

### **Use Case 1: Using the Semi Automatic AED Plus**

**Primary Actor:** Rescuer

**Goal in Context:** Successfully respond to a cardiac emergency by providing defibrillation and CPR if necessary

**Scope:** System - Semi Automatic AED Plus

**Level:** User Goal

**Stakeholders and Interests:**

- Rescuer: First responder to the cardiac emergency
- Victim: Receiver of the treatment in the event of a cardiac arrest

**Precondition:**

- **Use Case 10: Preparing the Semi Automatic AED Plus for Use**
- Rescuer is trained in basic life support.

**Minimal Guarantees:**

- The AED is capable of performing self-tests.
- Rescuer follows proper safety protocols when handling the device.

**Postcondition:**

- The device delivers defibrillation automatically if the rhythm was found to be shockable
- The rescuer performs CPR as instructed by the AED
- The victim regains consciousness

**Main Success Scenario:**

1. The rescuer finds the victim suffering a cardiac arrest.
2. The AED is retrieved for operation to begin.
3. **Use Case 5: Using the Passive Airway Support System (PASS)**
4. **Use Case 3: Using the Semi Automatic AED Plus Graphical User Interface**
5. If a shockable rhythm is detected, then the AED delivers defibrillation automatically.
6. **Use Case 2: Using Real CPR Help**
7. The victim regains consciousness and monitoring can begin.
8. The AED can be turned off once no longer in use.
9. **Use Case 15: Cleaning the Semi Automatic AED Plus**

**Extensions:**

- 3a. The victim regains consciousness before shocks are needed
  - 3a1. The victim is monitored for as long as the rescuer deems necessary
  - 3a2. The AED can be turned off
- 4a. No shockable rhythm is detected
  - 4a1. The AED informs the rescuer that automatic shocks are not necessary and the step is skipped till CPR
- 5a. The chest compressions are not adequate
  - 5a1. The AED provides voice prompts to inform the rescuer how to adjust their chest compressions

## **Use Case 2: Using Real CPR Help**

**Primary Actor:** Rescuer

**Goal in Context:** Successfully perform a complete set of CPR steps using the Real CPR Help

**Scope:** Subsystem - Real CPR Help

**Level:** User Goal

**Stakeholders and Interests:**

- Rescuer: First responder to the cardiac emergency.
- Victim: Receiver of the treatment in the event of a cardiac arrest.

**Precondition:**

- The Semi Automatic AED device is in full operation.
- The CPR-D-padz is available and in operation.
- Safety protocols are in effect.

**Minimal Guarantees:**

- CPR-D-padz are applied to the victim properly.
- Rescuer follows proper safety protocols when handling the device.

**Postcondition:**

- Effective chest compressions are delivered to the victim.

**Main Success Scenario:**

1. The rescuer finds the victim suffering a cardiac arrest.
2. The AED is retrieved for operation to begin.
3. CPR-D-padz are applied to the victim's chest.
4. The AED is turned on.
5. The rescuer performs chest compressions according to the instructions of the device.
6. The metronome ensures the rescuer performs the chest compressions at a fast and steady rate.
7. The compressions continue until the victim returns to consciousness.

**Extensions:**

5a. The rescuer ceases chest compressions during the CPR period

5a1. The metronome beeps halt until the CPR is initiated

5a2. the Semi Automatic AED Plus periodically re-issues the CONTINUE CPR prompt

5b. The rescuer fails to push hard enough during compressions

5a1. a PUSH HARDER prompt will be issued.

5a2. If the rescuer pushes harder, A GOOD COMPRESSION prompt will be issued

6a. the rescuer fails to deliver compressions at 80 CPM or greater

6a1. The metronome will beat 15 CPM higher than the rescuers current compression per minute to encourage the rescuer to speed up

6b. The rescuers delivers compressions substantially under 60 CPM

6b1. The metronome beeps at a minimum rate of 60 CPM

7a. The victim does not return to consciousness within 2 minutes

7a1. The device recommends the CPR be halted and emergency to be called

### **Use Case 3: Using the Semi Automatic AED Plus Graphical User Interface**

**Primary Actor:** Rescuer

**Goal in Context:** Successfully perform a rescue event using the the Semi Automatic AED Plus Graphical User Interface

**Scope:** Subsystem - AED Operation

**Level:** User Goal

**Stakeholders and Interests:**

- Rescuer: First responder to the cardiac emergency
- Victim: Receiver of the treatment in the event of a cardiac arrest

**Precondition:**

- The Semi Automatic AED Plus is in working order.
- The AED is equipped with electrodes.
- Rescuer is trained in basic life support.

