Basic Life Support
Primary Care Paramedic
Patient Care Protocols

Provincial Medical Oversight

Version 5.3
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Newfoundland & Labrador

ACKNOWLEDGEMENT

OFFICE OF THE
PROVINCIAL MEDICAL OVERSIGHT PROGRAM

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This OLMC line is only to be used for medical advice when actively engaged in patient care

AUTHORIZATION FOR PROTOCOLS

OVERVIEW

These protocols were developed for the following reasons:

1. To provide the EMS provider with a quick field reference
2. As written standards of care which are consistent throughout the Province of Newfoundland & Labrador. Users of these protocols are to have knowledge of more detailed and basic patient management principles found in EMS textbooks and literature appropriate to the EMS provider's level of training and licensure.
3. All users must have strict adherence to these protocols.

POLICY

Practitioners will work within their scope of practice specifically guided by procedures and protocols as authorized by the Provincial Medical Director or the Assistant Provincial Medical Director.

SCOPE

Primary Care Paramedics actively medically certified with the Provincial Medical Oversight Program (PMO) and who are on duty with a public BLS ambulance service that is recognized by the Department of Health and Community Services.

PURPOSE

The Procedures and Protocols are based on current best practice and evidence. These protocols are issued by the Provincial Medical Director and will be supported by Regional Medical Advisor and On-Line Medical Control physicians. These protocols govern the practice of EMS Providers who are registered and certified with the Provincial Medical Oversight Program by the authority of Department of Health and Community Services.

REVIEW

These protocols will be subject to annual review. New or revised protocols will be issued as applicable changes occur. If there are errors or omissions, please contact PMO.

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CONTENTS

GENERAL STANDARDS OF CARE

General standards of care should be performed as necessary with all patients based on your scope of practice

- Scene assessment (safety issues, MOI, # of patients, need for additional resources)
- Use of personal protective equipment (PPE) and universal precautions
- Assessment of level of consciousness, airway, breathing and circulation
- Airway management
- Administration of oxygen
- Assisted ventilation
- Obtained detailed history
- Perform physical examination
- Obtain vital signs
- Measure blood glucose level
- Obtain 12 lead ECG
- Establish vascular access
- C-spine and Spinal immobilization
- Perform CPR as per Heart & Stroke guidelines; NRP as per Canadian Pediatric Society
- Standards of trauma care to follow guidelines of International Trauma Life Support (ITLS)
- Consider ACP Intercept
- Consider differential diagnosis
- Frequent reassessment, particularly after intervention
- Radio and verbal report to receiving facility
- Completion of Patient Care Record

DOCUMENTATION

Ensure complete, thorough and timely documentation of patient care activities.

Patient Care Reports (PCR's) should contain enough detail so that it is easily apparent why specific treatments were offered or decisions were made. Careful documentation is especially important when documenting cases including but not limited to:

- Traumatic Cardiac Arrest
- Obvious Death
- Do-Not-Resuscitate (DNR)
- Termination of Resuscitation (TOR)
- Determination of Death
- Spinal Assessment
- Refusal of Care

If a PCR is reviewed, your documentation should present a logical train of thought that is easily followed through the appropriate protocol or algorithm.

GENERAL STANDARDS OF CARE Cont'd

To use these protocols as they were intended, it is necessary to know the philosophy, treatment principles and definitions, which guided the physicians and paramedics who drafted these protocols:

1. **Assessment and treatment should very RARELY delay transport.**
   IVs should be started en route except in those situations where treatment at the scene of an out-of-hospital emergency is in the patient's best interest such as shock with prolonged extrication or a cardiac patient when full ACLS care is available. Delays in transport should be discussed with OLMC

2. **Inability to establish voice contact with OLMC**
   There are rare situations where the patient is unstable and delay in treatment threatens the patient's life or limb. If, after good-faith attempts, the practitioner cannot contact OLMC, then the practitioner is authorized to use any appropriate treatment protocols as standing orders. Continue attempts to contact OLMC and document these attempts on the patient care report. See Communication Failure in Communications Reference **(Pg 107)**

3. **Treatments/drugs should be given in the order specified**
   PMO recognizes that often treatments are delivered simultaneously and more than one protocol may be used. OLMC may request treatments/drugs out of sequence for medical reasons.

4. **Teamwork in patient care**
   Partnered crew members are required to collaborate throughout the duration of the patient encounter and discuss clinical findings and management of the patient. Crew members are jointly responsible for the overall care of the patient. In the event of disagreement surrounding appropriate management approach, contact OLMC as per Medical Authority directive **(Pg 8)**

5. **Variation in clinical practice**
   Practitioners are expected to utilize their best clinical judgement with paramount consideration to the most reasonable and prudent care of the patient. It is not reasonable to expect a protocol compilation to cover every possible clinical situation and/or patient need. Protocols are expected to cover most time-dependent emergencies and practitioners are reminded that deviation from protocol may be required in rare circumstances. In the event of deviation from treatment protocol, the reasoning behind the treatment management decisions made must be outlined in the patient care record and the event must be reported to PMO immediately or if the variation occurs outside of business hours by the next business day, to ensure sufficient review of the case, as well as to determine if a new protocol is warranted.

6. **Duty to report in cases of medical error or adverse events**
   Reporting of medical error assists in mitigating future error by permitting an avenue of education and remediation for involved practitioners and is essential to ensure appropriate patient follow-up. Reporting of medical error is mandatory and represents an essential component of professional paramedicine practice. Any medical error or adverse events made by any crew member during the care of a patient must be reported to PMO immediately or if the error occurs outside of business hours by the next business day.

MEDICAL AUTHORITY

The ultimate responsibility for the decisions made in patient care are hereinafter referred to as medical authority. Despite the following hierarchy for patient care decisions, partnered crew members are required to collaborate throughout the duration of the patient encounter and discuss clinical findings and management of the patient. Crew members are jointly responsible for the overall care of the patient.

Medical authority is determined by the individual's level of training. Personnel with the highest level of training shall have medical authority during ambulance responses.

Personnel with the same level of training shall have medical authority determined by the amount of experience at that training level. The person with the most experience performing at that training level shall be granted medical authority.

Personnel who have the same training level and same experience at that training level shall determine the course of treatment for the patient by mutual agreement. If persons with the same training level and experience cannot mutually agree on the course of treatment they must contact OLMC for direction.

Failing the above, if there is disagreement regarding course of management at any time, regardless of training level or experience, practitioners must contact OLMC for direction.

PART I: ADULT EMERGENCY PROTOCOLS

AIRWAY MANAGEMENT

1. Manage airway as needed (airway maneuver and/or suction and/or adjunct)

- Follow current Heart & Stroke guidelines for management of respiratory arrest
- If severe respiratory distress or respiratory depression assist ventilation with positive pressure ventilation:

    - Perform bag mask ventilation (BMV) using 100% O_2 as needed
        - Consider **Predictors of Difficult Bag Mask Ventilation[1]**
        - Optimize BMV utilizing **Optimal Bag Mask Ventilation[2]** techniques
        - Observe for **Signs of Effective Bag Mask Ventilation[3]**

- If airway obstructed follow current Heart & Stroke guidelines for management of foreign body obstructed airway procedures as necessary

2. Continuous cardiac, SpO_2 and BP monitoring
3. Request ACP intercept (if available)
4. IV access during transport

[1]PREDICTORS OF DIFFICULT BAG MASK VENTILATION – "BOOTS"

B	**B**eard
O	**O**bese
O	**O**lder
T	**T**oothless
S	**S**nore / Stridor

[2]OPTIMAL BAG MASK VENTILATION / APPROACH TO DIFFICULT BAG MASK VENTILATION

1) Reposition airway – exaggerated head tilt or exaggerated jaw thrust
2) Position ear level with sternum (Ramp[4] patient if obese)
3) Consider foreign body
4) Consider alternative mask size
5) Insert oral and/or nasal airway
6) Perform two-person bag mask ventilation

[3]SIGNS OF EFFECTIVE BAG MASK VENTILATION

1) Rising SpO_2
2) Visible chest rise
3) Audible breath sounds
4) Good seal (no air leak) and good compliance

[4]RAMPING FOR PATIENTS WITH OBESITY	

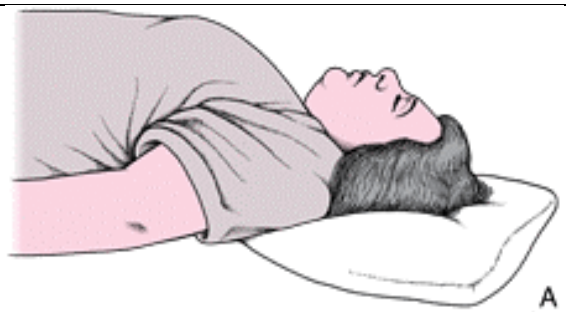



Figure A: Patient positioned without ramping	Figure B Patient ramped so that the sternum and ear line up.This position should improve ventilation

RESPIRATORY DISTRESS WITH BRONCHOSPASM
(COPD, Emphysema, Chronic Bronchitis, Asthma)

This protocol is intended for management of patients with respiratory distress most likely resulting from COPD, emphysema, chronic bronchitis or asthma.

