



TITLE

MANAGEMENT OF CARDIAC ARREST WHEN A PHYSICIAN OR NURSE PRACTITIONER IS NOT IMMEDIATELY AVAILABLE

SCOPE

Provincial: Emergency Departments and Urgent Care Centres

DOCUMENT #

HCS-272-01

APPROVAL AUTHORITY

Vice President, Provincial Clinical Excellence

INITIAL EFFECTIVE DATE

October 15, 2020

SPONSOR

Emergency Strategic Clinical Network

REVISION EFFECTIVE DATE

Not applicable

PARENT DOCUMENT TITLE, TYPE, AND NUMBER

Not applicable

SCHEDULED REVIEW DATE

October 15, 2021

NOTE: The first appearance of terms in bold in the body of this document (except titles) are defined terms – please refer to the Definitions section.

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OBJECTIVES

- To provide direction to **health care professionals** working in an Emergency Department (ED) or an Urgent Care Centre (UCC) to implement specific emergency interventions for **patients** in cardiac arrest when a Physician or Nurse Practitioner (NP) is not immediately available.
- To promote safe and consistent practice by aligning with the Heart & Stroke Foundation of Canada (HSFC) Basic Life Support (BLS), Advanced Cardiac Life Support (ACLS) and Pediatric Advanced Life Support (PALS) guidelines, and adhering to organizational policy, federal and provincial legislation.

APPLICABILITY

Compliance with this document is required by all Alberta Health Services employees, members of the medical and midwifery staffs, students, volunteers, and other persons acting on behalf of Alberta Health Services (including contracted service providers as necessary).

ELEMENTS

1. Points of Emphasis

- 1.1 Cardiac arrest is an **emergency situation** that requires immediate action. Failure to promptly intervene can be life-threatening – death can occur within minutes.
- 1.2 The foundation of advanced life support is high-quality cardiopulmonary resuscitation (CPR) and early defibrillation.

- 1.3 The Physician or NP should be contacted as soon as possible. Performing CPR, defibrillation, administration of oxygen and obtaining intravenous (IV) access should not be delayed while attempting to contact the Physician or NP.
- a) In exceptional circumstances, if the Physician or NP is unable to be contacted to provide direction, the health care professional shall escalate Physician or NP notification as per site processes.
- 1.4 A patient-specific **order** from an **authorized prescriber** is required prior to the administration of epinephrine and obtaining intraosseous (IO) access. Obtaining a patient-specific order for this protocol authorizes these interventions. Refer to Sections 6.3(b) and 7.2(b) below.

2. Inclusion Criteria

- 2.1 Any patient who is experiencing cardiac arrest when the Physician or NP is not immediately available (e.g., Physician/NP is not on-site and/or is unable to attend due to extenuating circumstances such as caring for a critically ill patient) and the patient's **Goals of Care Designation** (GCD) is R1 or unknown.

3. Exclusion Criteria

- 3.1 Any patient experiencing cardiac arrest where the patient's:
- a) GCD is not R1; or
- b) Personal Directive directs no CPR.

4. Competency Requirements

- 4.1 This protocol may be implemented by health care professionals who have the knowledge, skills and abilities (e.g., current ACLS or PALS certification, Alberta Health Services' [AHS] approved emergency cardiac management clinical education) to perform the activities and skills within this protocol.
- a) Health care professionals who are competent in cardiac rhythm interpretation shall assess the need for defibrillation, manually discharge the defibrillator and repeat, if required.
- b) All other health care professionals unfamiliar with cardiac rhythm interpretation shall use an automated external defibrillator (AED) or the AED mode on the monitor/defibrillator for defibrillation and provide BLS, as appropriate.

5. Initial Treatment of Cardiac Arrest

- 5.1 The health care professional leading the cardiac arrest care shall ensure the following interventions are performed:
- a) Initiate local Emergency Response Plan (e.g., Code Blue).