**Minimal Guarantees:**

- The graphical user interface is visible and functioning properly.
- The Semi Automatic AED Plus is configured to the appropriate mode.

**Postcondition:**

- The AED provides feedback through voice prompts, graphical illuminations, and LED indicators.

**Main Success Scenario:**

1. The rescuer finds the victim suffering a cardiac arrest.
2. The AED is retrieved for operation to begin.
3. **Use Case 6: Using Electrodes**
4. AED automatically initiates, turning on the voice prompts, graphical illuminations, and LED indicators.
5. **Use Case 4: Using the LCD Display**
6. The GUI remains illuminated while checking the heart rate and during the CPR sequence.
7. Voice prompts are made to inform the rescuer of the necessary steps to take.

**Extensions:**

- 6a. The electrodes stop being attached to the victim
  - 6a1. Shock delivery is interrupted
  - 6a2. A CHECK ELECTRODE PADS alert is prompted
  - 6a3. After the rescuer reattaches the electrodes to the victim, the AED can continue regular operations
- 6b. The heart rate analysed is not shockable
  - 6b1. A NO SHOCK ADVISED alert is prompted
  - 6b2. The shock step is skipped to the CPR step

## **Use Case 4: Using the LCD Display**

**Primary Actor:** Rescuer

**Goal in Context:** Successfully use the information on the LCD Display to aid in helping the victim

**Scope:** Subsystem - AED Information Display

**Level:** User Goal

**Stakeholders and Interests:**

- Rescuer: receiver relevant information about the victim's state
- Victim: the person who's providing information to the AED

**Precondition:**

- The Semi Automatic AED Plus is in working order.
- Rescuer is trained in basic life support.

**Minimal Guarantees:**

- The LCD is fully visible to the Rescuer.
- The LCD provides relevant information on the victim.

**Postcondition:**

- The information displayed is utilised in the rescuer making the best judgement in the situation.

**Main Success Scenario:**

1. The rescuer finds the victim suffering a cardiac arrest.
2. The AED is retrieved for operation to begin.
3. After the electrodes are connected and the system turns on, the LCD turns on as well.
4. The rescuer observes the information written on the LCD screen.
5. The rescuer uses the information to aid in helping the victim.

## **Use Case 5: Using the Passive Airway Support System (PASS)**

**Primary Actor:** Rescuer

**Goal in Context:** Successfully maintain head tilt using the Passive Airway Support System

**Scope:** Subsystem - Airway Support

**Level:** User Goal

**Stakeholders and Interests:**

- Rescuer: Uses PASS to open up the airway of the victim.
- Victim: The actor in which PASS is being used upon.

**Precondition:**

- The victim is unconscious and requires CPR.
- No neck injuries or trauma on the victim.

**Minimal Guarantees:**

- The victim is positioned such that no extra damage is dealt.

**Postcondition:**

- The victim's airway is successfully aided using PASS.

**Main Success Scenario:**

1. The rescuer finds the victim suffering a cardiac arrest.
2. The AED is retrieved for operation to begin.
3. The rescuer checks for any damage possibly incurred to the victim's neck
4. If no injury is present, the rescuer inserts the PASS underneath the victim's head such that their head is tilted slightly upwards.
5. Regular operation of the rescue event continues.

**Extensions:**

3a. Neck injury is visible

3a1. The rescuer does not slide the PASS underneath..

3a2. The operation continues with more care.

## **Use Case 6: Using Electrodes**

**Primary Actor:** Rescuer

**Goal in Context:** Successfully attach electrodes to the victim for effective defibrillation and monitoring.

**Scope:** Subsystem - Electrode Application

**Level:** User Goal

**Stakeholders and Interests:**

- Rescuer: Attaches electrode to the victim.
- Victim: Electrodes are attached to the victim.

**Precondition:**

- The Semi Automatic AED Plus is in working order.
- Rescuer is trained in basic life support.

**Minimal Guarantees:**

- The Electrode package has all needed tools for the operation.
- The electrode cable is tightly connected to the AED for safety.
- The appropriate type of electrodes are used depending on the victim's demographic.

**Postcondition:**

- Electrodes are successfully attached to the victim.