1. Manage airway
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature and blood glucose
5. IV access during transport
6. Administer a combination of both **salbutamol** and **ipratropium bromide** as per dosing guidelines below:

	MDI + aerochamber[1]		**Nebulized with O_2**
Salbutamol	4-8 puffs (100 mcg/puff)	**OR**	5 mg
Ipratropium bromide	4-8 puffs (20 mcg/puff)		500 mcg
Repeat every 5 minutes if indicated (Not to exceed a maximum total of 3 administrations)			

[1] Each puff must be followed by at least 4 breaths

7. **If confirmed COPD (Emphysema or Chronic Bronchitis) and** respiratory status has improved to patient's baseline after treatment:

   - Consider replacing NRB with nasal cannula to maintain SpO_2 90-92%
   - If there is continued respiratory distress continue O_2 via NRB

Contact OLMC if:

1. Respiratory distress is unrelieved by **salbutamol** and/or **ipratropium bromide** for consideration of:
   - Continued administration of **salbutamol**
   - Administration of **epinephrine 1:1000** 0.3 mg IM
2. Uncertainty about the cause of the patient's respiratory distress and for advice regarding appropriate management

NOTES

- Patients should be treated with MDI and aerochamber unless it is deemed inappropriate, ineffective or patient cannot tolerate
- **Salbutamol** or **ipratropium bromide** may be administered singularly if the patient has hypersensitivity to one of the other medications.

ALLERGY AND ANAPHYLAXIS

FINDINGS OF ANAPHYLAXIS

1) Acute onset (minutes to hours) of **TWO OR MORE** of the following after exposure to a **LIKELY ALLERGEN**:

- Skin symptoms (hives, itching, flushing)
- Oropharyngeal edema (lips, tongue, uvula)
- Respiratory compromise (dyspnea, wheeze, stridor, hypoxemia)
- Gastrointestinal symptoms (crampy abdominal pain, vomiting, diarrhea)
- Reduced blood pressure or associated symptoms (hypotonia, collapse, syncope)

OR

2) Hypotension alone after exposure to a **KNOWN ALLERGEN** for patient

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. IV access
5. If shock present, administer a fluid bolus as per **Adult Fluid Therapy Protocol (Pg 48)**
6. If **Findings of Anaphylaxis** present administer:

- **Epinephrine 1:1000** 0.3 mg IM, ideally in the lateral thigh
  - Repeat once in 5 minutes if no improvement

  AND

- **DiphenhydrAMINE[1]** 50 mg IV

7. If respiratory distress present (including wheezing), administer **salbutamol**:

	MDI + aerochamber[1]	**OR**	**Nebulized with O_2**
Salbutamol	4-8 puffs (100 mcg/puff)		5 mg
Repeat every 5 minutes if indicated (Not to exceed a maximum total of 3 administrations)			

[1]Each puff must be followed by at least 4 breaths

[1] NOTE

- Patients should be treated with MDI with aerochamber unless it is deemed inappropriate, ineffective or patient cannot tolerate
- Epinephrine is relatively contraindicated in the setting of ischemic chest pain. In the rare event that you suspect a patient has ischemic chest pain combined with anaphylaxis, contact OLMC prior to administration of **epinephrine**.
- May give **diphenhydrAMINE** 25-50 mg IV/IM alone for isolated hives.
- **There is NO absolute contraindication to epinephrine in a patient with anaphylaxis.**
- **DiphenhydrAMINE DOES NOT improve angioedema or respiratory symptoms in anaphylaxis.**

CARDIAC ARREST

If patient meets criteria outlined in the **DNR Protocol (Pg 18)** or **Obvious Death Protocol (Pg 17)** do not proceed with resuscitation

1. Confirm Vital Signs Absent (VSA) and initiate chest compressions
2. 100% O_2 via BMV (15 L/min)
3. Continuous cardiac and SpO_2 monitoring
4. Request ACP intercept (if available)
5. Consider and treat **Reversible Causes[1]**
6. IV access **(DO NOT delay or interrupt CPR)**

GENERAL GUIDELINES

- Confirm absence of pulse – pulse check **NOT** exceeding 10 seconds
- Initiate compressions immediately: **C-A-B Sequence**
- Begin CPR while immediately attaching defibrillator – Analyze, **defibrillate without delay if indicated**
- Ensure high quality CPR
  - Minimize interruptions in CPR
  - Allow full recoil of the chest between compressions
  - Rotate rescuers every 2 minutes (if resources allow) concurrent with pulse checks
- After third rhythm analysis determine if patient meets **Termination of Resuscitation (TOR) Protocol (Pg 16)** prior to initiating transport. If patient does not meet TOR, continue CPR and initiate transport.
- **Analyze rhythm every 10 minutes** thereafter. Continue CPR.
- If return of spontaneous circulation (ROSC) proceed immediately with **Post Cardiac Arrest Care Protocol (Pg 15**)
- If re-arrest occurs during transport, resume Cardiac Arrest Protocol

HYPOTHERMIC CARDIAC ARREST (CORE TEMPERATURE LESS THAN 32ºC)

- Hypothermic patients are to be resuscitated as per Cardiac Arrest Protocol above
- Resuscitation will be continued until active re-warming has returned core temperature to normal or there has been ROSC

[1] REVERSIBLE CAUSES OF CARDIAC ARREST

Hypovolemia
Hypoxia
Hypothermia
Hypoglycemia
Drug Overdose

POST CARDIAC ARREST CARE (RETURN OF SPONTANEOUS CIRCULATION)

1. Manage airway and assist ventilations as necessary
2. O_2 via NRB (15 L/min)

- Assist ventilations with BVM if signs of inadequate ventilation are present:
  - Abnormal sounds with breathing, such as snoring, gurgling or stridor
  - Fatigue with respiratory effort
  - Gasping
  - Irregular breathing pattern with periods of apnea
  - Little or no chest rise
  - Decreased or absent breath sounds ("silent chest")
  - Rate and/or depth of breathing grossly insufficient for age
  - Apnea

- If assisted ventilation is indicated, deliver ventilations by BVM at a rate of 12 breaths per minute (1 breath every 5 seconds)
  - Deliver each breath over 1 second
  - Deliver sufficient volume to produce visible chest rise
  - Avoid excessive ventilation (hyperventilation)

3. If defibrillator was used, leave pads in place
4. Request ACP intercept (if available)
5. Continuous cardiac (not via defib pads) SpO_2 and BP monitoring
6. Perform 12 Lead ECG
7. Two large bore IVs (initiate second IV during transport)
8. Consider and treat **Reversible Causes[1]**
9. If re-arrest occurs, resume **Cardiac Arrest Protocol (Pg 14)**
10. If persistent hypotension proceed with **Cardiogenic Shock Protocol (Pg 25)**

[1] REVERSIBLE CAUSES OF CARDIAC ARREST

Hypovolemia
Hypoxia
Hypothermia
Hypoglycemia
Drug Overdose

NOTE:

- **A copy of the code summary and PCR must be left with the receiving facility**

TERMINATION OF RESUSCITATION (TOR)

This TOR Protocol CANNOT be utilized in situations related to:

1) Age less than 18 years
2) Pregnancy
3) Hypothermia
4) Electrocution including lightning strike
5) Trauma (**Blunt** or **Penetrating Traumatic Cardiac Arrest Protocol Pg 46-47**)
6) Poisoning or drug overdose
7) Sudden reversible event (anaphylaxis, choking, drowning with submersion less than 60 minutes, asphyxia)

In these cases resuscitation and transport must proceed as per usual cardiac arrest protocols.

CRITERIA FOR TERMINATION OF RESUSCITATION

Termination of resuscitation is to be applied when resuscitation of cardiac arrest has been initiated and prior to transport

The PCP can terminate resuscitative efforts when ALL of the following criteria are met:

1) Cardiac arrest unwitnessed by EMS provider
2) No ROSC has occurred after 3 full rounds of CPR **by EMS Personnel**
   AND
3) No shock(s) advised or delivered by EMS provider or Medical First Responder

If ALL requirements are met, proceed with the Management of Death Protocol (Pg 19)

OBVIOUS DEATH

The PCP will **not** start resuscitation of a patient of any age that has suffered cardiac arrest (not breathing and no palpable pulse) if any of the following signs of obvious death are present:

1) Rigor mortis
2) Dependent lividity
3) Decapitation
4) Transection of the torso
5) Decomposition
6) Confirmed submersion greater than 60 minutes
7) Obvious destruction of brain, heart or lungs that is incompatible with life
8) Other catastrophic injury that is incompatible with life

NOTE

- Proceed with **Management of Death Protocol (Pg 19)** upon recognition of cardiac arrest meeting Obvious Death criteria

DO NOT RESUSCITATE (DNR)

This DNR Protocol CANNOT be implemented in situations related to:

1) Trauma (See **Blunt or Penetrating Cardiac Arrest Protocol Pg 46-47**)
2) Suicide attempt
3) Sudden reversible events: choking, asphyxia, anaphylaxis, drowning, hypothermia, electrocution, toxic ingestion or overdose
4) Pregnancy

The PCP will **not** start or may terminate resuscitation of a patient of any age that has suffered from cardiac arrest (not breathing and no palpable pulse) in either of the following circumstances:

1. A Valid DNR Order or Advance Health Care Directive **(Pg 116)** is presented **and** a reasonable effort has been made to verify the identity of the patient named on the document

OR

2. A legally recognized Substitute Health Care Decision Maker (SHCDM) **(Pg 116)** is present and states that the patient expressed a desire not to be resuscitated in this type of circumstance **or** presents reasons why the patient should not be resuscitated while maintaining the patient's best interest

AND

The PCP must **not** have any concerns about the appropriateness of withholding resuscitation based on:

1) Doubts about the patient's best interest
2) The validity of the DNR order or Advance Health Care Directive
3) The identity of the person making the request as a SHCDM
4) The patient's family that are present being unable to reach an agreement about withholding resuscitation

NOTES

- If the PCP has any concerns regarding the validity of the DNR request – full resuscitative efforts should be initiated and contact made with OLMC if necessary
- If a request for DNR is made prior to the patient suffering complete cardiac arrest – provide supportive care (oxygen, airway support and comfort measures) and contact OLMC with transport to hospital as appropriate
- Proceed with **Management of Death Protocol (Pg 19)** upon recognition of cardiac arrest with valid DNR request

MANAGEMENT OF DEATH (Resuscitation Terminated or not indicated)

CAUTION

This protocol is **not** to be utilized as the initial assessment of the unconscious patient to determine if they are in cardiac arrest. The initial assessment to determine if cardiac arrest is present should be conducted in accordance with the standards outlined in the Cardiac Arrest Protocol, with a pulse check not exceeding 10 seconds duration.

