

Automated External Defibrillator Care and Operation

Vernon Police Department Lesson Plan

Topic: Physio-Control LIFEPAK 1000 Automated External Defibrillator Operation

Course Purpose: To describe the proper use and application of the Physio-Control LIFEPAK 1000 Automated External Defibrillator.

Suggested Time Frame: 2-hour class time – additional self-directed study per individual as needed.

Objectives: At the conclusion of this topic, the learner as an active participant will be able to:

1) Demonstrate knowledge and ability in properly applying the Physio-Control LIFEPAK 1000 Automated External Defibrillator:

- Recognize indications for defibrillator application
- Understand the components of the defibrillator and their placement.
- Demonstrate knowledge of when defibrillator will advise shock and when it will not.
- Understand Safety precautions in using a defibrillator.

2) Demonstrate knowledge and ability to properly document defibrillator usage by personnel.

3) Demonstrate knowledge and ability of maintaining defibrillator in a proper state of readiness.

- Describe daily and monthly checks.
- Demonstrate battery life determination and replacement.
- Demonstrate proper cleaning and disinfection

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AED Overview

AED use has become an essential part of the Chain of Survival for people who experience cardiac arrest. Repeated studies and field experience has shown that the use of AED's for rapid defibrillation following cardiac arrest is essential for positive patient outcome. The Vernon Police Department, in understanding this critical link, has strategically placed AED's for rapid deployment to patients who might benefit from this life-saving device. The purpose of this course is to ensure all AED users are familiar with the Physio-Control LIFEPAK 1000 Automated External Defibrillator utilized by the department.

Basic Steps for Using the Physio-Control LIFEPAK 1000 Automated External Defibrillator

- 1) Establish appropriate BSI precautions
- 2) Establish that the patient is in cardiopulmonary arrest (the patient must be unresponsive, not breathing normally and showing no signs of circulation).
- 3) Activate 911/ Fire Department if not already enroute to the scene.
- 4) Begin CPR in accordance with American Heart Association current guidelines.
- 5) Position the AED near the patient and the operator.
- 6) Press **ON/OFF** to turn on the defibrillator (the green LED illuminates). Voice prompts will sound, guiding you through the rescue process. □
- 7) Prepare the patient for therapy electrode placement.
 - Remove excessive hair from the electrode sites. If shaving is necessary, avoid cutting the skin. □
 - Clean the skin and dry it briskly with a towel or gauze. □
 - Do not apply alcohol, tincture of benzoin, or antiperspirant to □the skin. □
 - Open the therapy electrode packet and remove the electrodes.
 - Slowly peel back the protective liner on the electrodes,

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beginning with the cable connection end.

- Safely discard the liner to prevent slipping.
 - Apply the therapy electrodes to the patient's chest. Starting from one end, press the electrodes firmly onto the patient's skin, as shown.
- 8) Connect the electrodes to the defibrillator (if they are not already connected).
- 9) Follow the screen messages and voice prompts provided by the defibrillator.

Excessive Energy Delivery.

For children less than 8 years of age or 55 lbs. (25 kg), use Infant/Child Reduced Energy Defibrillation electrodes. Do not use the Pediatric QUIK-COMBO electrodes carried by the Fire Department Paramedics; these electrodes do not attenuate the energy delivery by this defibrillator.

Placing Pads

Place defibrillation pads on chest as per the diagram on the package unless one of the "special situations" listed below occurs.

Obese Patients or Patients with Large Breasts

Apply the electrodes to a flat area on the chest, if possible. If skin folds or breast tissue prevent good adhesion, spread skin folds apart to create a flat surface.

Thin Patients

Follow the contour of the ribs and spaces when pressing the electrodes onto the torso. This limits air space or gaps under the electrodes and promotes good skin contact.

Patients with Implanted Pacemakers

If possible, place defibrillation electrodes away from the internal pacemaker generator. Treat this patient like any other patient requiring emergency care.

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Patients with Implanted Defibrillators

Apply the electrodes in the anterior-lateral position. Treat this patient like any other patient requiring emergency care.

Alternate Anterior-Posterior Electrode Position

The electrodes may be placed in an anterior-posterior position as follows:

- Place either the ♥ or + therapy electrode over the left precordium, the upper edge of the electrode should be below the nipple. Avoid placement over the nipple, the diaphragm, or the bony prominence of the sternum if possible. □
- Place the other electrode behind the heart inside the scapular area. For patient comfort, place the cable connection away from the spine. Do not place the electrode over the bony prominences of the spine or scapula. □

Voice Prompts and Messages in AED Mode

The following descriptions of voice prompts and messages are based on the default settings for AED mode. Changing the setup options may result in different AED behavior

“CONNECT ELECTRODES” Voice prompt and message when a patient has not been connected to the defibrillator.

**“STAND CLEAR,
ANALYZING NOW,
STAND CLEAR”** Voice prompt and message when a patient is connected to the defibrillator. Do not touch or move the patient, therapy cables, during analysis. ECG analysis requires 6–9 seconds.

“PREPARING TO SHOCK” Message displayed if the defibrillator detects a shockable rhythm. The defibrillator charges to the joule setting for that shock number. A rising tone and a charging bar on the screen indicate that the defibrillator is charging.

**“STAND CLEAR,
PUSH SHOCK BUTTON”** Voice prompt and message when charging is complete. The

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⚡ (shock) button flashes. *Clear everyone away from the patient, bed, or any equipment connected to the patient.* Press the ⚡ (shock) button to discharge the defibrillator. The energy level for shocks depends on the energy protocol setup option and the analysis decision after shocks. If the ⚡ (shock) button is not pressed within 15 seconds, the defibrillator disarms the shock button, and the **DISARMING...** message appears on the screen.