- b) Deliver high-quality CPR, as per current BLS guidelines.
 - (i) Provide or assist ventilations, as per current BLS guidelines.
 - This may include placing an oral or supraglottic airway, and/or ventilating with a bag-valve-mask (BVM) device. Refer to the *AHS Supraglottic Airway Insertion Policy*.
 - If a patient arrives via Emergency Medical Services (EMS), an advanced airway may already be in place.
 - c) Administer 100% oxygen until return of spontaneous circulation (ROSC).
 - d) Attach the patient to the monitor/defibrillator as soon as possible.
 - (i) If using a monitor/defibrillator in manual mode, analyze the rhythm.
 - If pulseless ventricular tachycardia (pVT) or ventricular fibrillation (VF), refer to Section 6 below.
 - If asystole or pulseless electrical activity (PEA), refer to Section 7 below.
 - (ii) If using an AED, follow AED prompts to continue CPR and defibrillate as instructed.
 - e) Without delay in initiation of cardiac arrest care, attempts to contact the most responsible Physician or NP and/or escalation as per Section 1.3 above should continue.
- 5.2 Without delaying CPR or defibrillation attempts, initiate vascular access as soon as possible.
- a) IO vascular access can be used for fluid and medication administration if peripheral access is difficult or impossible to obtain in emergent, urgent or medically necessary cases, and when the patient is at risk of increased morbidity and mortality. (Refer to the *AHS Intraosseous Vascular Access Protocol*).

6. Recognition of Pulseless Ventricular Tachycardia or Ventricular Fibrillation

- 6.1 Refer to Appendix A and B below for algorithms on the adult and pediatric cardiac arrest protocols for EDs and UCCs.
- 6.2 The health care professional leading the cardiac arrest care shall ensure the following interventions are performed until ROSC or until the Physician or NP provides an alternative order.

- a) Continue CPR, as per current BLS guidelines.
 - b) Prepare to defibrillate the patient as soon as possible:
 - (i) deliver one (1) unsynchronized defibrillation, as per manufacturer recommended dosing for adults or as per PALS for pediatrics; or
 - (ii) if using AED mode, follow the prompts.
 - c) Resume CPR immediately following every defibrillation.
- 6.3 A health care professional shall perform a rhythm check after each two (2) minute cycle of CPR.
- a) If pVT or VF continue, or if shock is advised by AED:
 - (i) defibrillation at manufacturer recommended dosing for adults, as per PALS for pediatrics or as per AED, until the Physician or NP provides direction or the patient has ROSC (refer to Section 8).
 - b) A health care professional shall administer epinephrine IV or IO, as per current ACLS or PALS guidelines. If using an IO, then refer to the AHS *Intraosseous Vascular Access Protocol*. Refer to Section 1.4 above.
 - (i) For the adult patient, administer epinephrine one (1) mg (10 mL of the 0.1 mg/mL solution) direct IV/IO, and repeat every three (3) to five (5) minutes in the absence of ROSC (refer to the AHS *Provincial Parenteral Monographs*).
 - (ii) For the pediatric patient, administer epinephrine 0.01 mg/kg (0.1 mL/kg of the 0.1 mg/mL solution) maximum one (1) mg/dose direct IV/IO, or as per Broselow tape, and repeat every three (3) to five (5) minutes in the absence of ROSC (refer to the AHS *Provincial Parenteral Monographs*).
 - c) If an organized rhythm or if no shock is advised by AED, check for pulse.
 - (i) If pulse is present, refer to Section 8 below.
 - (ii) If asystole or PEA, or if no shock is advised by AED and no pulse, initiate treatment as appropriate, as per Section 7 below.
 - d) Discuss with the Physician or NP if additional drug therapy is appropriate.
 - e) Search for any reversible causes of cardiac arrest, as per current ACLS and PALS guidelines.
 - f) Proceed with treating any reversible causes that are within the health care professional's scope of practice.

- 6.4 It is recommended to switch CPR providers every two (2) minutes to avoid fatigue.
- 6.5 If rhythm changes to asystole or PEA, or if no shock is advised by AED and patient remains pulseless, refer to Section 7.

7. Recognition of Asystole or Pulseless Electrical Activity

- 7.1 Refer to Appendix A and B below for algorithms on the adult and pediatric cardiac arrest protocols for EDs and UCCs.
- 7.2 The health care professional leading the cardiac arrest care shall ensure the following interventions are performed:
- a) Continue CPR as per current BLS guidelines.
 - b) A health care professional shall administer epinephrine IV or IO, as per the current ACLS or PALS guidelines. If using an IO, refer to the AHS *Intraosseous Vascular Access Protocol*. Refer to Section 1.4 above.
 - (i) For the adult patient, administer epinephrine one (1) mg (10 mL of the 0.1 mg/mL solution) direct IV/IO, and repeat every three (3) to five (5) minutes in the absence of ROSC (refer to the AHS *Provincial Parenteral Monographs*).
 - (ii) For the pediatric patient, administer epinephrine 0.01 mg/kg (0.1 mL/kg of the 0.1 mg/mL solution) maximum one (1) mg/dose direct IV/IO, or as per Broselow tape, and repeat every three (3) to five (5) minutes in the absence of ROSC (refer to the AHS *Provincial Parenteral Monographs*).
 - c) Continue above orders until ROSC, or until the Physician or NP provides an alternative order or directs to discontinue resuscitation efforts.
- 7.3 A health care professional shall perform a rhythm and pulse check after each two (2) minute cycle of CPR until the Physician or NP is at the bedside or the patient has ROSC (refer to Section 8 below).
- a) Discuss with the Physician or NP if additional drug therapy is appropriate.
 - b) Search for any reversible causes of cardiac arrest, as per current ACLS and PALS guidelines.
 - c) Proceed with treating any reversible causes that are within the health care professional's scope of practice.
- 7.4 It is recommended to switch CPR providers every two (2) minutes to avoid fatigue.