This protocol outlines the criteria that must be evaluated and documented in the PCR **after** it has been determined that resuscitation from cardiac arrest is not indicated or should be terminated when directed to do so by the **Blunt or Penetrating Cardiac Arrest (Pg 46-47), DNR (Pg 18), Obvious Death (Pg 17)** or **Termination of Resuscitation (Pg 16) Protocol(s).**

Once it is determined that resuscitation from cardiac arrest is not indicated **or** should be terminated, proceed with the following steps:

1. Evaluate for, confirm and document the presence of all the **Documentation of Death Criteria**[1]
2. Determine if the death meets criteria for **Reportable Death**[2] or **Expected Death**[3]

- If the death was an **Expected Death** inquire whether the patient is enrolled in the "End of Life Program" and proceed as follows:
  - If patient enrolled in the End of Life Program, contact the health care professional that has been identified to the family for purposes of notification of death
  - If the patient is not enrolled in the End of Life Program, notify the family physician or designate. If the family physician or designate is unavailable, contact the police

- If the death meets the criteria of a **Reportable Death** proceed as follows:
  1) Do not disturb the scene – limit access only to essential responders
  2) Leave all disposable medical equipment and supplies used in the resuscitation in place – do not remove from the scene
  3) Leave defibrillation pads and airway adjuncts in position
  4) Leave the deceased in position – do not move or cover the body
  5) Exit the scene of the death immediately using the same pathway as was used to enter
  6) Do not permit anyone entrance into the scene
  7) Notify police

3. Provide comfort to the bereaved

- Disclose death simply and directly with warmth and compassion
- Listen and empathize
- Assist locating support – relative, friend, clergy, etc.

MANAGEMENT OF DEATH (RESUSCITATION TERMINATED OR NOT INDICATED) Cont'd

4. Allow the bereaved to see the body if they wish:

- If not a reportable death, prepare the deceased – clean up medical supplies, cover with blanket, place pillow under head, close eyes, wipe up body fluids, etc.
- Prepare the bereaved for what they will see and answer any questions
- Do not rush the bereaved

5. Remain on-scene until appropriate supports arrive for the bereaved and/or:

- Family physician, police, medical examiner or funeral home arrive and assume control of the deceased
- Crew is requested to respond to another life-threatening time-dependent emergency call

[1]DOCUMENTATION OF DEATH CRITERIA

Assess and document **ALL** of the following criteria:

1) No palpable carotid pulse (assess for 60 seconds)
2) No spontaneous respiratory effort (assess for 60 seconds)
3) No heart sounds (assess for 60 seconds)
4) Non-reactive pupils

[2]REPORTABLE DEATH CRITERIA

When **ANY ONE OR MORE** of the following criteria present:

1) Death as a result of violence, accident or suicide
2) An unexpected death when the person was in good health
3) Where the person was not under the care of a physician
4) The death is obviously suspicious in nature
5) Where the cause of death is undetermined
6) Death is the result of improper or suspected negligent treatment by another person

[3]EXPECTED DEATH

Any death that does not meet Reportable Death Criteria

NOTES

- Transport of the deceased must be completed by a licensed funeral director
- An ambulance may transport the deceased only if the deceased is in a public place and the funeral director will be extensively delayed (greater than 1 hour) or as directed by police or OLMC

ALTERED LEVEL OF CONSCIOUSNESS

1. Manage airway and assist ventilations as necessary
2. O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Consider Spinal Motion Restriction
4. Continuous cardiac, SpO_2 and BP monitoring
5. Measure temperature and blood glucose
6. IV Access
7. Perform 12 lead ECG
8. Consider ACP intercept if available
9. Consider and treat underlying **Causes of Altered Mental Status[1]**

- If suspected infection, proceed with **Sepsis Protocol (Pg 24)**
- If suspected seizure, proceed with **Convulsive Seizure Protocol (Pg 34)**
- If suspected allergy, proceed with **Allergy and Anaphylaxis Protocol (Pg 13)**
- If suspected overdose, proceed with **General Approach To Toxin Management Protocol (Pg 39)**
- If suspected trauma, proceed with **Trauma Alert Protocol (Pg 42)**
- If suspected agitated/combative, proceed with **Agitated/Combative Protocol (Pg 37)**
- If suspected stroke, proceed with **Acute Stroke Protocol (Pg 29)**
- If suspected hypoglycemia, proceed with **Symptomatic Hypoglycemia Protocol (Pg 31)**
- If suspected hypothermia, proceed with **Hypothermia Protocol (Pg 54)**
- If suspected hyperthermia, proceed with **Heat Related Illness Protocol (Pg 53)**
- If unknown etiology, consider **Shock Protocol (Pg 22)**

[1] CAUSES OF ALTERED MENTAL STATUS

- **A**lcohol, Acidosis, Allergy
- **E**pilepsy, Electrolytes, Endocrine
- **I**nfection
- **O**piates, Overdose, Oxygen deprived
- **U**remia, Underdose
- **T**rauma
- **I**nsulin
- **P**oisoning, Psychosis
- **S**troke, Seizure, Shock
- **H**eart Attack (MI)
- **E**mbolism
- **A**ortic Obstruction
- **R**hythm disturbance
- **T**achycardia
- **H**ypoxia
- **H**ypo/hyperthermia
- **H**ypotension

SHOCK

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Control bleeding (if applicable)
4. Assess for **Signs and Symptoms of Shock[1]**
5. Continuous cardiac, SpO_2 and BP monitoring
6. Measure temperature and blood glucose

[1]SIGNS AND SYMPTOMS OF SHOCK

1) Hypotension (SBP less than 90 mmHg)

   AND

2) Any **one or more** of the following features:
   - Rapid and / or shallow breathing
   - Cool and / or clammy skin
   - Rapid and / or weak pulse(s)
   - Near fainting and / or fainting
   - Weakness

7. Two large bore IVs (initiate second IV during transport)
8. Perform 12 lead ECG
9. Consider causes of shock and treat accordingly:

   - If shock due to anaphylaxis, proceed with **Allergy and Anaphylaxis Protocol (Pg 13)**
   - If shock due to sepsis, proceed with **Sepsis Protocol (Pg 24)**
   - If shock due to cardiac etiology, proceed with **Cardiogenic Shock Protocol (Pg 25)**

10. For all other causes of shock or when the cause of shock is unknown, administer a fluid bolus as per **Adult Fluid Therapy Protocol (Pg 48)**

Contact OLMC if patient remains hypotensive after initial fluid bolus for consideration of:

- Additional IV fluid administration

SHOCK Cont'd

NOTES

- Shock is a life-threatening, progressive medical condition that results from the inadequate flow of oxygenated blood to critical organs and tissues of the body.
- When the blood pressure is inadequate to sustain a regular flow of oxygenated blood to the organs and tissues of the body, end-organ damage will ensue and shock will eventually result.
- Shock may result from a number of medical conditions including sepsis, trauma, blood loss, anaphylaxis, severe dehydration and various medical conditions.

CAUTION

- Trendelenburg positioning is not indicated in the treatment of shock and is not to be utilized
- Position the patient supine unless they are in severe respiratory distress
- If the patient in shock is suffering from severe respiratory distress, position them semi-sitting and assist ventilations as indicated

SEPSIS

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature and blood glucose
5. Two large bore IVs (initiate second IV during transport)
6. Perform 12 Lead ECG
7. If patient meets **Sepsis Inclusion Criteria[1]** administer a fluid bolus of 20 mL/kg 0.9% NaCl **regardless** of blood pressure

[1]SEPSIS INCLUSION CRITERIA

1) History suspicious for infection **OR** confirmed infection

AND

2) Any **TWO OR MORE** of the following clinical findings:
   - Temperature less than 36ºC or greater than 38ºC
   - Tachypnea (respiratory rate greater than 20)
   - Heart rate greater than 90

Contact OLMC if patient remains hypotensive after fluid bolus for consideration of:

- Additional IV fluid administration

DEFINITIONS

Severe Sepsis

Sepsis Inclusion Criteria + Any evidence of end-organ dysfunction
- Altered mental status, confusion or coma
- Renal dysfunction or poor urine output
- Respiratory distress or hypoxia
- Myocardial ischemia

Septic Shock

Sepsis Inclusion Criteria + SBP less than 90 mmHg despite administration of 20 mL/kg 0.9% NaCl

CARDIOGENIC SHOCK

CRITERIA FOR TREATMENT OF CARDIOGENIC SHOCK

1) Hypotension (SBP less than 90 mmHg)
   AND
2) Chest pain **OR** severe pulmonary edema **OR** cardiac dysrhythmia **OR** known cardiomyopathy
   AND
3) No history of trauma **OR** infection **OR** dehydration

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature and blood glucose
5. Perform 12 lead ECG
6. IV access
7. Request ACP intercept (if available)

SIGNS AND SYMPTOMS OF CARDIOGENIC SHOCK

- Altered level of consciousness
- Cool, pale or mottled skin
- Diaphoresis
- Hypotension
- Severe pulmonary edema (left heart failure)
- Decreased urine output

Contact OLMC for consideration of:

- IV fluid administration

Contact OLMC with full description of history and clinical findings including:

1. Vital signs
2. Lung sounds
3. Cardiac rhythm
4. Pedal edema assessment

Carefully observe for signs of fluid overload. Auscultate chest for crackles every 250 mL. If crackles present, stop bolus.

PULMONARY EDEMA

This protocol is intended for management of patients with **severe** and **acute** respiratory distress most likely resulting from pulmonary edema.