“ENERGY DELIVERED” Message displayed after each shock.

“START CPR” A message and countdown timer (min:sec format) appears for the CPR time.

“NO SHOCK ADVISED” Voice prompt and message when the defibrillator detects a nonshockable rhythm. The defibrillator will not charge, and a shock cannot be delivered. When a **NO SHOCK ADVISED** prompt follows a shock and CPR, the energy level will not increase for the next shock.

Post Rescue:

1. Contact AED Administrator so that they may Retrieve the rescue data stored in the internal memory of the AED via CODE-STAT software version 6.0 or later or via IrDA port adapter.
2. Connect a new pair of pads to the AED.
3. Replace any accessories that were used
4. Notify AED coordinator that AED was utilized and fill out post defibrillation paperwork/report as required.

Contraindications for AED:

1. Patients who are awake, have a pulse, or are breathing
2. Patients who meet conditions in **Reference 814, 815, and 818.**

Warnings:

- Ensure that AED pads are not expired or otherwise compromised.
- Do not place the pads directly over an implanted device.

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- Do not interchange Pediatric QUICK-COMBO electrodes used on the Life-PAK 15 Monitor Defibrillator carried by the Paramedics for the appropriate Infant/Child Reduced Energy Defibrillation electrodes specifically designed for the LIFEPAK 1000 Automated External Defibrillator.
- Place the pad at least an inch from any implanted device.
- During a rescue attempt, excessive jostling or moving of the patient may cause AEDs to improperly analyze the patient's cardiac rhythm. Stop all motion or vibration before attempting a rescue.

Maintenance:

Auto Tests

The defibrillator performs automatic self-tests daily and monthly at 0300 (3:00 a.m.) if not in use. During the automatic self-test, the defibrillator turns itself on (ON/OFF LED illuminates) briefly and completes the following tasks:

- Performs a self-test
- Stores the self-test results in the Test Log
- Turns itself off

If the defibrillator detects a problem during an auto test that requires service, it displays the service symbol. If the service symbol is visible, you should attempt to use the defibrillator, if needed, for a cardiac emergency. However, you should contact authorized service personnel to correct the problem as soon as possible. The service symbol will remain visible until the problem is corrected.

The automatic self-test is not performed if the defibrillator is already turned on at 0300 or if the battery is not installed. If the defibrillator is turned on while a self-test is in progress, the test is halted; the defibrillator will turn on normally.

Daily Maintenance:

Observe readiness display

- "OK" symbol.
- Battery status indicator shows one bar or less (Replace battery immediately)
- Service symbol not displayed.

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Monthly Maintenance:

Examine the defibrillator case, connector, battery well, battery pins, and accessories.

- Foreign substances.
- Damage or cracks.
- Battery pins bent or discolored.
- Expired batteries or defibrillation electrodes.

Examine Accessory Cables

- Foreign substances.
- Inspect for cracks, damage, extreme wear, broken or bent connectors and pins.
- Confirm that connectors engage securely.

Clean the device and clean the cables

- Clean with damp sponge or cloth.
- Use quaternary ammonium compounds
- Use Rubbing (isopropyl) alcohol
- Use Peroxide (peracetic acid) solutions

Documentations:

AED Service Provider Incident Report

The Officer or Department member who provided care to the patient must document all accounts of the medical event and any patient care given on the Early Defibrillation Incident Report Form. Submit the completed Early Defibrillation Incident Report to the Public Safety AED Service Provider Program Coordinator for data collection and quality review.

Los Angeles County EMS Agency

EMS Skill / Cardiac Emergency: Automated External Defibrillation (AED)

LIFEPAK 1000 Defibrillator Operating Instructions iii

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NAME _____

DATE ____/____/____

SKILL COMPETENCY EVALUATION

**CARDIAC EMERGENCY:
AUTOMATED EXTERNAL DEFIBRILLATION (AED)**

PERFORMANCE OBJECTIVE

Demonstrate competency in assessing signs of cardiopulmonary arrest, managing a full arrest, and performing defibrillation using a semi-automated external defibrillator. Ventilations and compressions must be performed at the minimum rate required.

EQUIPMENT

Adult and pediatric CPR manikin, AED trainer, adult and pediatric defibrillator pads and attenuator (if available), cables, towel, safety razor, bag-valve-mask device, 1-2 assistants (optional), eye protection, various masks, gown, gloves, timing device.

SCENARIO

Manage an Adult, Child or Infant patient who is found unresponsive with no signs of trauma. CPR may or may not be in progress. The manikin will be found in a supine position. Necessary equipment will be adjacent to the manikin or brought to the field setting.

EXAMINER(S): _____

PASS

FAIL

Attempt: 1st 2nd 3rd (final)

PREPARATION			
Performance Criteria	YES	NO	Comments
Establishes appropriate BSI precautions			
Assesses patient and initiates appropriate BLS Procedures	Responsiveness		
	Circulation		
	Airway		
	Breathing		

PREPARATION			
Performance Criteria	YES	NO	Comments
Positions AED near the patient and operator			
Turns on the AED			
Exposes the chest			
Prepares appropriate sites for pads			
Applies appropriate AED pads			
Initiates stand clear procedure			
Analyzes rhythm and follows voice prompt			
Delivers shock	Verbalizes stand clear		
	Administers shock		
Continues 1 or 2 Rescuer CPR and follows voice prompts every 2 minutes, OR as directed by ALS, OR return of spontaneous circulation (ROSC)			

ADDITIONAL CRITERIA			
Performance Criteria	YES	NO	Comments
Made appropriate decision based upon reassessment findings and response to interventions			
Gave appropriate report to equal or higher level of care personnel			
Performed procedure in a safe and appropriate manner			