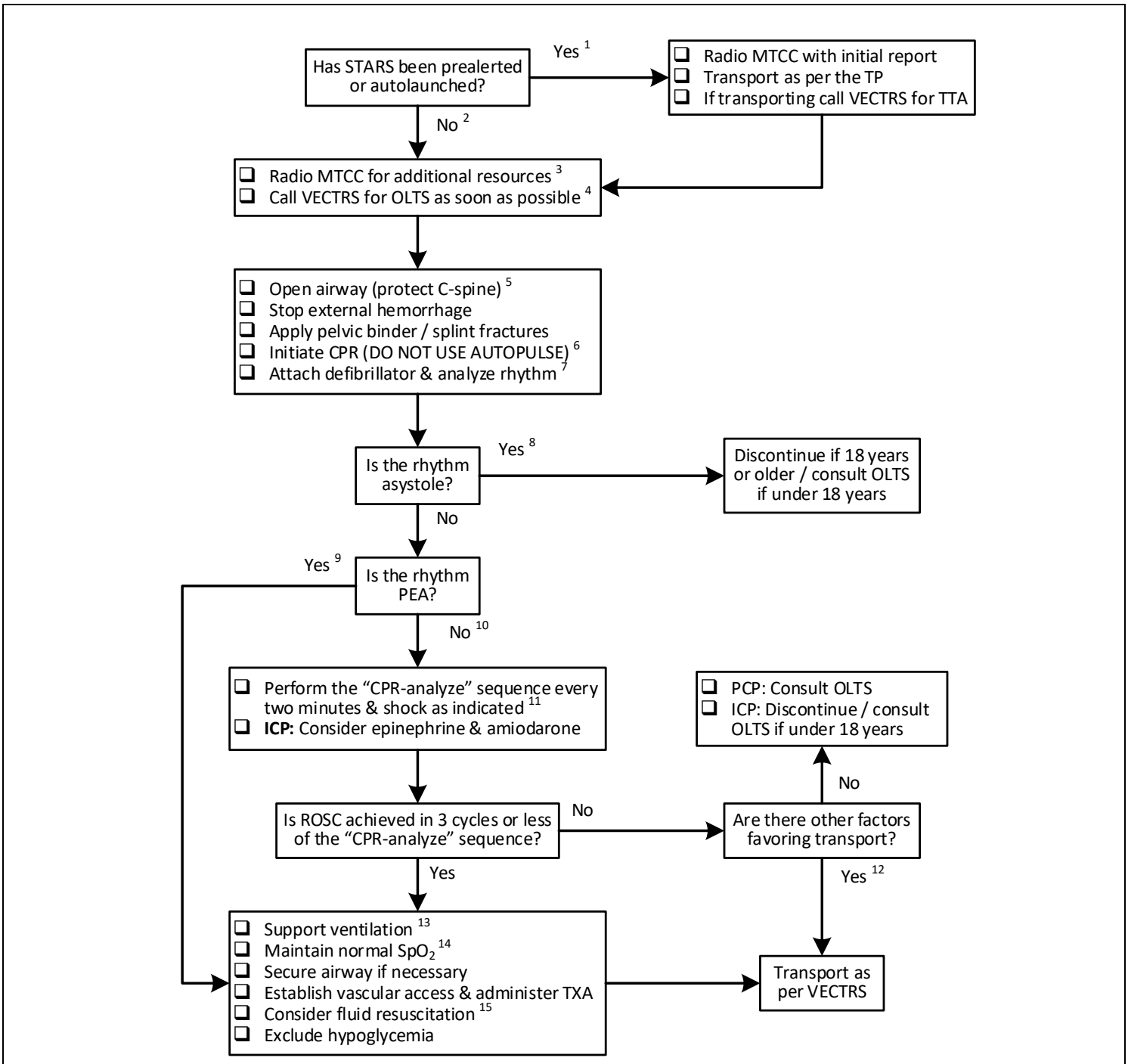
Shared health Soins communs Manitoba	F02.2 - ADVANCED TRAUMA ARREST	
	ALL AGES	TRAUMA
Version date: 2024-10-28		Effective Date: 2024-11-05 (07:00)
ERS WORK SCOPE	**PCP:** PCP only	**ICP:** ICP only / None - all providers



VECTRS will provide TTA / prealert. Paramedics will provide prearrival notification. 14	**VECTRS: (204) 949-4000**

INDICATIONS
• Cardiac arrest due to major traumatic injury (for nontraumatic cardiac arrest refer to C02)

CONTRAINDICATIONS
• Health care directive prohibiting cardiopulmonary resuscitation (CPR) • Injuries incompatible with survival [17]

NOTES

1. The Medical Transportation Coordination Center (MTCC) will notify the responding ground unit when the Shock Trauma Air Rescue Society (STARS) has been prealerted or autolaunched for the same call. MTCC will request an initial report from paramedics by radio as early as possible. The transport physician (TP) will decide to launch or stand down based on this report.

   If STARS responds to the call, the TP will be the most responsible physician (MRP) and paramedics will transport as directed by the TP.

   If transporting, paramedics must also notify the Virtual Emergency Care & Transport Resource Service (VECTRS) as soon as possible. VECTRS will provide trauma team activation (TTA) if transporting to the Provincial trauma center, or a trauma prealert if transporting to an alternate destination.

2. If STARS is not involved or is stood down, VECTRS will assume responsibility and the VECTRS emergency physician (EP) will assume the MRP role.

   Paramedics will contact VECTRS for on-line trauma support (OLTS) and will transport as directed by the VECTRS EP or advanced care paramedic (ACP).