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Position patient upright if SBP greater than 100 mmHg
5. Perform 12 lead ECG
6. IV access
7. Request ACP Intercept (if available)
8. Administer **nitroglycerin** 0.4mg SL

- Repeat every 5 minutes if indicated to a maximum of 6 sprays, until symptoms are relieved or SBP falls below 100 mmHg
- If hypotension develops or SBP falls below 100 mmHg following the administration of nitroglycerin discontinue further administration

Contact OLMC:

- For consideration of administration of nitroglycerin beyond six sprays
- If there is uncertainty about the cause of the patient's respiratory distress and for advice regarding appropriate management

SIGNS AND SYMPTOMS OF PULMONARY EDEMA

- Severe respiratory distress
- Orthopnea
- Crackles
- Diaphoresis
- Nocturnal dyspnea
- Jugular vein distention
- Cough that may contain foamy, blood tinged sputum
- Peripheral edema

ISCHEMIC CHEST PAIN

This protocol is intended for management of patients with chest pain suspected to be of ischemic etiology.

1. Manage airway and assist ventilations as necessary
2. Administer O_2 to keep SpO_2 95% or greater
3. Continuous cardiac, SpO_2 and BP monitoring
4. Perform 12 lead ECG pre and post intervention and in accordance with **Serial 12 Lead ECGs[1] box**
5. Administer **ASA** 160–162 mg PO chewed
6. IV access
7. Administer **nitroglycerin[2]** 0.4 mg SL
   - Repeat every 5 minutes if indicated to a maximum of 6 sprays, until chest pain is relieved or SBP falls below 100 mmHg
   - If patient has no response to nitroglycerin following the administration of three (3) doses, discontinue use.
8. Request ACP intercept (if available)

[1] SERIAL 12 LEAD ECGs

Serial 12 lead ECGs must be performed as outlined below:

1) On scene (prior to treatment)
2) In ambulance just prior to transport
3) Every 15 minutes during transport (if transport time greater than 30 minutes)
4) Just prior to arrival to receiving health care facility
5) Any time patient condition or ECG rhythm changes

If the initial 12 lead demonstrates evidence of ST elevation MI serial 12 leads are not required unless there is a change in patient condition or ECG rhythm changes

[2] INFERIOR WALL MYOCARDIAL INFARCTION (MI)

- Do not administer nitroglycerin if an inferior wall MI is suspected or confirmed by 12 Lead ECG and / or patients SBP has been less than 100 mmHg at any time during current event
- Fluid therapy is not to be used to increase SBP to greater than 100mmHg to aid in nitroglycerin administration

STEMI ALERT

1) Notify receiving facility of "STEMI Alert" if ECG printout that reads "*****Acute MI***** or Left Bundle Branch Block" in a patient experiencing chest pain
2) **ASA** 160-162 mg PO chewed if not already administered
3) Establish 2nd IV during transport (same arm, if possible)
4) Complete Thrombolytic Checklist for STEMI during transport

Contact OLMC:

- For consideration of administration of nitroglycerin beyond six sprays

SYMPTOMATIC DYSRHYTHMIAS (ADULT)
(Suspected cardiac origin, non-traumatic)

This protocol is intended for patients with symptomatic or clinically significant cardiac dysrhythmias. A variety of cardiac dysrhythmias may lead to symptoms or clinically significant findings including:

- Bradycardia
- Wide Complex Tachycardia
- Narrow Complex Tachycardia
- Atrial Fibrillation with heart rate greater than 120
- Atrial Flutter

Examples of symptoms that should prompt concern for clinically significant dysrhythmia are provided below.

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Perform 12 lead ECG
5. IV access
6. Request ACP intercept (if available)

SIGNS AND SYMPTOMS OF CLINICALLY SIGNIFICANT DYSRHYTHMIAS

Signs

- Hypotension
- Shock
- Altered level of consciousness
- Tachypnea
- Hypoxia
- Respiratory distress
- Diaphoresis
- Pallor or mottled skin
- Vomiting

Symptoms

- Chest pain
- Dyspnea
- Syncope or presyncope
- Palpitation
- Nausea

ACUTE STROKE

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Establish and document **Last Seen Normal (LSN) Time[1]**
4. Continuous cardiac, SpO_2 and BP monitoring
5. Measure temperature and blood glucose

    - Treat hypoglycemia as per **Symptomatic Hypoglycemia Protocol (Pg 31)**

6. Determine if patient is candidate for direct transport to a Stroke Centre using **Paramedic Prompt Card (Pg 30)**
7. IV during transport

[1] LAST SEEN NORMAL (LSN) TIME

- The last time the patient was witnessed or confirmed in their usual state of health and completely without signs or symptoms of stroke

CAUTION

- If at any time during your patient contact there is airway compromise or patient condition becomes unstable, transport to the closest Emergency Department, even if it is not a designated Stroke Centre

PARAMEDIC PROMPT CARD FOR ACUTE STROKE PROTOCOL

Indications for Direct Transport to a Stroke Centre

Direct transport to a designated Stroke Centre will be considered for patient who meet **BOTH** of the following requirements:

1) New onset of **ANY ONE OR MORE** of the following symptoms suggestive of the onset of an acute stroke:
   - Unilateral arm **AND / OR** leg weakness or drift
   - Slurred speech **OR** inappropriate words **OR** unable to speak
   - Unilateral facial weakness or droop

   AND

2) Can be transported to arrive at a designated Stroke Centre within **4 hours** of a clearly determined **Last Seen Normal Time** or time of symptom onset

Contraindications for Direct Transport to a Stroke Centre

The presence of **ANY ONE OR MORE** of the following conditions excludes a patient from being transported directly to a Stroke Centre when there is a closer health care facility available:

- Uncorrected airway, breathing or circulatory problem
- GCS less than 10
- Blood glucose remains less than 4 mmol/L despite treatment as per Symptomatic Hypoglycemia Protocol
- Seizure at onset of symptoms or observed by paramedics
- Terminally ill or palliative care patient
- Pregnancy
- Symptoms of stroke completely resolved prior to paramedic arrival or assessment[1]
- No Stroke Centre within 4 hours of LSN time in your area
- Any history of:
  - Brain hemorrhage in the past 6 months
  - Brain tumor, arteriovenous malformation (AVM) or brain aneurysm
  - Stroke or brain surgery within last 3 months
  - Anticoagulation with any of the following medications:
    - Xarelto (Rivaroxaban)
    - Eliquis (Apixaban)
    - Pradaxa (Dabigatran)
    - Lixiana (Edoxaban)
    - Warfarin (Coumadin)

[1] If symptoms improve significantly or completely resolve during transport, continue transport to designated Stroke Centre

SYMPTOMATIC HYPOGLYCEMIA

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature and blood glucose level (BGL)
5. IV access
6. If blood glucose is less than 4 mmol/L, administer **ONE** of the following medications and recheck blood glucose in accordance with table below:

Patient able to maintain own airway (Awake and able to cough and swallow)	**IV established**	**Unable to establish IV**
Oral glucose options: 1) **Dex 4**® tablets 20 g (5 tablets) 2) **Insta-glucose**® 1 tube (30 g) 3) 1 cup (250 mL) of juice or pop (Non-diet) 4) 4 teaspoons (20 mL) or 4 packets of table sugar dissolved in water	**Dextrose 50% (D50%)** 25 g (50 mL) IVP	**Glucagon**[1] 1 mg IM
Recheck BGL in 15 minutes	Recheck BGL in 10 minutes	Recheck BGL in 20 minutes

7. Repeat Step 6 **once** if necessary
8. If the patient expresses a wish to remain home rather than continue care to hospital evaluate for **Treat and Release** inclusion and exclusion criteria **(Pg 32)**

Contact OLMC if blood glucose remains below 4 mmol/L after 2nd dose of **dextrose** or **glucagon**

[1] NOTES

- Anticipate that it could take up to 20 minutes to observe an effect from glucagon
- While waiting for glucagon to take effect, manage patient's airway as indicated and initiate transport

CAUTION

- If head injury or stroke suspected administer half of the usual dose of dextrose, recheck blood glucose and then administer the second half dose if necessary
- The goal is to correct hypoglycemia while avoiding transient hyperglycemia that may lead to cerebral edema

TREAT AND RELEASE PROTOCOL FOR HYPOGLYCEMIA

The Treat and Release Protocol is intended to be a patient initiated request for non-transport after resolution of hypoglycemia and return to normal level of consciousness. In all cases, transport to hospital should be presumed to be the usual outcome following treatment of hypoglycemia unless the patient requests non-transport or to remain at home.

If upon resolution of hypoglycemia and return to normal level of consciousness the patient requests non-transport proceed as follows:

1. Does the patient meet ALL inclusion criteria?

INCLUSION CRITERIA
Alert and cooperative
Capacity to refuse transport
In usual state of health before the hypoglycemic episode (no new medical concerns)
Competent adult bystander present to remain with patient
Patient is able to eat and monitor own blood sugar

If YES – Evaluate for exclusion criteria

If NO – Patient not eligible for Treat and Release – proceed with transport or contact OLMC if patient refuses transport

2. Does the patient have ANY ONE OR MORE exclusion criteria?

EXCLUSION CRITERIA
Non-diabetic patient
Patient on oral diabetic medications
Insulin overdose
Hypoglycemia despite compliance with normal insulin dosing and PO intake
History of hepatic or renal insufficiency

If YES – Patient not eligible for Treat and Release – proceed with transport or contact OLMC if patient refuses transport

If NO – Proceed with Treat and Release (including completion of Patient Refusal Form) and document presence of all inclusion criteria and absence of all exclusion criteria on PCR

NOTES

- If the patient meets all inclusion criteria and no exclusion criteria are identified contact with OLMC is not required. PCP's are required to document the presence of all inclusion criteria and absence of all exclusion criteria on the PCR.
- In all Treat and Release circumstances the patient must be advised to contact his or her family physician to arrange follow-up within 24-48 hours. Document this and all advice given on the PCR.
- Contact with OLMC is mandatory if the patient does not meet all inclusion criteria or any exclusion criteria are identified and the patient is refusing transport.

