



St. John Ambulance

PROVINCIAL COMMISSIONER'S DIRECTIVE

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USE OF AUTOMATED EXTERNAL DEFIBRILLATION (AED) BY COMMUNITY SERVICES PATIENT CARE PROVIDERS

MEDICAL CONTROL

In Ontario, the medical authority to delegate the use of AEDs to St. John Ambulance Community Services patient care providers will be the St. John Ambulance provincially appointed AED Medical Director.

The provincial AED Medical Director will supervise the training of AED Instructors and delegate certification and re-certification to them on an annual basis.

The provincial AED Medical Director will be the delegating physician for use of AED by Community Services in Ontario. This delegation applies to the treatment of adult patients in Ontario, while providing patient care at events authorized by St. John Ambulance. AED is to be performed only using St. John Ambulance authorized AED equipment, and within the boundaries and jurisdiction of the St. John Ambulance Community Services in Ontario.

AED PROVIDER TRAINING

Training will take place in accordance with the guidelines of the St. John Ambulance Automated External Defibrillation Program.

A Community Services patient care provider must have a minimum of both BTS Level 1 and Basic Rescuer CPR successfully completed within the previous twelve months. Prerequisites must be met before the first training session takes place.

Training must take place on St. John Ambulance approved equipment (or manufacturer's unit-specific trainer) to meet the learning outcome of understanding all functional components of the AED, including visual and auditory commands.

AED INSTRUCTORS

The qualifications for AED instructors within Community Services will be the same as for AED instructors for the St. John Ambulance Association.

AED Instructors must be currently certified to perform AED under medical control.

AED Instructors will provide the AED Medical Director (through the Community Services Department of Council) with a list of those Community Services patient care providers certified and the date of certification after each course. Once the AED Medical Director receives this, a Standing Order will be issued to that patient care provider authorizing him or her to perform automated external defibrillation in accordance with the guidelines developed.

CERTIFICATION & RE-CERTIFICATION

Certification will take place upon successful completion of the first training session.

The maximum allowable time elapsed before re-certification is one year.

The minimum allowable time elapsed before re-certification is at the discretion of the AED Medical Director.

Supervised practice within the context of patient care must take place every six months. If this does not take place, certification must be completed in full.

The member's certificate must be signed at least every six months by an AED instructor to indicate that supervised practice took place. Re-certification cannot take place without this signature.

Unsupervised continuing medical education (CME) is required quarterly (see attached Annex E)

The AED Medical Director reserves the right to de-certify any St. John Ambulance AED provider who does not comply with training, CME, certification, safety or reporting standards, or is deemed incompetent, unprofessional or a potential risk to public safety in the utilization of a defibrillator.

A Community Services patient care provider must receive a Standing Order (see Annex A) signed by the AED Medical Director before performing automated external defibrillation as a Community Services patient care provider.

AED EQUIPMENT

The minimum acceptable standard for all equipment is the capacity of producing a monitoring or rhythm strip; either real-time or post-event via data download. Rhythm strips will be used for quality assurance purposes and for attachment to the Patient Care Record.

All AED equipment must be semi-automatic.

Compatibility with Emergency Medical Services may be a consideration. Calibration of the equipment must be carried out as per the manufacturer's recommendations.

The equipment must be checked and signed off at the beginning and end of each duty, utilizing the Defibrillator Check Sheet (see Annex B) and After Use Check List (see Annex C).

Defective defibrillator equipment must be forwarded to the AED Medical Director c/o the Community Services Department at St. John Council for Ontario. Defective equipment is forwarded for the purpose of coordinating contact with manufactures and quality control.

INDICATIONS FOR USE

Use of the Automatic External Defibrillator (AED) with defibrillation pads is required for the following patients:

- a) All Vital Signs Absent (VSA) patients **EXCEPT** patients who:
 - ✎ Are 8 years of age or younger
 - ✎ Meet the criteria of obvious death (partial or complete decapitation)
 - ✎ Have a cardiac arrest due to obvious penetrating trauma

- b) St. John Ambulance AED Providers are required to take the AED with them to the patient immediately upon arrival at the scene for the following call types:
 - ✎ VSA
 - ✎ Unconscious/decreased level of consciousness
 - ✎ Collapse
 - ✎ Syncopal (fainting) episode
 - ✎ Chest Pain
 - ✎ Shortness of breath
 - ✎ Seizures
 - ✎ Overdose
 - ✎ Electrocutation
 - ✎ Hanging
 - ✎ Drowning/near drowning
 - ✎ Hypothermia and heat related illness
 - ✎ Unknown

In Hazardous Material incidents the main priority remains safety. While it is a mandate to perform AED as soon as possible, AED providers must ensure that the scene is completely safe before proceeding to any treatment.

