Automatic External Defibrillator (AED) Guidelines
HeartStart OnSite HS1

**Purpose**

An automated external defibrillator (AED) is used to treat an individual who experiences symptoms of sudden cardiac arrest, has no pulse, is unresponsive and not breathing or not breathing normally. The HeartStart OnSite (HS1) AED manufactured by Philips is self-testing, battery-operated, and rescue-ready in a cardiac emergency. The HeartStart OnSite (HS1) AED automatically analyzes the electrocardiogram, after the electrodes (pads) are applied to the victim’s chest. The AED advises the rescuer to press the orange button to deliver the shock, if shock is needed, and provides audible prompts and instructions to assist the rescuer with cardiopulmonary resuscitation (CPR) and operation of the AED.

**Adult and Infant/Child SMART Pads Cartridges**

Two sets of SMART pad cartridges are ideally kept with the AED – adult and pediatric. The infant/child pads cartridge should be used when the victim is an infant or child up to 8 years of age or up to 55 lbs. The rescue should not be delayed to determine the victim’s exact age or weight.

**Fast Response Resuscitation Kit with the AED**

The resuscitation kit contains:

1. Scissors — for cutting the victim’s clothes if needed;
2. Disposable gloves — to protect the user;
3. A disposable razor — to shave the chest if hair prevents good pads contact;
4. A pocket mask or face shield — to protect the user; and,
5. A towel or absorbent wipes — to dry the victim’s skin for good pads contact.

**AED Location - Wall cabinet**

The AED will be placed in a wall cabinet and located in an area allowing the device to be easily accessed. The wall cabinet's alarm will be set to when the door is open.

**Authorized AED Users and Training**

The AED is intended to be used by individuals who have been trained in its operation. Authorized AED users are individuals qualified by completing a nationally recognized training program in CPR and use of AED; e.g., American Heart Association and American Red Cross.

**Responsibilities**

**Medical Advisor**

1. Provide medical direction for AED use.
2. Review and approve emergency procedures for CPR and use of AED.
3. Evaluate post-event incident report forms.

**School Principal**

1. Designate someone to:
   a. Maintain records of AED training, inspection, and scheduled maintenance;
   b. Clean the AED case post-resuscitation and order replacement supplies; and
   c. Contact the manufacturer if the AED is rendered unusable for replacement.
2. Designate a minimum of two (2) employees, in addition to the school nurse, to serve as an approved AED user and First Responder.
3. Assure all staff members are trained in the school’s emergency response protocol.
4. Review training records annually.

**First Person on the Scene**

1. Stay calm and overview scene for safe entry.
2. Determine basic information such as type of emergency, location, and how it occurred.
3. Direct someone to call 9-1-1 or contact 9-1-1.
4. Direct someone to notify a trained First Responder and take the AED to scene.
5. Sign the AED post event incident report form (Attachment A).
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Administrative Staff
1. Assist in activating the Emergency Medical Services (EMS) system, alerting trained AED users, and school principal.
2. Assign someone to meet the responding EMS vehicle and direct the EMS team to the medical emergency site.
3. Update the victim’s condition to the 9-1-1 system unless a first responder at the scene assumes this responsibility.
4. Follow the school’s emergency response protocol.

Authorized AED User/First Responder
1. Determine that the area is safe to enter upon arrival.
2. Direct someone to call 9-1-1 or make the call if the call has not been made.
3. Get AED, turn AED on, and prepare the victim for placement of AED pads.
4. Determine need for adult or pediatric pads. (Adult if over age of 8 or greater than 55 lbs.)
5. Use the AED if the victim is unconscious and not breathing or not breathing normally.
6. Follow the automated AED instructions for CPR until EMS arrives.

Flow chart for use of AED and CPR

Assess scene for safe entry and for flammable gases. Do not use the HeartStart AED in the presence of flammable gases.

Victim: Unresponsive and not breathing or not breathing normally

Call 9-1-1.

Get AED → Turn on → Apply AED pads to chest.

Follow AED instructions for CPR until EMS team arrives.

AED will analyze heart rhythm → shock, if indicated → instruct CPR

AED Instructions
There are three basic steps to using the defibrillator to treat someone who may be in sudden cardiac arrest:
1. Pull up the handle on the SMART Pads Cartridge.
2. Place the pads on the victim’s bare skin. Shave chest hair if so excessive it will prevent a good seal between electrodes (pads) and skin. Chest must be dry and free of oil. Press pads to skin.
3. Press the flashing Shock button if instructed.
## Basic Steps in Using the AED

### Step 1: Pull the green handle
Turn on the HeartStart by pulling the SMART Pads Cartridge's green handle or by pressing the green On/Off button. Remove the hard cover from the pads cartridge and set it aside. Remain calm and follow the AED instructions. The HeartStart starts by instructing to remove all clothes from the victim's chest. If necessary, rip or cut off the clothing to bare the person's chest.