SYMPTOMATIC HYPERGLYCEMIA

This protocol is intended for patients who demonstrate findings of significant dehydration and presentations suggestive of diabetic ketoacidosis or hyperosmolar hyperglycemic state. Many diabetic patients may have blood glucose levels greater than 15 mmol/L during times of physiologic stress in the absence of dehydration and will not require fluid administration.

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature and blood glucose
5. IV access
6. If blood glucose is greater than 15 mmol/L **AND** patient shows signs of DKA[1] or signs of dehydration[2] administer a fluid bolus as per **Adult Fluid Therapy Protocol (Pg 48)**

Contact OLMC if you are uncertain as to whether the patient meets criteria for fluid administration

[1] SIGNS AND SYMPTOMS OF DKA	[2] SIGNS OF DEHYDRATION
• Polyuria • Polydipsia • Polyphagia • Tachypnea • Tachycardia • Nausea and vomiting • Abdominal pain • Signs of dehydration	• Dry mucous membranes • Decreased urine output (oliguria) • Tachycardia • Weakness or lethargy

CONVULSIVE SEIZURES

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Spinal immobilization if unprotected fall to ground and seizure has stopped if indicated by **C-Spine Assessment (Pg 43)** and **Spine Assessment for Backboard (Pg 44)**
4. Position patient

    - Actively seizing – place supine and protect from injury
    - Postictal – place left lateral recumbent and maintain airway

5. Continuous cardiac, SpO_2 and BP monitoring
6. Measure temperature and blood glucose

    - Treat hypoglycemia as per **Symptomatic Hypoglycemia Protocol (Pg 31)**

7. IV access
8. If available, request ACP intercept for active seizures or recurrent seizures (status epilepticus)

ADULT NAUSEA AND VOMITING

1. Manage airway and assist ventilations as necessary
2. O_2 as per **Oxygen Therapy Protocol (Pg. 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature and blood glucose
5. IV access
6. Position the patient in a position of comfort
7. If **severe** nausea and vomiting administer:

   - **DimenhyDRINATE** 25-50 mg IV/IM
     - Repeat once in 15 minutes if indicated (not to exceed a maximum total dose of 50 mg)

     OR

   - **Metoclopramide** 10 mg SIVP over 2 to 5 minutes if any of the following criteria apply:

     - Severe nausea and vomiting refractory to **dimenhyDRINATE** after 15 minutes since last dose
     - Allergy or contraindication to **dimenhyDRINATE**
     - Altered LOC or head injury

8. If **metoclopramide** has been administered and acute **extrapyramidal signs or symptoms**[1] develop, reassure patient and administer **diphenhydrAMINE** 50 mg IV

[1] EXTRAPYRAMIDAL SIGNS AND SYMPTOMS

- **Akathisia** – a severe and unpleasant sensation of restlessness in patients causing them severe anxiety and inability to sit still
- **Dystonia** – increased rigidity or muscle contraction that may result in twisting or abnormal postures
- **Dyskinesia** – abnormal or repetitive movements (e.g.: lip smacking, eye twitching, etc.)

Administration of diphenhydrAMINE is not indicated for treatment of chronic extrapyramidal signs and symptoms

NOTES

- **DimenhyDRINATE OR metoclopramide** may be administered by IM route if indications are present and you are unable to establish an IV.

PAIN MANAGEMENT

1. Manage airway and assist ventilations as necessary
2. O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2, and BP monitoring
4. IV access
5. Administer **ketorolac** 15 mg SIVP/IM if severe pain[1] due to one of the following:
   - Acute musculoskeletal trauma
   - Uncomplicated renal or biliary colic if the presentation is consistent with previous episodes
   - Mechanical back pain
   - Burns
6. If severe headache[2] and patient meets the **Criteria for Metoclopramide in Migraine[3]**, administer:
   - **Metoclopramide** 10 mg SIVP
     - May administer 10 mg IM if indications are present **AND** you are unable to establish an IV
     - If **metoclopramide** has been administered and acute **extrapyramidal signs or symptoms[4]** develop, reassure patient and administer **diphenhydrAMINE** 50 mg IV
7. If patient develops nausea or vomiting proceed with **Nausea and Vomiting Protocol (Pg 35)**

[3]CRITERIA FOR METOCLOPRAMIDE IN MIGRAINE

1) Patient has **all** of the following:
   - Acute and severe unilateral headache
   - History of diagnosed migraine
   - Presentation of current migraine is consistent with previous migraines
     - Any aura is consistent with previous auras

AND

2) Patient has **none** of the following:
   - Recent head trauma
   - New onset of fever greater than 38°C
   - New neurological abnormality, including acute seizure

[4] EXTRAPYRAMIDAL SIGNS AND SYMPTOMS

- **Akathisia** – a severe and unpleasant sensation of restlessness in patients causing them severe anxiety and inability to sit still
- **Dystonia** – increased rigidity or muscle contraction that may result in twisting or abnormal postures
- **Dyskinesia** – abnormal or repetitive movements (e.g.: lip smacking, eye twitching, etc.)

Administration of diphenhydrAMINE is not indicated for treatment of chronic extrapyramidal signs and symptoms

NOTES

[1] Document pain severity pre and post intervention.

[2] Consider migraine mimics, including stroke and pre-eclampsia.

AGITATED / COMBATIVE
(Patient is danger to self or others)

1. Contact police and request that they attend the scene immediately
2. Manage airway and assist ventilation as necessary
3. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
4. Continuous cardiac, SpO_2 and BP monitoring
5. Measure temperature and blood glucose

- Treat hypoglycemia as per **Symptomatic Hypoglycemia Protocol (Pg 31)**

6. Consider and treat **Reversible or Treatable Causes of Altered Mental Status[1]**
7. IV access
8. Request ACP intercept (if available)
9. Attempt verbal management techniques for crisis intervention to de-escalate the situation and calm the patient
10. If **Indications for Physical Restraint[2]** present, apply the least amount of physical restraint necessary to protect the patient from harming themselves or bystanders until the police arrive, as per **Agitated Combative / Physical Restraint Reference (Pg 110)**

[1] REVERSIBLE OR TREATABLE CAUSES OF ALTERED MENTAL STATUS

- Hypoxia
- Hypotension
- Hypoglycemia
- Medications or Toxins
- Sepsis

[2] INDICATIONS FOR PHYSICAL RESTRAINT

1) Imminent danger[3] to life or threat of physical harm to patient and/or bystanders

   AND

2) Attempts at verbal de-escalation have failed

   AND

3) Attempts to restrain do not place the practitioner(s) at significant risk of harm to themselves

[3] NOTES

Imminent Danger – an immediate threat of significant harm to one's self or others, up to and including death

Examples of Imminent Danger:

- Actively attempting suicide
- Actively attempting to cause serious bodily injury to others
- Attempting to jump from a building or moving vehicle

AGITATED / COMBATIVE Cont'd

CAUTION

- There is a high risk of positional asphyxia and/or aspiration in patients undergoing chemical or physical restraint. Close and continuous monitoring of these patients, including airway patency and adequacy of respirations is mandatory
- At **NO TIME** should the patient be restrained in the prone (face or chest-down) position
- Always maintain an ability to escape the scene. Position yourself between the patient and the exit at all times to maintain a safe exit should the situation escalate
- Be alert for potential weapons and hazards. If the patient has a weapon, do not attempt to disarm them. Instead, leave the scene and stage until the police declare the scene safe to re-enter
- Be aware of signs of increased agitation or aggression including, but not limited to:
  - Tense posture
  - Loud speech
  - Pacing
  - Threatening statements
  - Clenched hands
  - Hostile or aggressive body language

GENERAL APPROACH TO TOXIN MANAGEMENT

1. Scene safety: protect rescuers and patients from immediate danger and contamination
    - **Toxic exposures might require special precautions, including CBRNE precautions or decontamination, before patient treatment begins**
2. Manage airway and assist ventilations as necessary
3. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
4. Continuous cardiac, SpO_2 and BP monitoring
5. Measure temperature and blood glucose
6. IV access
7. Perform 12 Lead ECG
8. If seizure occurs refer to **Convulsive Seizure Protocol (Pg 34)**
9. Request ACP intercept (if available). Do not delay transport in cases of severely symptomatic patients

OPIOIDS

This protocol is intended for management of the severely symptomatic adult patient with suspected or confirmed ingestion or use of an opioid[1] agent.

Therapy is not intended to return patient to a normal level of consciousness. The goal of treatment is a respiratory rate greater than 10 per minute with adequate ventilation.

If **ALL** of the following criteria are met proceed with **naloxone** administration as outlined:

- Impaired consciousness
- Respiratory rate less than 10 per minute
- Pupil constriction (except in suspected meperidine (Demerol) or tramadol ingestion)
- Requiring assisted ventilation

Administer **naloxone[2]** 0.2-0.4 mg IM/IV

- Repeat every 2-3 minutes if indicated, titrated to improved respiratory drive

[1] EXAMPLES OF OPIOIDS INCLUDE BUT ARE NOT LIMITED TO:

- Morphine
- Hydromorphone (Dilaudid)
- Codeine
- Oxycodone (Percocet, OxyContin, OxyNEO)
- Fentanyl
- Tramadol (Tramacet)
- Meperidine (Demerol)
- Methadone
- Buprenorphine (Butrans)
- Heroin

[2] NOTES

- Return to normal alertness is not a required outcome following naloxone administration
- Meperidine (Demerol) or tramadol are opioids that do not cause pupil constriction
- Examine patient for transdermal opioid patches (placed on the skin), including fentanyl and buprenorphine (Butrans) and remove with a gloved hand

Contact OLMC for guidance if required.