- c) If use of the AED is indicated it must remain connected to the patient and turned on for the entire call until an ambulance crew arrives and care of the patient is transferred.

ELECTRODE SELECTION AND PLACEMENT

- a) When using the defibrillator capability of the AED it is imperative that a fresh pair of large electrodes is used.
- b) It is necessary to completely expose the chest. Clothing should be quickly removed. (Cutting clothing away is appropriate in the management of cardiac arrest).
- c) The preferred electrode position is:
 - ✧ Sternum: below the distal portion of the right clavicle and to the right of the sternum;
 - ✧ Apex: mid axillary line, below left pectoral muscle.
- d) Causes of poor electrode placement include: excessive hair, excessive moisture, and placement over bony area. The chest should be dried with a towel before applying the electrodes even if the chest does not appear damp. If the patient is lying on an excessively wet or metal surface, they should be removed before defibrillating.
- e) If a patient is wearing a pacemaker, do not place electrodes directly over a pacemaker. Place the electrodes at least 2.5 cm away from the pacemaker.
- f) If the “check electrode” message continues in spite of proper skin preparation and electrode placement, the defibrillation pads should be replaced with a new set. The malfunctioning pads are to be sent to the Community Services Department at Council outlining the problem encountered.
- g) If either ‘check electrodes’ message continues after all reasonable attempts to prepare the chest have been made and a second set of electrodes has been tried unsuccessfully, continue CPR until ambulance crew arrives. Retain the sets of defibrillation pads and send them to the Community Services Department at Council outlining the problem encountered.

DEFIBRILLATION PROCESS

Note: If the patient is wearing patch medication, remove patch and wipe the area clean.

- a) Begin Basic Life Support (BLS) resuscitation (CPR).
- b) Place defibrillator electrodes on chest and turn on device.
- c) Call “Stand Clear” and stop cardiac compressions.
- d) Press analyze switch. **DO NOT ATTACH AED or ANALYZE TO ANY PATIENT WITH VITAL SIGNS.**
- e) If shock is advised: Call “STAND CLEAR!”

- f) Press the “SHOCK” button.
- g) The machine will automatically reanalyze after each shock, in groups of 3 shocks.
- h) Three initial defibrillations are permitted. If rhythm is not converted after three defibrillation attempts, perform CPR for one minute and analyze again. Continue this sequence of 3 shocks followed by 1 minute of CPR until:
 - ✓ Patient has return of pulse OR
 - ✓ Ambulance crew arrives OR
 - ✓ No Shock Indicated message is given; then complete No Shock protocol in which case follow algorithm for non-shockable.

See treatment algorithm for shockable rhythm on page 6.

PROCEDURE FOR NO SHOCK INDICATED

If after the first analysis, there is no shock indicated and no pulse, perform CPR for 1 minute. Analyze again and if no shock indicated and no pulse, perform CPR for 1 minute then analyze a third time. After third no shock indicated, continue CPR until ambulance arrives.

See treatment algorithm for non-shockable rhythm on page 7.

VSA CPR AND DEFIBRILLATION PROCEDURE

Protocol for Ventricular Fibrillation and Pulseless Ventricular Tachycardia Shockable Rhythm

**Arrest Witnessed by
Emergency Personnel**

Initiate Basic Life Support (BLS)

Check Pulse – If no pulse

**Arrested Before Arrival Of
Emergency Personnel (unwitnessed)**

Initiate BLS

Check pulse – If no pulse

CPR until AED is attached

AED Automatically Analyzes
Press the "SHOCK" button to defibrillate

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Press the "SHOCK" button to defibrillate

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Press the "SHOCK" button to defibrillate