### Step 2: Place the pads
Pull the tab at the top of the pads cartridge to peel off the film seal. Inside are two adhesive pads on a plastic liner. Remove the pads from the cartridge. Peel one pad off the liner. Place the pad on the victim's bare skin, exactly as shown in the picture on the pad. Press the pad down firmly. Then repeat this with the other pad. Be sure the pads have been removed from the liner before placing them.

### Step 3: Press the Shock button
As soon as the HeartStart detects that the pads are attached to the victim, it begins analyzing the victim's heart rhythm. It instructs that no one should be touching the victim, and the Caution light begins flashing as a reminder.

If a shock is needed: The Caution light goes from flashing to solid, the orange Shock button starts flashing, and the defibrillator instructs to press the flashing orange button. Before pressing the button, make sure no one is touching the victim. When the Shock button is pressed, the defibrillator instructs that the shock has been delivered. Then the HeartStart instructs it is safe to touch the victim, to begin CPR, and to press the flashing blue i-button for CPR Coaching if desired.

If a shock is not needed: The HeartStart instructs it is safe to touch the victim and to perform CPR if needed. If the victim is moving or regaining consciousness, CPR is not needed. For CPR Coaching: Press the flashing blue i-button during the first 30 seconds of the victim care and pause to activate CPR Coaching. Coaching instructions are determined by the type of cartridge inserted, adult or infant/child. When the pause is over, the defibrillator instructs to stop CPR, so it can analyze the victim's heart rhythm. Note: Motion caused by CPR can interfere with analysis.

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## Treating infants and children

With the infant/child SMART Pads Cartridge inserted, the HeartStart automatically reduces the defibrillation energy from the adult dose of 150 joules to 50 Joules and provides optional infant/child CPR Coaching. **WARNING:** Most cardiac arrests in children are not caused by heart problems. When responding to cardiac arrest in an infant or child:

- Provide infant/child CPR while a bystander calls EMS and brings the HeartStart AED.
- If no bystander is available, provide 1-2 minutes of CPR before calling EMS and retrieving the HeartStart.
- If the child's collapse was witnessed, call EMS immediately and then get the HeartStart AED.

**If the victim is under 55 pounds or 8 years old, and an infant/child SMART Pads Cartridge is available:**

- Remove the infant/child SMART Pads Cartridge from its package.
- Locate the latch at the top edge of the defibrillator, and slide it to the side. The pads cartridge will be released. Remove the old cartridge.
- Install the new cartridge: slide the bottom end of the cartridge into the recess, then press in the cartridge until the latch clicks into place. Be sure the green handle is pressed down firmly. The HeartStart will instruct that infant/child pads have been inserted, and then it will turn off to be ready for use.
- Pull the green handle to start the rescue.
- Remove all clothing from the upper body, to bare both the chest and the back. Place one pad in the center of the chest between the nipples, and the other in the center of the back (anterior-posterior).
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**If the victim is less than 55 pounds or 8 years old, but an Infant/Child Smart Pads Cartridge is not available:**
- DO NOT DELAY TREATMENT.
- Remove all clothing from the torso, to bare both the chest and the back.
- Apply the HeartStart using the adult pads cartridge, but place one pad in the center of the chest between the nipples, and the other in the center of the back (anterior-posterior).

**If the victim is over 55 pounds or 8 years old, or the exact weight or age is not known:**
- DO NOT DELAY TREATMENT.
- Remove all clothing from the chest.
- Apply the HeartStart using the adult pads cartridge, and place the pads as illustrated on the pads (anterior-anterior). Make sure the pads do not overlap or touch each other.

### When Emergency Medical Services Arrive

Emergency Medical Services (EMS) may decide to apply another defibrillator to allow monitoring of the victim. The SMART Pads should be removed from the victim prior to using another defibrillator. They may want a summary of the last-use data stored in the HeartStart. To hear the summary data, hold down the i-button until the HeartStart AED beeps.

Note: After the EMS team removes the SMART Pads from the victim, remove the used pads cartridge, and insert a new adult pads cartridge before returning the HeartStart to service, to be sure it is ready for use.

### Medical Response Documentation

Each incident involving the use of the AED will be documented (Attachment A) to include name, date, time, and location, description of event, actions taken, outcome, responding EMS assistance, and equipment used.

