Emergency Cardiac Care: Decision Support Tool #1
RN-Initiated Emergency Cardiac Care
Without Cardiac Monitoring/Manual Defibrillator or Emergency Cardiac Drugs

Decision support tools are evidence-based documents used to guide the assessment, diagnosis and treatment of client-specific clinical problems. When practice support tools are used to direct practice, they are used in conjunction with clinical judgment, available evidence, and following discussion with colleagues. Nurses also consider client needs and preferences when using decision support tools to make clinical decisions.

Purpose
To guide registered nurses who may manage clients experiencing sudden or unexpected life-threatening cardiac emergencies.

Definitions and Abbreviations	**CPR: cardiopulmonary resuscitation.** Emergency procedure for persons who have circulatory and/or respiratory arrest. The two main components of conventional CPR are chest compressions and rescue breathing/ventilations (preferably via adjunctive airway or bag-valve-mask) **BLS: basic life support** **AED: automated external defibrillator**. Device that, when applied to the chest, automatically detects life-threatening arrhythmias and, if ventricular fibrillation or ventricular tachycardia is detected, delivers a shock to restore a normal heart rhythm (defibrillation). **ACLS**: **advanced cardiac life support**. Components of emergency cardiac care that entail more advanced skills, e.g., interpreting cardiac rhythm, use of manual defibrillator, administration of emergency cardiac drugs **PALS: pediatric advanced life support**. Components of emergency cardiac care for children that entail more advanced skills, as above.

Background
Patients may experience sudden and life-threatening cardiac arrhythmias, due to either acute coronary syndromes or other causes (e.g. hypovolemia, tension pneumothorax, electrolyte imbalance, shock, congenital heart defects). Once cardiac arrest has occurred, rapid resuscitation is critical to ensure survival. Although approximately 21% of patients experiencing an *unwitnessed* in-hospital cardiac arrest are successfully resuscitated, only 1% survive to hospital discharge; for *witnessed* in-hospital cardiac arrest, the rate of successful resuscitation is approximately 48%, but survival to hospital discharge is only 22%. Ideally, nurses should recognize clinical deterioration prior to cardiac arrest and intervene by providing or accessing appropriate care to prevent the arrest. However, some arrest events are sudden and nurses are very likely to be the first health professional to discover a patient in cardiac arrest or with a life-threatening arrhythmia, and must be able to recognize the condition and intervene immediately.

Recognition of cardiac arrhythmias and use of specialised equipment (e.g. cardiac monitors, defibrillators, bag-valve-mask ventilation) requires <u>additional education and regular practice.</u>

The use of AEDs and high-quality CPR is associated with the highest rates of survival. Therefore, the use of AEDs is strongly encouraged. Nurses who treat cardiac arrest in hospitals and other facilities with on-site AEDs or defibrillators should provide immediate CPR and should use the AED/defibrillator as soon as it is available. Other modes of emergency cardiac care (e.g., cardiac monitoring and administration of medications) can be used in conjunction with AEDs, if they become necessary.

The physician makes the decision to discontinue resuscitation. It is reasonable to consider discontinuing after 30 minutes of resuscitation. However, resuscitation should never be stopped:

- before 30 minutes (unless "no CPR" order discovered or futility determined, in consultation with physician)
- if there is *intermittent* return of spontaneous circulation
- if there is a likely cause, until the treatment for that is supplied (tension pneumothorax, tamponade, hypoxia, hyperkalemia)
- if hypothermia is the cause, until the patient is warmed.

Registered nurses are not authorized to initiate emergency cardioversion and transcutaneous pacing without a physician's order. However, in areas where there may be a long interval before a physician arrives (e.g. rural settings), it is recommended that physicians, employers and nurses collaborate to devise mechanisms to address this need. Options include a client-specific order (including telephone orders) or college-approved delegation.

If cardiac monitoring and emergency drugs are available, **refer to Emergency Cardiac Care Decision Support Tool #2**

Applicable Nurses (Registered) and Nurse Practitioners Regulation	**Excerpts from Section 6 of the Health Professions Act: Nurses (Registered) and Nurse Practitioners Regulation (activities that CAN be carried out without a physician's order):** Section 6(1): A registrant in the course of practicing nursing may: (a) make a nursing diagnosis identifying a condition as the cause of the signs or symptoms of an individual; (e) administer oxygen by inhalation (j) apply electricity for the purpose of defibrillation in the course of emergency cardiac care (k) compound, dispense or administer by any method a drug specified in Schedule II of the Drug Schedules Regulation, B.C. Reg. 9/98...such as the following: sublingual nitroglycerin (l) in respect of a drug specified in Schedule 1of the Drug Schedules Regulation, compound, dispense or administer the drug…for the purpose of treating cardiac dysrhythmia
Applicable CRNBC Limit and Condition	(1) Registered nurses who, in the course of providing emergency cardiac care, apply electricity using a manual defibrillator, must possess the competencies established by Providence Health Care and follow decision support tools established by Providence