Check pulse – if no pulse
CPR x 1 minute

Press Analyze
Press the "SHOCK" button to defibrillate

AED Automatically Analyzes
Press the "SHOCK" button to defibrillate

AED Automatically Analyzes
Press the "SHOCK" button to defibrillate

Check pulse – if no pulse
CPR x 1 minute

Repeat set of three stacked shocks

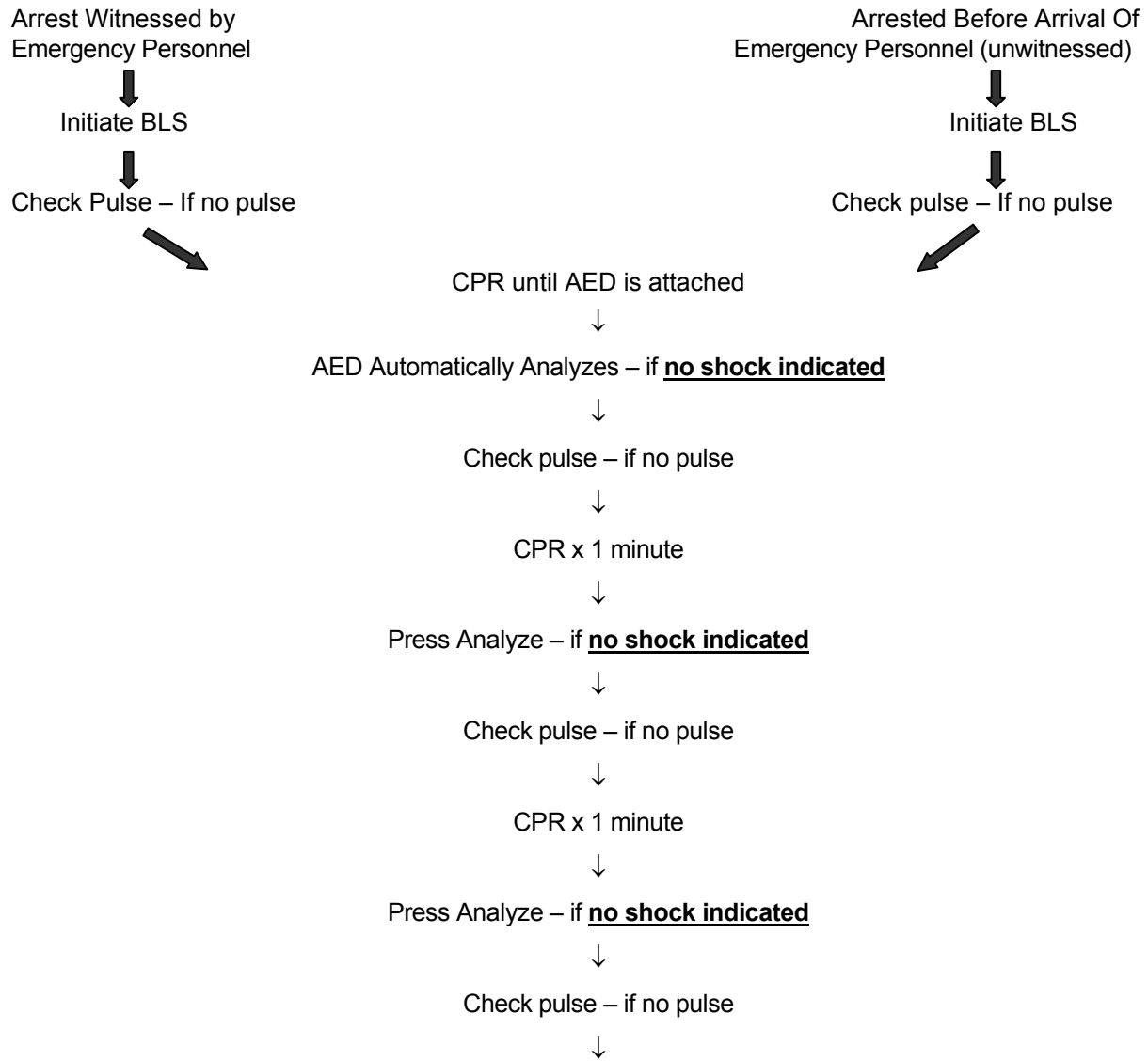
Continue this sequence until:

1. Ambulance crew arrives
2. The patient goes into a non-shockable rhythm then follow that protocol.

REMEMBER TO CHECK PULSE PRIOR TO STARTING ANY CPR.

NOTE: If you get a return of pulse at any time continue to ventilate the patient and monitor the pulse closely as the patient may suffer a cardiac arrest again.

**Protocol for
Asystole or Pulseless Electrical Activity
Non-shockable Rhythm**



Continue CPR with good ventilations checking every minute for pulse until

1. Ambulance crew arrives OR
2. 3 consecutive check patient prompts then STANDARD

NOTE: If you get a return of pulse at any time continue to ventilate the patient and monitor the pulse closely as the patient may suffer a cardiac arrest again.

OPERATING GUIDELINES FOR A VSA TRAUMA PATIENT

The AED should not be applied to victims of obvious trauma with gross bleeding who are VSA. Their cardiac rhythm is seldom ventricular fibrillation and cardiac arrest is due to hypovolemia. AED assessment delays other necessary interventions and/or rapid transport to an Emergency Department where the resuscitation measures they need are available. Therefore, initiate ventilation and CPR if indicated.