UNCONTROLLED TRAUMATIC BLEEDING

1. Manage airway and assist ventilations as necessary
2. O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Control Bleeding:
   - Compressible site:
     - Apply direct pressure to site of active bleeding
     - If hemostasis achieved, apply pressure dressing and monitor for re-bleeding
   - Non-compressible site **OR** Hemostasis **not** achieved at a compressible site:
     - Insert **hemostatic gauze** into the wound and apply direct pressure for a minimum of three (3) minutes. Release manual pressure only when hemostasis is achieved, then apply pressure dressing over the hemostatic gauze. Monitor for re-bleeding.
   - Catastrophic extremity injury with massive hemorrhage:
     - Rapidly apply a tourniquet at least 5 cm proximal to the injury, tighten until bleeding is controlled
   - Suspected pelvic fracture:
     - Apply a **pelvic sling (Pg 41)** and tighten until reasonably stabilized
   - Femur fracture:
     - Apply a traction splint to mid-shaft femur fractures
4. Spinal immobilization, if indicated as per **C-spine Assessment Protocol (Pg 43)** or if suspected pelvic injury
5. Continuous cardiac, SpO_2 and BP monitoring
6. Measure temperature and blood glucose
7. Two large bore IVs (initiate second IV during transport)
8. Request ACP intercept (if available)

CAUTION

- Assess for both entry and exit wounds in penetrating trauma. Application of direct pressure on an entry wound while neglecting the exit wound can permit exsanguination. Remember to always assess the back of the trauma patient.

UNCONTROLLED TRAUMATIC BLEEDING Cont'd

Improvised Pelvic Sling

- Place a sheet, folded lengthwise, across the spine board at the level of the patient's pelvis.
- Place patient on spine board, on top of the sheet.
- Grab each end of the sheet and cross sheet ends across patient's pelvis in opposing directions
- Apply traction on each sheet end to increase tightness of sling without over compressing the pelvis. The goal is to provide reasonable stability to the pelvis and reduce internal bleeding.
- Hold traction on sheet ends until created sling is secured with a knot. Alternately, large surgical clamps can be used by clamping the sheet ends to the opposing sides of the created sling.
- Ensure sling is tight and prevent loosening of the sling.

Improvised Tourniquet

[1] NOTES

- It is essential to pre-alert the receiving health care facility as early as possible when transporting a patient with an uncontrolled, life threatening bleed. Ensure a **Trauma Alert** is called when performing a radio report.
- Record time of tourniquet application. Assess and document neurological status in the distal limb every 15 minutes. Ensure the medical staff at the emergency room are fully informed of the location and time of tourniquet application.
- Do not remove a hemostatic dressing or tourniquet once applied.
- If pelvic injury suspected, avoid log rolling the patient if at all possible and (if available), use a scoop stretcher to transfer the patient to the long spine board.

TRAUMA ALERT

Trauma Alert allows for the highest state of readiness and preparation prior to the trauma patient's arrival to hospital. It is important that the ambulance crew identify that the situation warrants a "Trauma Alert" and notifies the receiving hospital as soon as possible.

Trauma Alert Criteria

Mechanism of Injury
Death occurs in same compartment of a MVC
Fall greater than 5 meters (15 feet)
Vehicle vs. pedestrian collision
Patient ejected from the vehicle
MVC greater than 100 km/hr
Motorcycle or ATV collision
Vehicle roll-over
Any time the practitioner judges the mechanism of injury to constitute a major trauma
Physical Findings
Tachycardia or bradycardia
Hypotension
Respiratory distress
Glasgow Coma Scale less than 14
Paralysis or suspected spinal cord injury
Penetrating injury
Amputation proximal to wrist or ankle
Two or more proximal long bone fractures
Suspected pelvis fracture
Burns greater than 15% of total BSA or involving face or airway
Multi-system trauma (Involves two or more body systems)
Any time the practitioner judges the physical finding(s) to constitute a major trauma
Co-Morbidities
Age less than 5 or greater than 55 years
Pregnancy
Morbid obesity
Coagulopathy

C-SPINE ASSESSMENT

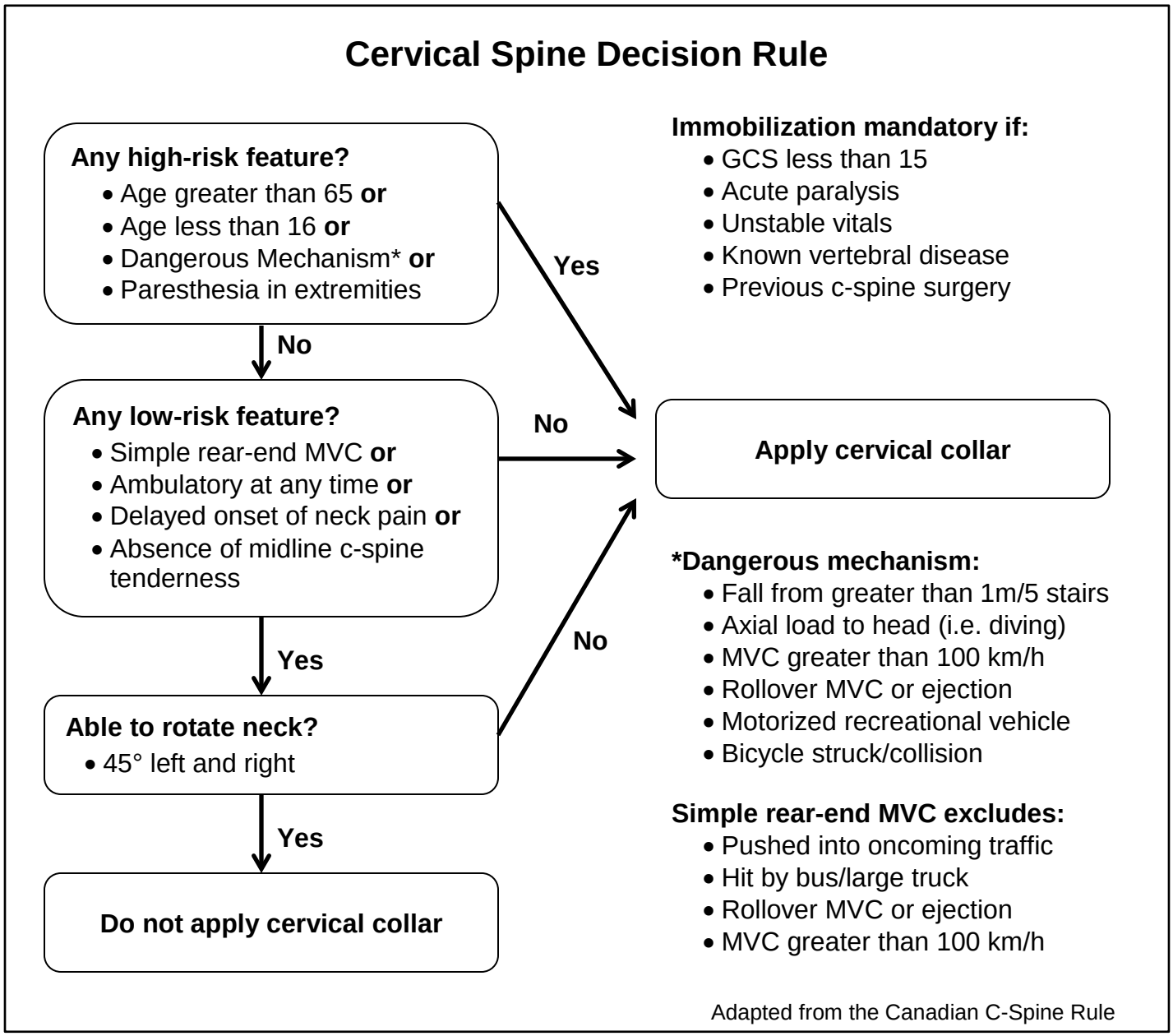
Spine assessment consists of two different decisions:

1. Does the patient require a cervical collar?

   And if yes,

2. Does the patient require a backboard?

The following decision rule is based on the Canadian C-Spine Rule and will be used to determine if a cervical collar is required. **It is only applicable in alert, cooperative patients with no recent history of drug or alcohol ingestion.** If there is uncertainty in the interpretation of this tool or the practitioner judges the patient to be high risk for cervical spine injury, **the practitioner must default towards application of a cervical collar.**



SPINE ASSESSMENT FOR BACKBOARD

Most patients requiring a cervical collar will not require transport on a backboard. If a backboard is required to transfer a patient to a stretcher, it should be promptly removed once they are placed on the stretcher. If the patient can ambulate, they should be encouraged to lie down on the stretcher on their own. Patients must be secured using the stretcher's five-point restraints.

Precautions should be taken to minimize movement of the spine during patient transfers. Scoop stretchers are an excellent option for transferring patients to a stretcher but must also be removed.

Patients must remain on a backboard during transport to hospital if:

- Backboard is part of a larger splinting strategy (pelvic or multiple long bone fractures)
- Significant trauma with altered LOC
- New neurologic complaint (paralysis or paresthesia)
- Obvious spinal deformity
- Patient is agitated or otherwise unable to cooperate with their own spinal motion restriction
- Patient is at risk of vomiting and may need to be turned on their side
- Backboard removal would unacceptably delay transport in a critical patient
- Practitioner feels there are extenuating circumstances requiring transport on a backboard

At the receiving facility, patient transfer devices such as sliding boards, scoop stretchers or roller devices should be used to minimize motion of the spine.

NOTES

- If there are any concerns regarding the application of this protocol, contact OLMC
- If a sending physician is requesting a patient be transferred on a backboard, it must be discussed with OLMC
- Backboards do not have a role in inter-facility transfers, even if a spine injury has been diagnosed.