7.5 If rhythm changes to pVT or VF or if shock is advised by the AED, refer to Section 6 above.

8. Return of Spontaneous Circulation

8.1 Upon return of an organized cardiac rhythm or if no shock is advised by AED and the patient has a palpable pulse, the health care professional shall ensure the patient is adequately monitored, oxygenated and ventilated.

8.2 A health care professional shall provide post-cardiac arrest care as per HSFC guidelines.

9. Reporting and Documentation

9.1 The health care professional shall document the following on the patient's **health record**:

- a) implementation of this protocol, including specific documentation of attempts to contact the most responsible Physician or NP;
- b) all assessments;
- c) reassessments;
- d) interventions; and
- e) the patient's responses to interventions.

9.2 Additional reporting requirements may include but are not limited to the Manager/Supervisor on call or the Reporting and Learning System for Patient Safety (RLS), as per the AHS *Patient Safety Policy Suite*.

DEFINITIONS

Authorized prescriber means a health care professional who is permitted by federal and provincial legislation, their regulatory college, Alberta Health Services, and practice setting (where applicable) to prescribe medications.

Emergency situation means a circumstance which requires immediate health care that is necessary to preserve life, to prevent serious physical or mental harm, or to alleviate severe pain.

Goals of Care Designation means one of a set of short-hand instructions by which health care providers describe and communicate general care intentions, specific clinically indicated health interventions, transfer decisions, and locations of care for a patient as established after consultation between the most responsible health practitioner and patient or alternate decision-maker.

Health care professional means an individual who is a member of a regulated health discipline, as defined by the *Health Disciplines Act* (Alberta) or the *Health Professions Act* (Alberta), and who practices within scope and role.

Health record means the collection of all records documenting individually identifying health information in relation to a single person.

Order means a direction given by a regulated health care professional to carry out specific activity(-ies) as part of the diagnostic and/or therapeutic care and treatment to the benefit of a patient. An order may be written (including handwritten and/or electronic), verbal, by telephone, or facsimile.

Patient means an adult or child who receives or has requested health care or services from Alberta Health Services and its health care providers or individuals authorized to act on behalf of Alberta Health Services. This term is inclusive of residents, clients, and outpatients.

REFERENCES

- Appendix A: *Adult Cardiac Arrest Protocol for ED/UCC*
- Appendix B: *Pediatric Cardiac Arrest Protocol for ED/UCC*
- Alberta Health Services Governance Documents:
 - *Advance Care Planning and Goals of Care Designation Policy* (#HCS-38)
 - *Anaphylaxis Management: Administration Of Intramuscular Epinephrine Policy* (#HCS-223)
 - *Consent to Treatment/Procedure(s) Policy* (#PRR-01)
 - *Intraosseous Vascular Access Protocol* (#HCS-231-01)
 - *Supraglottic Airway Insertion Policy* (#HCS-202)
 - *Verbal and Telephonic Medication Orders Procedure* (#PS-93-02)
- Alberta Health Services Resources:
 - *Emergency Response Plan: Code Blue*
 - *Provincial Parenteral Monographs*
- Non-Alberta Health Services Documents:
 - *Advanced Cardiovascular Life Support (ACLS) Guidelines* (Heart & Stroke Foundation of Canada, 2016)
 - *Basic Life Support Guidelines* (Heart & Stroke Foundation of Canada, 2015)
 - *Medication Management Practice Guideline* (College of Licensed Practical Nurses of Alberta, 2020)
 - *Medication Management Standards* (College & Association of Registered Nurses of Alberta, 2020)
 - *Pediatric Advanced Life Support (PALS) Guidelines* (Heart & Stroke Foundation of Canada, 2015)