### Reminders

1. Remove any medicine patches and residual adhesive from the victim’s chest before applying the pads.
2. Do not allow the pads to contact other electrodes or metal parts that are in contact with the victim.
3. Avoid placing the pads directly over an implanted pacemaker or defibrillator. A noticeable lump with a surgical scar should indicate the position of an implanted device.
4. If the pads do not stick well, check that the pads adhesive has not dried out. Each pad has a layer of adhesive gel. If the gel is not sticky to the touch, replace the pads with a new set.
5. Keep the victim still and keep any movement around the victim to a minimum during rhythm analysis. Do not touch the victim or the pads while the Caution light is on solid or flashing. If the HeartStart is unable to analyze due to electrical “noise” (artifact), it will instruct to stop all movement, not to touch the victim, and will pause until the noise is eliminated, then resume analysis.
6. The HeartStart will not deliver a shock unless the flashing orange Shock button is pressed. If this instruction is not followed, the AED will disarm itself, and (for the first CPR interval) give a reminder to make sure emergency medical services have been called, then begin a CPR interval. This is designed to minimize interruption of CPR and help ensure ongoing victim support.
7. While waiting for the Shock button to be pressed, the HeartStart will continue to analyze the heart rhythm. If the victim’s rhythm changes before the Shock button is pressed, and a shock is no longer needed, the defibrillator will disarm and instruct that a shock is not advised.
8. If for any reason the defibrillator needs to be turned off during a use, press the On/Off button – holding it down for at least one second – to return the device to standby mode.

### After Using the HeartStart AED

**After each use:**
1. Prepare the AED for the next rescue.
2. Retrieve the rescue data stored in the internal memory of the AED by using the Event Review software installed on a PC. Give the data to EMS personnel within 24-48 hours of rescue.

Note: The stored data can be conveniently transferred to a personal computer or a handheld computer running the appropriate application in the Philips HeartStart Event Review data management software.
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Check the outside of the HeartStart for signs of damage, dirt, or contamination. Contact Philips for technical support, if signs of damage are noticed. If the HeartStart is dirty or contaminated, clean it according to the guidelines.

The single-use pads must be replaced after being used. Locate the latch at the top edge of the HeartStart and slide it to the side. The pads cartridge will be released. Lift out the used pads cartridge.

Note: To prevent the pads’ adhesive gel from drying out, do not open the hard cover or film seal of the cartridge until the pads are needed for use.

Check supplies and accessories for damage and expiration dates. Replace any used, damaged or expired items. Use a new maintenance tag to record the pads expiration date for the new installed pads cartridge. If the spare pads and/or battery are replaced, record the dates for them on the maintenance tag. Then sign and date the inspection log/maintenance booklet.

Remove the battery for five seconds, and then reinstall it to run the battery insertion self-test to check the operation of the HeartStart. When the test is complete, check that the green Ready light is blinking.

The HeartStart will automatically run a self-test when the battery is inserted. Press the Shock button when instructed. Be sure to let the self-test run all the way to completion. When the self-test is over, the HeartStart will report the result, and instruct to push the green On/Off button in case of an emergency. (Do not push the green button unless this is an actual emergency.) Then the HeartStart will turn off and go to standby mode. The green Ready light will be blinking to show the HeartStart is ready for use.

Note: Always store the HeartStart with an adult pads cartridge and a battery installed, so it will be ready to use and can perform daily self-tests.

Maintaining the HeartStart AED

Routine Maintenance and AED Self-Test
The HeartStart is very simple to maintain. The defibrillator performs a self-test every day. In addition, a battery insertion self-test is run whenever a battery is installed in the device. The HeartStart’s extensive automatic self-test features eliminate the need for any manual calibration. The HeartStart has no serviceable parts.

WARNING: Electrical shock hazard.
Do not open the HeartStart, remove its covers, or attempt repair. There are no user-serviceable components in the HeartStart. If repair is required, return the HeartStart to Philips for service.

Reminders

1. Do not leave the HeartStart without an adult pads cartridge installed; the defibrillator will start chirping and the i-button will start flashing.

2. The HeartStart runs daily self-tests. As long as the green Ready light is blinking, it is not necessary to test the defibrillator by initiating a battery insertion self-test. This uses battery power and risks draining the battery prematurely.

Monthly Checks
Other than the checks recommended after each use of the HeartStart, maintenance is limited to monthly checking:

1. Check the green Ready light. If the green Ready light is not blinking, see Troubleshooting Tips in the owner’s manual.