**Main Success Scenario:**

1. The rescuer finds the victim suffering a cardiac arrest.
2. The AED is retrieved for operation to begin.
3. Electrode pads are selected based on the victim's age.
4. The electrode package is opened.
5. **Use Case 7: Applying CPR-D-padz (Adult)**
6. Clothing or chest hair deemed excessive is cut by scissors/razor from the electrode package.
7. A small towel is used to ensure the victim's skin is dry.
8. The Electrode is securely connected to the AED.
9. The electrodes are placed on the victim where they should go.
10. The AED powers on and does its self test, a prompt is voiced telling the rescuer which electrodes were attached.
11. Once confirmation is made on the type of electrode, The AED is ready for use.

**Extensions:**

5a. The victim is not an adult

5a1. **Use Case 8: Applying Pedi-padz II (Infant/Child Electrodes)**

8a. Electrode cable not properly attached to the unit

8a1. PLUG IN CABLE prompt is issued

8a2. The rescuer connects the cable to the AED and tries again

9a. Electrodes not attached properly

9a1. CHECK ELECTRODE PADS or ATTACH ELECTRODE PADS prompts are issued by the unit

9a2. The rescuer ensures secure attachment and continues

## **Use Case 7: Applying CPR-D-padz (Adult)**

**Primary Actor:** Rescuer

**Goal in Context:** Successfully apply CPR-D-padz to an adult victim for effective defibrillation and monitoring.

**Scope:** Subsystem - Electrode Application

**Level:** User Goal

**Stakeholders and Interests:**

- Rescuer: First responder to the cardiac emergency.
- Victim: Receiver of the treatment in the event of a cardiac arrest.

**Precondition:**

- The victim is an adult
- The Semi Automatic AED Plus is in working order.
- Rescuer is trained in basic life support.

**Minimal Guarantees:**

- The CPR-D-padz package is available and in good condition.
- The rescuer checks for anything blocking the chest before placing the pads.
- The correct electrodes are selected.

**Postcondition:**

- The CPR-D-padz are properly connected and the AED is ready for its operations.
- The rescuer follows procedures properly.

**Main Success Scenario:**

1. The rescuer finds the victim suffering a cardiac arrest.
2. The AED is retrieved for operation to begin.
3. Anything blocking the chest is removed. (clothes, excessive chest hair, etc.)
4. The CPR-D-Padz package is opened.
5. The rescuer places the pads on the victim according to the instructions.
6. The CPR sensor is held, and the sensor is placed between the nipples and on the middle of the victim's breastbone.
7. Number 2 and 3 tabs are peeled off the protective backing from the electrodes.

**Extensions:**

5a. the victim has an implanted pacemaker or defibrillator in the upper right chest

5a1. The electrodes are angled to avoid placing on either devices

5b. The victim is large or there is a need to place the electrode under the breast

5b1. The pad can be placed slightly to the victim's left and under the victim's left breast

## **Use Case 8: Applying Pedi-padz II (Infant/Child Electrodes)**

**Primary Actor:** Rescuer

**Goal in Context:** Successfully apply Pedi-padz to a child victim for effective defibrillation and monitoring.

**Scope:** Subsystem - Electrode Application

**Level:** User Goal

**Stakeholders and Interests:**

- Rescuer: First responder to the cardiac emergency.
- Victim: Receiver of the treatment in the event of a cardiac arrest.

**Precondition:**

- The victim is a child
- The Semi Automatic AED Plus is in working order.
- Rescuer is trained in basic life support.

**Minimal Guarantees:**

- The Pedi-padz package is available and in good condition.
- The rescuer checks for anything blocking the chest before placing the pads.
- The correct electrodes are selected

**Postcondition:**

- The Pedi-padz are properly connected and the AED is ready for its operations.
- The rescuer follows procedures properly.

**Main Success Scenario:**

1. The rescuer finds the victim suffering a cardiac arrest.
2. The AED is retrieved for operation to begin.
3. Anything blocking the chest is removed. (clothes, excessive chest hair, etc.)
4. The Pedi-Padz package is opened.
5. The rescuer places the round electrode on the victim according to the instructions.
6. The round electrode is removed from its backing material.
7. The rescuer places it on the victim's chest.
8. The rescuer gently rolls the electrode onto the victim's chest.
9. The victim is rolled onto their chest.
10. The square electrode is placed on the victim's back.
11. The rescuer rolls the electrode onto the victim's skin.
12. The victim is rolled back onto their back and the AED prompts are followed.



## **Use Case 9: Using the Audio Recording Option**

**Primary Actor:** Rescuer

**Goal in Context:** Successfully record and store audio and data during a rescue using the audio recording option.

**Scope:** Subsystem - Audio Recording

**Level:** User Goal

**Stakeholders and Interests:**

- Rescuer: First responder to the cardiac emergency.
- Victim: Receiver of the treatment in the event of a cardiac arrest.