Upon arrival of the ambulance crew, the Ambulance Officer (Paramedic) will decide if the defibrillator should be applied subsequent to an assessment.

NOTE: Although victims of electrocution will usually have serious traumatic injuries, you **MUST** attempt to defibrillate these patients if VSA. These people may be VSA primarily due to an electrical disturbance that can be corrected by the use of the AED.

HYPOTHERMIA AED PROTOCOL

In cases where you suspect that the patient may be in arrest **due to hypothermia** the following procedures and precautions should be followed.

- a) Avoid any sudden or unnecessary movement of the patient. The hypothermic heart is very unstable and if the patient is jostled this may cause the heart to go into ventricular fibrillation.
- b) Assess the airway and breathing as per normal but for a longer period of time (45 seconds), if required, begin ventilating the patient at a rate of not more than 8-10/minute. Do not hyperventilate and if possible try to avoid the use of airways and if required, suction gently.
- c) Perform a carotid pulse check for a span of 30 to 35 seconds to determine pulselessness, for which CPR should be started immediately.
- d) Connect the AED and if, on analysis, the machine begins to charge, proceed to give a total of 3 shocks if possible.
- e) After 3 shocks have been delivered or the No Shock protocol has been completed, without a return of spontaneous circulation (remember to check pulses for an extended period of time), continue CPR. **DO NOT DELIVER MORE THAN 3 SHOCKS.**
- f) Remember to handle the patient as gently as possible, cut away any wet clothing.

The hypothermic myocardium may not respond to defibrillation, however, when core temperature cannot be measured in the field, an attempt to defibrillate the heart should be made.

Additional documentation that **must** be included for patients treated under this protocol include:

- ✎ Location where patient was found
- ✎ Estimated length of time of exposure
- ✎ Description of patient's clothing
- ✎ Core temperature at receiving hospital.

PREGNANT PATIENT

If the patient is pregnant proceed with normal algorithms.

TRANSFER OF RESPONSIBILITY AT THE SCENE

It is essential that the transfer of patient care from the St. John Ambulance AED Provider to the Ambulance Officer (Paramedic), at the scene, proceed smoothly and promptly.

IF THE ST. JOHN AMBULANCE AED Provider THREE-SHOCK PROTOCOL IS IN PROGRESS, THIS WILL NOT BE INTERRUPTED.

WHEN THE AMBULANCE OFFICERS (PARAMEDICS) ARRIVE:

- a) CPR is continued by current providers.
- b) The St. John Ambulance AED Provider reports the situation to the arriving ambulance officer (Paramedic) including patient history, number of shocks indicated, number of shocks given.
- c) **THE FOLLOWING SEQUENCE WILL ALWAYS TAKE PLACE DURING THE TIME THAT CPR IS BEING PERFORMED FOR 1 MINUTE. NEVER INTERRUPT A SERIES OF THREE SHOCKS.**
- d) The St. John Ambulance AED Provider's cables are disconnected at the pad site by the Ambulance Officer (Paramedic) and the ambulance service AED cables and electrodes (if required) will be attached to the patient.
- e) The ambulance officer (Paramedic) will halt CPR and verify that the patient is VSA.
- f) A St. John Ambulance AED Provider should accompany the patient and the ambulance officer (Paramedic) to the receiving hospital, assisting with CPR if requested to do so.
- g) The ambulance officer (Paramedic) will provide the medical report to the receiving health care professional.
- h) The St. John Ambulance AED Provider is to complete the St. John Ambulance – Patient Care Record Form.

STANDARD OPERATING GUIDELINES FOR A PHYSICIAN AT SCENE

If a physician arrives at the scene of a cardiac arrest patient and wants you to DEVIATE from the accepted defibrillation protocol, the following actions should be taken:

The AED Provider will, in the event of a physician at the scene issuing orders, give a brief explanation of AED to the physician, explain to the physician that the AED provider is functioning under the license and supervision of a Medical Director, and confirm that the physician at the scene is taking full and complete responsibility for the patient care.

The AED Provider will only institute approved Clinical Protocol.

A physician at the scene must provide valid and current proof of licensure to practice medicine in the Province of Ontario.

NOTE: If a medical doctor offers to assist with CPR or ventilation and does NOT ask you to deviate from your AED protocol, then there is NO need to ask him/her for proof of medical licensure. Accept his/her help!

EQUIPMENT CHECK OF AED

The equipment must be checked and signed off at the beginning and end of each duty.