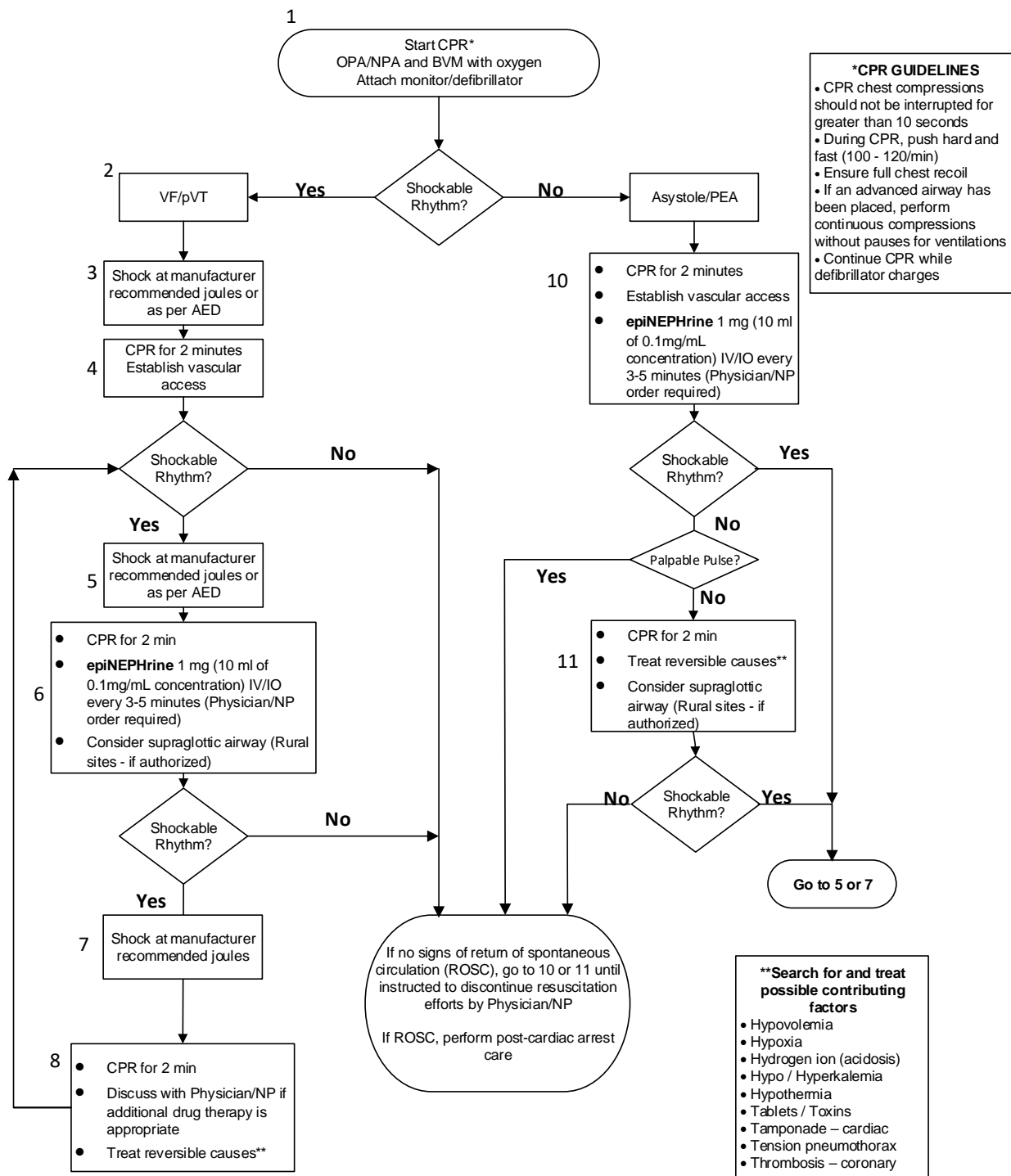
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APPENDIX A

Adult Cardiac Arrest Protocol for ED/UCC



***CPR GUIDELINES**

- CPR chest compressions should not be interrupted for greater than 10 seconds
- During CPR, push hard and fast (100 - 120/min)
- Ensure full chest recoil
- If an advanced airway has been placed, perform continuous compressions without pauses for ventilations
- Continue CPR while defibrillator charges

****Search for and treat possible contributing factors**

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo / Hyperkalemia
- Hypothermia
- Tablets / Toxins
- Tamponade – cardiac
- Tension pneumothorax
- Thrombosis – coronary