**Precondition:**

- The audio recording option is available and enabled
- **Use Case 7: Applying CPR-D-padZ (Adult)**

**Minimal Guarantees:**

- The rescuer is familiar with the audio recording option procedures.

**Postcondition:**

- 20 minutes of continuous audio and clinical event data during the rescue successfully recorded.

**Main Success Scenario:**

1. The rescuer finds the victim suffering a cardiac arrest.
2. The AED is retrieved for operation to begin.
3. The rescuer applies the CPR-D-padZ to the victim
4. The STAY CALM prompt is issued and the audio recording function initiates
5. 20 minutes of continuous audio is recorded

**Extensions:**

4a. A clinical event is initiated and there's already data stored

4a1. old ECG, audio and event data is deleted and overridden by the new recording.

## **Use Case 10: Preparing the Semi Automatic AED Plus for Use**

**Primary Actor:** Operator

**Goal in Context:** Successfully prepare the Semi Automatic AED Plus in case of an emergency situation.

**Scope:** System - Semi Automatic AED machine

**Level:** User Goal

**Stakeholders and Interests:**

- Operator: Prepares and makes sure the AED is in optimal condition for use at any time.

**Precondition:**

- The Semi Automatic AED Plus is available on hand.

**Minimal Guarantees:**

- The operator has knowledge of maintaining the machine.
- Safety protocols are followed during preparations.

**Postcondition:**

- The Semi Automatic AED plus is available and ready to use in case an emergency arises.

**Main Success Scenario:**

1. The operator retrieves the device from its designated area to begin the inspection
2. The operator examines the surface device, ensuring no apparent damage or missing parts has ensued.
3. The electrode is then examined for any damaged or missing connector pins.
4. Then, checks should be made that any pads used from the transfer of electricity have not been used before, nor are they past their expiration dates.
5. The electrodes are then pre-connected to the electrode connector on the device using the instructions provided.
6. Operator then closes up the cover of the unit and starts the self test by pressing the power button. The unit should issue the "UNIT OK" voice prompt.
7. The operator ensures that the unit issues the correct voice prompts for "Adult Pads" or "Pediatric Pads"
8. The Semi Automatic AED Plus unit can then be turned off
9. A green check symbol should be outputted in the status indicator window after 2 minutes of inactivity
10. The operator checks the unit periodically, verifying that the green check remains displayed.

**Extensions:**

- 5a. The electrodes are not connected to the Semi Automatic AED Plus unit
  - 5a1. The device fails the self test and displays a red "X" in the status indicator window
  - 5a2. New batteries should then be installed
- 9a. No green check is displayed in the status indicator window after 2 minutes
  - 9a1. The unit emits a beeping tone
  - 9a2. The preparations should restart
- 10a. A red X is displayed after the preparation
  - 10a1. The unit is not ready to be used and the operator should consult the troubleshooting guide

## **Use Case 11: Using the Self Test Feature**

**Primary Actor:** Operator

**Goal in Context:** Ensure the AED unit is ready and fully operational for emergency cases through self tests.

**Scope:** System - Self Test

**Level:** Subfunction

**Stakeholders and Interests:**

- Operator: initiator for the self tests the AED unit must go through.

**Precondition:**

- **Use Case 10: Preparing the Semi Automatic AED Plus for Use**

**Minimal Guarantees:**

- The Semi Automatic AED plus Successfully completes all self Tests and returns a conclusion.
- Safety protocols are followed during preparations.

**Postcondition:**

- The Semi Automatic AED plus completes all the self tests and concludes with the unit being optimal for use.
- A green check is displayed on the status indicator window.

**Main Success Scenario:**

1. The AED is prompted to do its self test
2. The AED checks that the defibrillation electrodes are properly pre connected to the device.
3. It checks that the ECG signal acquisition and processing are functional.
4. It checks the defibrillation charge and discharge, and circuitry charge and discharge at 200 joules.
5. It verifies the full functionality of the microprocessor hardware and software.
6. It checks that the CPR monitoring and compression depth are functional.
7. It checks that the audio prompts are being issued as they should.
8. A green check mark displays on the status indicator window signifying it's good to use.