Inspection checks:

- a) Verify the device shows no obvious signs of damage to the exterior of the device, cables and other accessories. Insert fully charged batteries.
- b) Verify the device turns on when the "ON" button is pushed down.
- c) Verify the "Self-Test OK" message appears.
- d) Verify the clock time is correct.
- e) Verify the "Needs Service, Low Battery or Service Mandatory" messages do not appear.
- f) Verify defibrillator recognizes V-fib, Normal Sinus rhythm, and delivers a shock.
- g) Verify a package of defibrillation electrodes are in place and a spare package of electrodes, and one battery are available (if battery re-charging is required).
- h) Ensure a cleared Memory.

RESTOCKING (AFTER USE)**ENSURE THE MEDICAL DATA IS FORWARDED TO AED MEDICAL DIRECTOR.**

- a) Discard used electrodes. NOTE: If there is a suspected problem with the electrode pads they should be forwarded to the Community Services Department at Council outlining the problem encountered.
- b) Replace electrodes with a new package. Check that the electrodes have not reached their expiration date.
- c) Remove battery from unit and follow instructions for charging a depleted battery (if re-charging is required).
- d) **ENSURE DATA FROM PREVIOUS EVENT IS CLEARED ONLY AFTER YOU HAVE CONFIRMED THAT ST. JOHN AMBULANCE AED MEDICAL DIRECTOR HAS A HARD COPY OR DOWNLOAD OF THE DATA.**
- e) Install a fully charged battery (if battery re-charging is required).
- f) Follow previously described inspection checks.
- g) Return the device to use if no problems are noted.

PROCEDURE FOR DEFECTIVE DEFIBRILLATOR EQUIPMENT, ELECTRODE PADS AND PACKAGING ENVELOPES

The AED Medical Director must be informed of all failures of AED equipment, electrode pads, and packaging envelopes that you feel have a potential problem or defect.

Forward defective packaging envelopes and defective defibrillator pads to the Community Services Department at Council outlining the problem encountered. These will in turn be turned over to the AED Medical Director.

- ✎ Any Cardiac Arrest call in which the voice prompt continuously states “check electrodes” “check electrodes”. This includes the calls in which the pads were corrected and the message cancelled.
- ✎ Any Cardiac Arrest calls in which the pads were changed. Please forward both sets of pads and both packaging envelopes to the Community Services Department at Council outlining the problem encountered.

All pad sets that exceed the manufacturer’s expiry date must be returned to the manufacturer/distributor.

In the event of any equipment malfunction during a cardiac arrest, notify the Community Services Department immediately and identify the problem area with appropriate call information, dates, times, and AED provider name.

DOCUMENTATION

Ideally, there is a requirement for two rhythm strips: one to accompany the Patient Care Record for emergency personnel when responsibility for care of the patient is turned over to them, and one to be retained by the AED Medical Director for quality assurance. If two rhythm strips cannot be produced at the scene, then one should be printed as soon as possible after each use and submitted with one copy of the Patient Care Record to the AED Medical Director.

The Patient Care Record Form (Annex D) in triplicate will be used for all patient care provided by St. John Ambulance Community Services patient care providers.

When AED is used,

- a) one copy (white) must be retained locally (with Branch or Community Services Unit) for St. John Ambulance records. From time to time Council may request a photocopy of the white copy in response to a record release request.
- b) one copy (canary) is given to emergency medical/hospital personnel upon transfer of the patient, with a rhythm strip attached (if possible);
- c) one copy (pink), along with a rhythm strip (or data download) attached must be sent to the St. John Ambulance AED Medical Director, c/o the Community Services Department at Council. This copy is used for quality assurance, data management, and follow-up.

The Patient Care Record Form should be filled out as completely as possible, including name, address, and phone of the patient and arrest details as described on the second half of the form.

Please remember to send the SJA Medical Director copy of the patient care record and associated material to the AED Medical Director within 24 hours of each use of AED.



FOLLOW-UP SUPPORT

Upon review of each cardiac arrest incident a support session should occur in conjunction with the AED Medical Director, or designate for all AED providers involved in the incident and if necessary Critical Incident Stress (CIS) teams should be called in. A province-wide listing of CIS teams is available from the Community Services Department at Council.

For additional information please reference the following:

- i. Brigade Training System – Brigade Specialized Training Modules (BSTM) Standards and Reference Guide: Automated External Defibrillation (AED) Training Program for Brigade Members, March 1999
- ii. St. John Ambulance Automated External Defibrillation Instructor Guide, 1999

Questions regarding the above directive and associated protocols can be addressed to:
St. John Ambulance AED Medical Director, Community Services, St. John Council for Ontario, 46 Wellesley Street East, Toronto, ON M4Y 1G5.

Authority  AED Medical Director
Authority  Barbara M. Graham Provincial Commissioner