2. Replace any used, damaged or expired supplies and accessories.

3. Check the outside of the AED. If cracks or other signs of damage are seen, contact Philips.

4. Record each monthly check, using the checklist (Attachment B).
The HeartStart AED’s Green Light – Guide to knowing if the AED is ready for use

1. If the green light is blinking: The AED is ready for use.
2. If the green light is solid: The AED is in use or running a self-test.
3. If the green light is off, the AED is chirping, and the i-button is flashing: A self-test error has occurred, there is a problem with the pads or the battery power is low. Press the i-button for instructions.
4. If the green light is off but the AED is not chirping and the i-button is not flashing: There is no battery inserted, the battery is depleted, or the AED needs repair. Insert/replace battery and run the self-test. As long as the AED passes the self-test, it is ready for use.

Cleaning the HeartStart AED

The outside of the HeartStart and its carry case can be cleaned with a soft cloth dampened with soapy water, chlorine bleach (2 tablespoons per quart or liter of water), or ammonia-based cleaners.

Reminders:
1. Do not use isopropyl (rubbing) alcohol, strong solvents such as acetone or acetone-based cleaners, abrasive materials, or enzymatic cleaners to clean the HeartStart.
2. Do not immerse the HeartStart in fluids or allow fluids to spill onto it.
3. Do not sterilize the defibrillator or its accessories.

Scheduled Maintenance

Daily Maintenance: The Status Indicator will be checked to ensure that it is green. Troubleshooting guidelines in the owner’s manual will be followed if the indicator is red.

Monthly Maintenance: The following procedure will be followed each month (28 days) and documented.
1. Open the AED lid. Wait for the AED to indicate status: Observe the change of the Status Indicator to red. After approximately 5 seconds, verify that the Status Indicator returns to green.
2. Check the expiration date on the electrodes (pads). Listen for the voice prompts.
3. Close the lid and observe the change of the Status Indicator to red. After approximately 5 seconds, verify that the Status Indicator returns to green.


Cross References: OSHA AED Standards; Philips HeartStart OnSite (HS1) Product Owner’s Manual; 2010 AHA/ERC Guidelines AED Defibrillation CPR; NRMPS Bloodborne Pathogens Exposure Control Plan

Issue Date: 6/3/2013

Forms: AED Post-Event Incident Report Form and AED Monitoring Form

Approvals: Charnette H. Shade, M.D., Medical Advisor
Anthony Jackson, Ed.D., Superintendent, Nash-Rocky Mount Public Schools
# Automatic External Defibrillator (AED) Post Event Incident Report

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<th>Date:</th>
<th>Time:</th>
<th>Location:</th>
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<tr>
<th>Name of victim:</th>
<th>Student</th>
<th>Employee</th>
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**Description of Event:**

**Witnesses of the Event:**

**Description of the first aid that was administered and other actions taken:**

____________________________________________________________________________

____________________________________________________________________________

**Names of personnel involved:**

_______________________________________________________________________________________

_________________________________________________________________________________________________________________________

**Responding EMS unit and team members:**

_______________________________________________________________________________________

_________________________________________________________________________________________________________________________

**Outcome after using AED:**

- Successful ☐
- Unsuccessful ☐

**Indicate if AED equipment was replaced after usage:**

- Yes ☐
- No ☐

**Was data from the AED sent to the responding EMS Department within 24-48 hours?**

- Yes ☐
- No ☐

**Name of hospital where victim was transferred:**

**Additional Notations**

*Use the space below to provide additional information – Add signature.*

**Signatures**

*Signatures below indicate this report and first response actions were reviewed.*

<table>
<thead>
<tr>
<th>School Principal</th>
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<th>School Nurse</th>
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*Send original report to Carol Eatman, Central Office.*

**Attachment A**
**AED Monthly Inspection Form**

School ___________________________ School Nurse ___________________________

Serial # ___________________________ Location of AED ___________________________

Inspections made below will ensure that the AED battery is charged, the AED electrode cartridge packet (pads) are not expired, and the AED will be rescue ready and function properly in the event of a cardiac arrest.

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<td><strong>AED:</strong> Clean, not damaged</td>
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<td><strong>Status Indicator:</strong> Green, blinking</td>
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<td><strong>Adult Electrodes:</strong> Sealed, in date</td>
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<td><strong>Wall Cabinet Alarm:</strong> Works properly</td>
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<tr>
<td><strong>Resuscitation Kit:</strong> All contents present</td>
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**Item** | **Problem** | **Corrective Action**
--- | --- | ---
AED | Signs of contamination | Clean according to manual.
AED | Signs of damage | Contact manufacturer, Philips.
AED | Date expired | Replace expired electrode cartridge packets.
Resuscitation Kit | Missing contents | Replenish needed contents.
AED Pads | Not working properly | Contact Vendor, e.g., AED Brands.

**Describe problems/corrective actions, date/initial:**