**Extensions:**

- 1a. The operator inserts new batteries (Battery Installation Self Test)
  - 1a1. It completes the tests indicated above
  - 1a2. The operator presses the battery reset button
  - 1a3. The indicator resets to having the battery be fully charged.
- 1b. The operator turns on the power of the unit. (Power On Self Test)
  - 1b1. It completes the tests indicated above
- 1c. The Operator holds the power button for longer than 5 seconds (Manual Self Test)
  - 1c1. It completes the tests indicated above
- 1d. The configured time cycle for automatically self testing occurs. (Automatic Self Test)
  - 1d1. It completes the tests indicated above
- 1e. A month has elapsed since the last automatic self test (Automatic Monthly Test)
  - 1e1. It completes the tests indicated above
- 8a. A red X is displayed
  - 8a1. **Use Case 16: Troubleshooting**

## **Use Case 12: Installing or Replacing Batteries**

**Primary Actor:** Operator

**Goal in Context:** Successfully install or replace batteries to allow for a fresh source of power for the Semi Automatic AED Plus.

**Scope:** Subsystem - Power Supply

**Level:** Subfunction

**Stakeholders and Interests:**

- Operator: Allows for the Semi Automatic AED Plus to have a new power supply to power the device.

**Precondition:**

- The unit is fully turned off
- The Operator has access to 10 consumer type 123A Photo Flash lithium manganese dioxide batteries

**Minimal Guarantees:**

- The Semi Automatic AED Plus acknowledges the insertion of new batteries with the correct voice prompt.

**Postcondition:**

- The Semi Automatic AED Plus has a new set of batteries powering the machine.

**Main Success Scenario:**

1. The battery compartment is opened, and any batteries the operator wishes to replace are removed.
2. New batteries of the specific type are inserted into the newly open spot and properly oriented as per the guides on the unit.
3. After the first 5 to 9 batteries are placed, the device issues the "INSTALL BATTERIES" audio prompt.
4. The operator installs the remaining batteries.
5. The operator presses the battery reset button within 15 seconds of installing the final battery
6. **Use Case 11: Using the Self Test Feature**
7. A green check is displayed, indicating the self test has passed and the unit can derive power off of the newly installed batteries.

**Extensions:**

- 5a. The operator does not press the battery reset button within 15 seconds
  - 5a1. The unit assumes that some amount of batteries have been removed
  - 5a2. The installation is not successful and needs to be redone.

### **Use Case 13: Identifying Battery Condition**

**Primary Actor:** Operator

**Goal in Context:** successfully identify and diagnose battery conditions to assess the reliability of the power supply for the Semi Automatic AED Plus.

**Scope:** Subsystem - Power Supply

**Level:** Subfunction

**Stakeholders and Interests:**

- Operator: identifies the condition of the batteries to maintain a reliable power supply.

**Precondition:**

- The Operator has the prerequisite knowledge to be able to diagnose the conditions of the power supply.

**Minimal Guarantees:**

- Safety protocols are followed throughout the entire diagnosis process.
- The Semi Automatic AED Plus issues clear indications as to the state of the batteries.

**Postcondition:**

- The operator has identified any issues arising from the power supply and has responded accordingly to fix the problem.

**Main Success Scenario:**

1. The Semi Automatic AED Plus monitors the energy remaining in the power supply of the unit.
2. Some alert is sounded to give the indication that the batteries need replacing
3. **Use Case 12: Installing or Replacing Batteries**
4. A green check is displayed showing that the installation of new batteries was successful.

**Extensions:**

- 2a. The batteries are at low power and the unit is turned off
  - 2a1. An audible beep sounds every minute to alert the operator
  - 2a2. The operator replaces the batteries
  - 2a3. A green check is displayed on the status indicator window
- 2b. The batteries are at low power during a power on self test
  - 2b1. The audio prompt "CHANGE BATTERIES" is issued when powered on
  - 2b2. The operator replaces the batteries
  - 2b3. A green check is displayed on the status indicator window
- 2c. The batteries are at low power during any other self test
  - 2c1. The status indicator window displays a red X
  - 2c2. The operators replaces batteries and checks electrodes
  - 2c3. If the red X remains, go to 2c4
  - 2c4. The operator should then contact Technical Service
- 2d. The batteries are dead
  - 2d1. The status indicator window displays a red X
  - 2d2. The operators replaces batteries
  - 2d3. If the red X remains, go to 2d4
  - 2d4. The operator should then contact Technical Service

## **Use Case 14: Maintaining the Semi Automatic AED Plus**

**Primary Actor:** Operator

**Goal in Context:** Successfully keep the Semi Automatic AED Plus maintained and fully functional in case of an emergency situation.