BURNS
(Thermal and Chemical)

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Two large bore IVs if inhalation injury[1] **OR** greater than 20% Total Body Surface Area (TBSA) (Initiate 2nd IV during transport)
5. Stop the burning process:

    - Remove involved clothing
    - Brush off powdered chemicals and copious irrigation of any other chemical exposure

6. **Warm ambient temperature to avoid hypothermia**

7. Estimate % Total Body Surface Area (TBSA) affected using **Rule of Nines (Pg 117)** and provide wound care as outlined below:

Less than 5% TBSA	Cover with moist or saline soaked (10-25ºC) dressing
5 – 20% TBSA	Cover with clean, dry sheet or commercial dressing
Greater than 20% TBSA	Cover with clean, dry sheet or commercial dressing IV fluid administration as per **Parkland Formula (Pg 117)**

8. Remove all items including jewelry that have the potential to become constrictive to the neck, extremities or digits
9. Request ACP intercept (if available)

[1]SIGNS AND SYMPTOMS OF INHALATION INJURY

- Inability to swallow
- Sensation of throat swelling
- Hypoxemia
- Closed space fire victim
- Respiratory distress
- Facial burns
- Singed nasal hairs
- Carbonaceous sputum
- Wheezing or crackles
- Voice changes

CAUTION

- Cooling with ice or ice water is contraindicated as this may increase severity of injury and lead to hypothermia.

BLUNT TRAUMATIC CARDIAC ARREST

UNWITNESSED BLUNT CARDIAC ARREST

If the following two criteria are met on arrival to patient side then no resuscitation indicated:

1) Obvious external signs of major blunt trauma consistent with Trauma Alert Activation Criteria in the **Trauma Alert Protocol (Pg 42)**

   AND

2) Confirmed cardiac arrest by absence of spontaneous respiration and palpable pulse

WITNESSED BLUNT CARDIAC ARREST

ON-SCENE

- Begin CPR while attaching defibrillator
- Request ACP intercept (if available)
- IV access and administer 20 mL/kg 0.9% NaCl IV fluid bolus while transporting

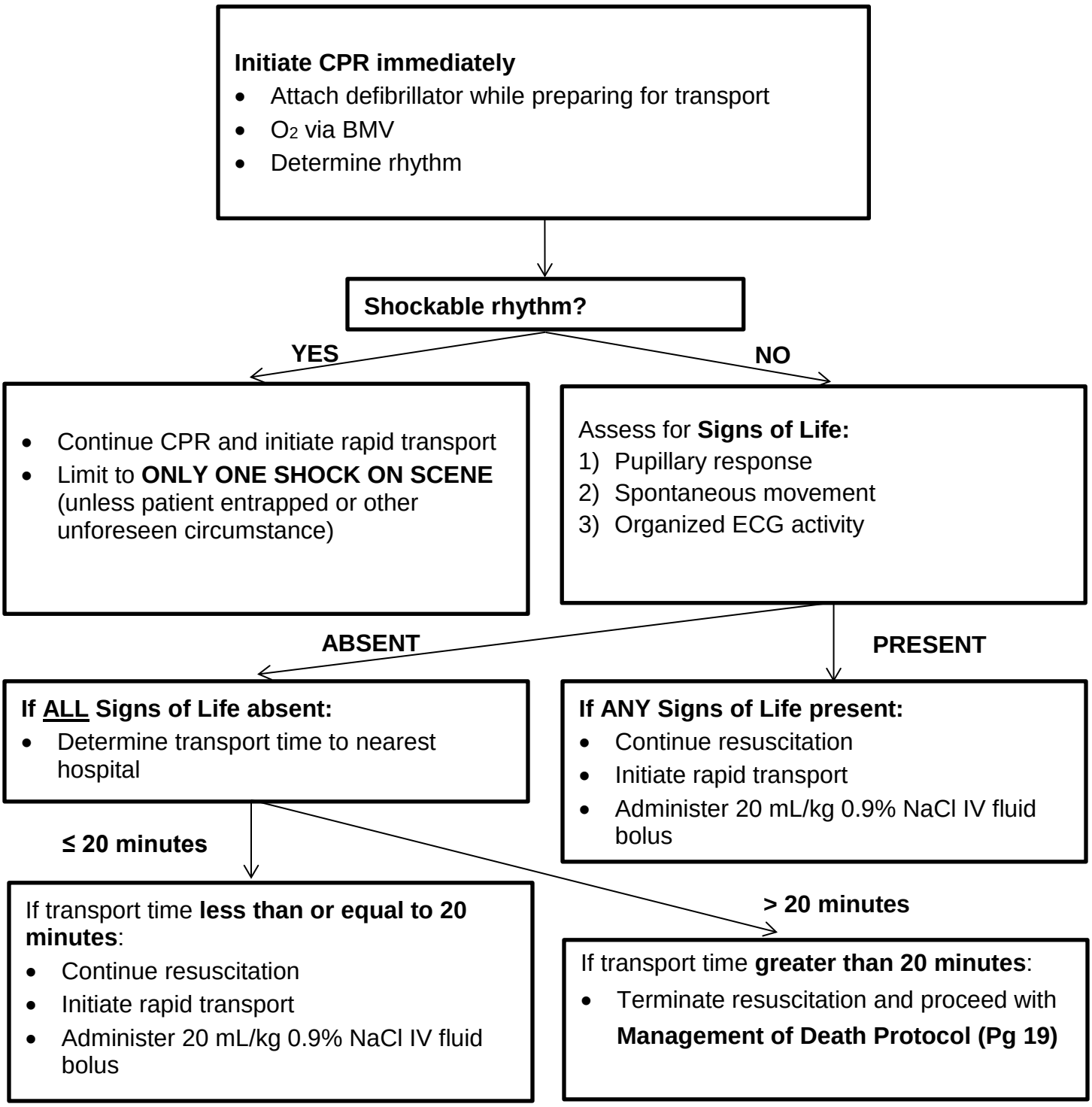
ENROUTE TO HOSPITAL

- Begin CPR while attaching defibrillator
- Request ACP intercept (if available)
- IV access and administer 20 mL/kg 0.9% NaCl IV fluid bolus while continuing transport
- Notify receiving Emergency Department without delay that cardiac arrest has occurred and continue transport

NOTES

- If no obvious external signs of significant trauma or if unsure of mechanism of injury, consider medical cardiac arrest and treat according to appropriate medical cardiac arrest protocol
- If witnessed blunt cardiac arrest **do not** delay transport
- Do not delay transport for IV insertion. All interventions must be performed en route to hospital
- Notify receiving Emergency Department without delay of actual or impending cardiac arrest (from the scene if possible)

PENETRATING TRAUMATIC CARDIAC ARREST



NOTES

- If no obvious external signs of significant trauma or if unsure of mechanism of injury, consider medical cardiac arrest and treat according to appropriate medical cardiac arrest protocol
- Do not delay transport for IV insertion. All interventions must be performed en route to hospital
- Notify receiving Emergency Department without delay of actual or impending cardiac arrest (from the scene if possible)

ADULT FLUID THERAPY

When IV medication or fluid therapy may be required, start a peripheral IV line or lock using 0.9% NaCl solution.

Unless otherwise directed by protocol or OLMC**,** the drip rate will be set TKVO at 30-60 mL/hr

Fluid bolus should be initiated as follows unless otherwise specified by a specific treatment protocol.

FLUID ADMINISTRATION IN TRAUMA CASES

Bolus administration of IV fluid is to be reserved for cases of hypotension with evidence of poor perfusion. When indicated, administer IV 0.9% NaCl as outlined below:

- 20 mL/kg bolus until SBP 90 mmHg achieved
- If brain and/or spinal cord injury is suspected, maintain an optimal SBP of 110-120 mmHg
- There is no limit to the amount of fluid a PCP may administer to achieve the desired target SBP

Routine administration of bolus IV fluids in the absence of hypotension is CONTRAINDICATED in the trauma patient.

IV fluid boluses are only to be administered when above criteria is met to avoid inducing coagulopathy.

FLUID ADMINISTRATION IN MEDICAL CASES (NON-TRAUMA)

When indicated by protocol, administer IV 0.9% NaCl as outlined below:

- 20 mL/kg bolus
- May repeat bolus administration while indications persist up to maximum 2000 mL unless otherwise directed by protocol
- If indications for additional IV fluid persist despite administration of 2000 mL IV fluids, contact OLMC

OXYGEN THERAPY

Oxygen therapy should be initiated as follows unless otherwise specified by a specific treatment protocol:

A. Administer high flow oxygen without delay if any of the following critical findings are present, regardless of SpO_2. Be prepared to initiate BVM without delay if the patient displays signs of inadequate ventilation[1]:

- Apnea
- Respiratory distress or failure
- Cyanosis or ashen colored skin
- Loss of consciousness
- Toxin or smoke inhalation
- Suspected or confirmed carbon monoxide exposure
- Hypotension with accompanied signs and symptoms of shock or impending shock
- Complications of pregnancy or high risk childbirth:
  - Hemorrhage
  - Labour with multiple fetuses
  - Premature labor (less than 37 weeks gestation)
  - Trauma extending beyond an isolated extremity
  - Complications of delivery
  - Convulsive seizure in pregnancy (eclampsia)

B. Administer high flow oxygen if SpO_2 less than 95% AND any of the following chief complaints are present:

- Cardiac arrhythmia
- Acute stroke
- Decreasing level of consciousness
- Altered mental status
- Uncomplicated pregnancy / childbirth
- Traumatic injury
- Sepsis
- Toxin ingestion
- Hypo / Hyperglycemia
- Convulsive seizures
- Agitation or combative behavior
- Electrocution
- Vision and / or hearing changes
- Near drowning
- Acute severe pain

C. Once hypoxia has been corrected, titrate oxygen delivery to achieve a target SpO_2 of 95%

COPD

If **confirmed COPD (emphysema or chronic bronchitis)**, administer oxygen according to the following guidelines:

- If the patient is in moderate to severe respiratory distress or has critical findings, administer high flow oxygen. Be prepared to initiate BMV without delay if the patient displays signs of inadequate ventilation[1].
  - If respiratory status has improved to patient's baseline after treatment, consider replacing NRB with nasal cannula to maintain SpO_2 90-92%
- If the patient is in mild distress, administer low flow oxygen 1 to 2 liters per minute above home oxygen levels, titrated to a target SpO_2 of 90-92%

NOTES

1. **If you experience any difficulty obtaining a reliable SpO_2 or if at any time you obtain a low SpO_2 reading, you must administer high flow oxygen and assume the patient is hypoxic and that any low reading is accurate.**
2. There may be additional circumstances beyond those contained in this protocol which will require oxygen therapy. Clinicians are advised to use sound clinical judgement to titrate oxygen therapy to balance the risk of hypoxia with concerns about hyperoxia.