   If transporting, VECTRS may conference in the TP and air medical crew (AMC) for consideration of air intercept. Paramedics may be directed to an alternate location for rendezvous.

3. Paramedics should anticipate the need for additional resources or clinical support. Radio MTCC early for backup, advanced life support (ALS) intercept, and / or additional resources (e.g. fire service) for extrication, egress and loading.

4. The decision to transport the trauma arrest victim without a return of spontaneous circulation (ROSC) or discontinue resuscitation in the field, as well as determining an appropriate destination if transporting, is complex.

   Paramedics with the primary (PCP) work scope must call VECTRS and consult OLTS for all nonasystolic trauma arrests. Paramedics with both the PCP and intermediate (ICP) work scopes must consult OLTS for all trauma arrests in patients up to 18 years of age, regardless of the underlying cardiac rhythm.

5. Airway maneuvers during resuscitation are considered aerosol-generating medical procedures (AGMP). Chest compressions and defibrillation are not. Appropriate personnel protective equipment (PPE) is required (A09).

   Always maintain personal safety when performing CPR during transport.

6. The scientific literature is divided on the risks versus benefits of mechanical compression devices (MCD) in patients with traumatic arrest, with some studies showing increased bleeding and death. ERS policy at this time precludes the use the AutoPulse™ during traumatic arrest.

7. For patients less than eight years of age or 25 kilograms weight use pediatric pads. If the patient's age is unknown, use visible signs of puberty to differentiate a child from an adolescent. If pediatric pads are not available, use adult pads but ensure separation by at least 2.5 cm (consider antero-posterior placement).

   When defibrillating a patient with an implanted cardioverter-defibrillator (ICD) or pacemaker, place the electrodes at least eight centimeters (three inches) away from the pulse generator.

8. Traumatic cardiac arrest resulting in asystole in universally fatal (asystole must be confirmed in two leads). Emergency transport without hope of survival exposes paramedics and the public to unnecessary risk. Continued resuscitation and transport are rarely indicated.

9. Cardiac arrest from trauma most often starts with pulseless electrical activity (PEA), due to insufficient cardiac filling from blood loss. Other causes include tension pneumothorax and pericardial tamponade (table A). It will rapidly progress to asystole if uncorrected.

   If opening the airway and staunching bleeding does not result in the return of spontaneous circulation (ROSC) it is highly unlikely that further prehospital management will be effective. Advanced interventions at a hospital (e.g. decompression of tension pneumothorax, transfusion, surgery) may be life-saving save a life, but only if they are *rapidly* available.

   Decompression of tension pneumothorax *may* be available at a local emergency department (ED). Scene time should be minimized.

10. Ventricular fibrillation (VF) or ventricular tachycardia (VT) are uncommon initial rhythms in trauma arrest. However, isolated blunt precordial force can result in these without other serious injuries, a phenomenon known as *commotio cordis*. This usually responds well to prompt high-quality CPR and rapid defibrillation. Epinephrine and amiodarone are rarely necessary, but should be considered in shock-refractory cases.

11. The "CPR-analyze" sequence represents two minutes of CPR, followed by a brief pause for rhythm analysis, and immediate defibrillation if indicated. Minimize interruptions in chest compressions and limit all interruptions to ten seconds or less. Continue chest compression while the automated external defibrillator (AED) is charging.

12. In some circumstances and even with little probability of survival, transporting to a health care facility and deferring the decision about discontinuation to a health care provider with additional training and experience may be in the best interest of the patient's family *and providers* (e.g. child victim, family distress, provider uncertainty). As well, organ donation should might be a consideration.

13. Over-ventilation may reduce blood flow to the brain, which can worsen a neurological injury.

14. Provide supplemental oxygen to target pulse oximetry (SpO_2) value of 92% to 98% in adults and 94% to 98% in children.

15. Do not implement permissive hypotension if an intracranial injury is suspected. Aggressive crystalloid administration can create coagulopathy, dislodge fragile clot, increase bleeding and mortality. In the absence of head injury, mild permissive hypotension should be considered, based on the following age cohorts. Carefully and continuously reassess the patient's level of consciousness (LOC) to monitor cerebral perfusion.
    - Adult = 90 mmHg
    - Adolescent = 80 mmHg
    - Child = 70 mmHg
    - Infant = 60 mmHg

16. Paramedics will provide notification (including an estimated time of arrival) to receiving ED staff at an appropriate interval before arrival.

17. Injuries incompatible with survival include decapitation, incineration, transection of the thorax or abdomen, substantial destruction of vital organs (heart, lungs, brain), or separation of vital organs from the body.

TABLE A: INJURIES CAUSING TRAUMATIC CARDIAC ARREST	
• Airway obstruction • External or internal exsanguination • Shock • Intracranial injury with cerebral herniation	• Hypoxemia • Flail chest • Tension pneumothorax • Open pneumothorax

LINKS / REFERENCES
• A09 - AEROSOL GENERATING MEDICAL PROCEDURES • C02 - ADVANCED CARDIAC ARREST • M05.2 - EPINEPHRINE FOR CARDIAC ARREST • M14 - AMIODARONE

APPROVED BY	
	
EMS Medical Director	EMS Associate Medical Director

VERSION CHANGES (refer to X06 for change tracking)
• Paramedics to radio MTCC with initial report for STARS prealert / autolaunch • Paramedics to call VECTRS for OLTS • Reminder to call OLTS on all pediatric trauma arrests • Flow chart & notes revised for great clarity and ease of use • Separation of rhythms in flow chart • Use of AutoPulse™ contraindicated • Removal of quick reference medication guide to avoid conflict with standing orders