**Scope:** System - Semi Automatic AED Plus

**Level:** subfunction

**Stakeholders and Interests:**

- Operator: Ensures that the Semi Automatic AED Plus is ready to be used at any time. through regularly scheduled maintenance.

**Precondition:**

- The unit is not actively in use.
- The Operator has the prerequisite knowledge to progress through the maintenance process.

**Minimal Guarantees:**

- The device has been thoroughly inspected for cleanliness, damage, and functionality.
- Any information gathered is documented for use.
- Safety protocols have been followed throughout the maintenance process.

**Postcondition:**

- The device is maintained in an optimal state for usage.

**Main Success Scenario:**

1. The AED is retrieved for the regularly scheduled maintenance and inspection.
2. The operator checks if the unit is clean or undamaged
3. The operator checks if there are any cracks or loose parts
4. The operator checks whether the electrodes have expired, and verifies the connection of the electrodes to the unit.
5. The operator checks that the status indicator window displays a green check signifying it's ready to be used by powering on the machine and turning it off afterwards
6. The operator checks whether the batteries have expired or not
7. Finally, the operator checks if the supplies are all adequate.

**Extensions:**

2a. The parts are unclean

2a1. **Use Case 15: Cleaning the Semi Automatic AED Plus**

5a. The status indicator window displays a red X

5a1. **Use Case 16: Troubleshooting**

6a. The batteries have expired

6a1. **Use Case 12: Installing or Replacing Batteries**

## **Use Case 15: Cleaning the Semi Automatic AED Plus**

**Primary Actor:** Operator

**Goal in Context:** Successfully keep the Semi Automatic AED Plus clean and tidy such that dirtiness can not play a factor in emergency cases.

**Scope:** System - Semi Automatic AED Plus

**Level:** subfunction

**Stakeholders and Interests:**

- Operator: Keep the unit clean and maintained.

**Precondition:**

- The Semi Automatic AED Plus is not currently in use.
- The Operator has the knowledge to clean the device without damaging it.

**Minimal Guarantees:**

- The Semi Automatic AED Plus remains undamaged after the cleaning.
- No part of the unit is immersed in water.
- Ketones are not used to clean the unit.
- Abrasives are avoided on the display window or IrDa port
- The unit is not sterilised.

**Postcondition:**

- The unit is cleaned and ready to be used at any moment

**Main Success Scenario:**

1. The operator cleans the unit with a soft, damp cloth using 90% isopropyl alcohol, or soap and water.
2. The unit is then dried and put away for later use.

## **Use Case 16: Troubleshooting**

**Primary Actor:** Operator

**Goal in Context:** Successfully identify and resolve issues pertaining to the Semi Automatic AED Plus in order to be able to use it in case of emergencies.

**Scope:** System - Semi Automatic AED Plus

**Level:** subfunction

**Stakeholders and Interests:**

- Operator: Main driver of the troubleshooting process.
- Technical Service: contacted for a higher level of support if it is needed.

**Precondition:**

- The Semi Automatic AED Plus is not currently in use.
- An error during the testing or using has occurred.

**Minimal Guarantees:**

- Troubleshooting is attempted for the given problem.
- Safety protocols are followed during the troubleshooting process.

**Postcondition:**

- The error has been solved and the unit can return to being functional under cases of emergencies.

**Main Success Scenario:**

1. An issue has occurred in the Semi Automatic AED Plus
2. The operator trouble shoots this error
3. The fix is successful and the device can go back to be functional under cases of emergencies.

**Extensions:**

1a. The error is that a self test has failed

1a1. **Use Case 12: Installing or Replacing Batteries**

1a2. If that does not work, the operator should then contact Technical Service

1b. The error is that a "CHANGE BATTERIES" prompt has been issued

1b1. **Use Case 12: Installing or Replacing Batteries**

1c. A red X is displayed on the status indicator window

1c1. The operator verifies that the electrode cables are fully connected

1c2. Replace the electrodes and **Use Case 12: Installing or Replacing Batteries**

1c3. If that does not work, the operator should then contact Technical Service

1d. A beeping noise sounds while the unit is turned off

1d1. **Use Case 12: Installing or Replacing Batteries**

1d2. If that does not work, the operator should then contact Technical Service

1e. The error is that a "PLUG IN CABLE" prompt has been issued

1e1. The Operator plugs any electrode cable that isn't plugged all the way through

1f. The error is that a "ANALYSIS HALTED. KEEP VICTIM STILL" prompt has been issued

1f1. The operator must keep the victim motionless

1f2. Perform ECG analysis.