	Health Care. (2) Registered nurses may compound or administer: …epinephrine, atropine, amiodarone or lidocaine to treat cardiac dysrhythmia. (3) Registered nurses who administer epinephrine, atropine, amiodarone or lidocaine must possess the competencies established by Providence Health Care and follow decision support tools established by Providence Health Care. www.heartcentre.ca/EmergencyCardiacCareInformation.asp **NOTE**: emergency cardioversion and initiating temporary pacing fall under Section 7 and therefore require a physician's order: (Section 7.1. (e)…apply electricity for the purposes of destroying tissue or affecting activity of the heart or nervous system)

Indications ("application parameters")	To be used in situations in which the patient presents with sudden (expected or unexpected) collapse, loss of consciousness or decreased level of consciousness, and there is no physician present. This tool provides guidance for nursing actions to be taken during the first 10 – 15 minutes, or until a physician arrives or orders can be received.
Related Resources, Policies and Standards	BLS Guidelines; Core Competencies for Emergency Cardiac Care, Scope of Practice for Registered Nurses https://www.crnbc.ca/Standards/Lists/StandardResources/433ScopeforRegisteredNurses.pdf CRNBC Standards for Acting Without an Order: https://www.crnbc.ca/Standards/Lists/StandardResources/433ScopeforRegisteredNurses.pdf

I. INITIAL ASSESSMENT AND INTERVENTION

1. ALL PATIENTS
   a. If you are alone in the facility or unit:
      1) Assess patient for a response and look for normal or abnormal breathing. If there is no response and patient is not breathing call for help as per facility's protocol
      2) THEN bring AED to patient's side
      3) Check pulse If you do not feel a pulse within 10 seconds, begin CPR starting with compressions in C-A-B sequence (i.e. Compressions, Airway, Breathing)
      4) After 5 cycles of compressions and breaths (30:2 ratio), apply AED pads, turn on AED and follow prompts (if AED is used, it is not necessary to remove the pads, even if cardiac monitoring is later established they are usually compatible with monitor/defibrillators)

   b. There is other staff in the facility or unit:
      1) Assess patient for a response and look for normal or abnormal breathing. If there is no response and patient is not breathing call for help as per facility's protocol
      2) Ask helper to bring emergency cart and AED, and notify physician as soon as possible if not done in facility's protocol
      3) Check the victim's pulse If you do not feel a pulse within 10 seconds, begin CPR starting with compressions in a C-A-B sequence. Continue 5 cycles of Compressions and Breaths (30:2 ratio), until AED arrives.

4) Turn on AED and follow prompts (if AED is used it is not necessary to remove the pads if cardiac monitoring is later established – they are usually compatible with monitor/defibrillators)

c. If shock delivered, resume CPR immediately for 2 minutes.
- AED will time 2 minute cycles, then notify it is ready to analyze cardiac rhythm

d. Continue to support patient as per BLS guidelines, until another health professional provides relief, or a physician or nurse practitioner provides direction

e. After 30 minutes of no response consider contacting physician to discuss discontinuing

f. If cardiac monitoring and emergency drugs available, refer to Emergency Cardiac Care Decision Support Tool #2 (**NOTE**: the nurse must possess the competencies (specialised knowledge, skill, judgment) as outlined by Providence Health Care and maintain competency through regular practice of these procedures).

Nursing Diagnosis
Inadequate cardiac output for tissue/organ perfusion, due to cardiac arrhythmia.

Special Considerations/Precautions
When possible, efforts should be made to ascertain if the patient or family has expressed any directives or preferences for care before the current cardiac emergency (e.g., from the family or those accompanying the patient). This information should be communicated to and discussed with the physician (and family members, as appropriate) at the first opportunity.

Intended Clinical Outcomes
Cardiac output that is adequate to perfuse all organs will return by restoring cardiac rate and rhythm. This will likely require access to definitive emergency cardiac care (i.e. ACLS/PALS).
Indicators:

- return to previous level of consciousness
- return to previous blood pressure
- return to previous respiratory status
- freedom from symptoms of cardiac ischemia (e.g. angina or equivalent)

Patient and Family Education and Support
When possible, regardless of patient's level of consciousness, explain to them where they are, what has happened, and what you are doing to help them, throughout process. Facilitate communication amongst patient, family and team; encourage and support family to be with patient.

In agencies where a standard of care for family presence during resuscitation has been fully implemented, families should be permitted into the resuscitation room. Otherwise, when patient care priorities permit, inform family of patient's condition and what is being done, and facilitate communication with physician. Allow family to see patient **as soon as possible.**

Documentation
A documentation tool designed specifically for cardiac emergencies can streamline the documentation process and improve completeness. Use of such a tool is recommended.

<u>Document initial assessment, including:</u>

- Time of assessment
- Presence of pulse, respirations
- Level of consciousness

List all staff in attendance.

Document all subsequent assessments, interventions and patient's response.

If care is transferred to emergency paramedics or a cardiac arrest team, responsibility for further documentation should rest with them (but may be delegated to first or second responders). Indicate the time of this transfer of care.

Obtain and mount ECG rhythm strip for each discharge of AED, if used.

Document time and content of each communication with physician or other health professionals.

Document any specimens obtained and sent to laboratory.

Document time and content of communication with family members.

References

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