.		
Verbally and visually clear the patient prior to delivering shock.		
Press Shock button when advised.		
Immediately provide CPR after delivering a shock.		

Instructor Signature _____



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