[1]CAUTION

In order for supplementary oxygen to be effective, the patient must have adequate respiratory effort, rate and volume to ensure oxygen is delivered to the lungs. If the patient's respiratory effort, rate or volume is inadequate to maintain oxygenation, the patient is considered to be in respiratory failure and BMV with high flow oxygen must be delivered without delay.

The following **signs of inadequate ventilation** may be observed in patients with respiratory failure:

- Abnormal sounds with breathing, such as snoring, gurgling or stridor
- Fatigue with respiratory effort
- Gasping
- Irregular breathing pattern with periods of apnea
- Little or no chest rise
- Decreased or absent breath sounds ("silent chest")
- Rate and/or depth of breathing grossly insufficient for age
- Apnea

If there are findings of airway obstruction, such as stridor, snoring or gurgling, proceed with basic airway maneuvers to open and/or clear the airway.

LESS THAN LETHAL FORCE
Conducted Energy Weapons (CEW)

1. If cardiac arrest present, start CPR immediately and proceed with **Cardiac Arrest Protocol (Pg 14)** without delay
2. Manage airway and assist ventilation as necessary
3. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
4. Continuous cardiac, SpO_2 and BP monitoring
5. Measure blood glucose
   - Treat hypoglycemia as per **Symptomatic Hypoglycemia Protocol (Pg 31)**
6. Request ACP intercept (if available)
7. Assess for secondary injuries (burns, pathological fractures, etc.)
8. If altered mental status consider the following:
   - If signs of hypoglycemia, treat as per **Symptomatic Hypoglycemia Protocol (Pg 31)**
   - If severe agitation or combativeness is present proceed with **Agitated/Combative Protocol (Pg 37)**
   - If signs of hyperthermia and **Excited Delirium[1]** are present, initiate external cooling measures
9. Determine the event(s) preceding the use of the CEW and how many "5-second cycles of energy" were delivered to the patient
10. Inspect the impact site of the probe dart(s). If necessary, cut away clothing to view the probe darts
    - Do not remove any probe dart(s)
    - Treat dart(s) as impaled object(s) and secure in place
11. Initiate IV access
    - If signs of hyperthermia and **Excited Delirium[1]** are present, initiate a second IV en route to hospital

[1] EXCITED DELIRIUM

A state of excessive agitation and psychosis often brought on by overdose, drug withdrawal or non-compliance with medications used in the treatment of mental health disorders. These patients are at heightened risk of adverse outcome (cardiac and respiratory demise) and death, which is exacerbated in situations of physical restraint.

Assess the patient for the following signs of excited delirium:

- Aggressive and bizarre behaviour
- Dilated pupils
- Extreme agitation
- Shivering
- Shouting
- Excessive physical strength
- Decreased sensitivity to pain

CAUTION

- Maintain police presence at all times while on-scene and request police escort during transport.
- Ensure that there is no electricity flowing through the CEW before approaching the patient.
- Exercise caution when approaching a patient exposed to CEW energy as they may display violent tendencies post-deployment. Always maintain an ability to escape the scene. Position yourself between the patient and the exit at all times to maintain a safe exit, should the situation escalate.
- At NO TIME should the patient be restrained in the prone (face or chest-down) position.
- There is a high risk of positional asphyxia and/or aspiration in patients in excessively agitated states. Close and continuous monitoring of these patients, including airway patency and adequacy of respiration, is mandatory.
- Patients with a weakened cardiac system may not tolerate exposure to CEW. Complaints of chest pain or shortness of breath must be taken seriously, evaluated and treated as appropriate.
- All patients exposed to CEW **must** be transported to the closest medical facility for evaluation. If police determine transport by ambulance is too dangerous, ensure that the police are clearly informed of the need for medical evaluation at a hospital and document the badge number of the police officer informed.
- Be alert for the possibility of soft tissue burns after the use of a push stun feature on the CEW.
- Be alert for the possibility of blunt force trauma after the use of a bean bag deployment device

HEAT RELATED ILLNESS

This protocol is intended for the management of patients with exposure to high temperatures or high levels of exertion and without history of recent infection.

1. Manage airway and assist ventilations as necessary
2. O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature and blood glucose
   - Treat hypoglycemia as per **Symptomatic Hypoglycemia Protocol (Pg 31)**
5. IV access
   - If signs of dehydration present administer fluid bolus as per **Fluid Therapy Protocol (Pg 48)**
6. Begin cooling measures[1] if signs of heat exhaustion or heat stroke present[2]. Continue until temperature is less than 39°C or patient starts shivering.
7. If severe agitation or combativeness is present, concurrently manage as per **Agitated / Combative Protocol (Pg 37)**
8. If seizure occurs, proceed with **Convulsive Seizure Protocol (Pg 34)** and continue cooling.
9. Request ACP intercept (if available)

[1]COOLING MEASURES (STOP if patient starts shivering)

1) Remove the patient from hot environment and cool ambient temperature in the ambulance
2) Remove patient's clothing and apply cool water to patient's skin
3) Promote evaporation by using a fan or open window
4) Apply ice packs to the groin, neck and axilla, do not apply directly to skin

[2]SIGNS OF HEAT EXHAUSTION and HEAT STROKE

Patients with heat related illness may exhibit one or more of the following:

Heat Exhaustion

- Decreased coordination
- Sweating
- Tachycardia and hypotension
- Hyperventilation
- Headache
- Abdominal pain and/or nausea and vomiting

Heat Stroke

1) Temperature greater than 40°C **AND**
2) Altered mental status or CNS dysfunction

NOTES:

- Patients may have normal to slightly elevated temperature with heat exhaustion
- Lack of perspiration is a late sign of heat stroke
- Patients with exertional heat illness may have profound sinus tachycardia as a normal physiological response

HYPOTHERMIA

This protocol is intended for the management of patients with exposure to environmental conditions consistent with hypothermia.

1. Manage airway and assist ventilations as necessary
2. O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature and blood glucose
   - Treat hypoglycemia as per **Symptomatic Hypoglycemia Protocol (Pg 31)**
5. IV access
   - Treat hypotension as per **Adult Fluid Therapy Protocol (Pg 48)**
6. If signs of frostbite present:
   - Splint or pad effected area to minimize injury
   - Remove jewelry if required
   - Pad between effected digits and bandage effected tissue loosely with a soft, sterile dressing. Do not put pressure on the effected parts.
7. If signs of hypothermia proceed with steps for rewarming[1]
8. Request ACP intercept (if available)
9. If Cardiac Arrest occurs proceed to **Adult Cardiac Arrest Protocol (Pg 14)**

[1]STEPS FOR REWARMING

- Remove patient from cold environment
- Remove wet clothing (cutting preferred)
- Cover with blankets
- Increase ambient temperature in ambulance
- Apply radiant heat and/or warm blankets to core
- Use warmed IV fluids for resuscitation

Mild Hypothermia	Severe Hypothermia
1) 32°C-35°C	1) Temperature less than 32°C
2) Normal mental status	2) Decreased LOC, slurred speech and ataxia
3) Shivering	3) Decreased heart rate and respiratory rate
4) Normal to slightly elevated vital signs	4) Shivering absent below 30°C

CAUTION

- Patients in severe hypothermia often become extremely bradycardic.
- Hypothermic patients are at a high risk for VF if handled roughly. Patient movement should be limited and a horizontal position maintained whenever possible.
- Severely hypothermic patients should have their core areas warmed first. Warming extremities before core can precipitate a secondary drop in temperature.
- **DO NOT** attempt to thaw frostbitten areas.
- **DO NOT** ambulate patients with hypothermia.

ADRENAL INSUFFICIENCY

1. Manage airway and assist ventilations as necessary
2. O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2, and BP monitoring
4. Measure temperature **AND** closely monitor blood glucose
   - Treat hypoglycemia as per **Symptomatic Hypoglycemia Protocol (Pg 31)**

5. IV access
   - Administer 20 mL/kg bolus NaCl 0.9% if signs or symptoms of adrenal crisis[1] present

6. If patient meets **Criteria for Hydrocortisone Administration[2]**, administer:
   - **Hydrocortisone** 100 mg IV, **OR** IM may be administered if IV delayed or unattainable

7. Perform 12 lead ECG

[1]SIGNS AND SYMPTOMS OF ADRENAL CRISIS

- Nausea/Vomiting
- Hypoglycemia
- Abdominal pain
- Arrhythmia
- Hypotension (less than 100 SBP or drop of 20 mmHg from baseline)
- Weakness
- Dizziness
- Pallor
- Confusion
- Lethargy
- Altered LOC

[2]CRITERIA FOR HYDROCORTISONE ADMINISTRATION

1) Patient has any **one** of the following:
   - Trauma or significant physical stressor
   - Significant emotional crisis
   - Vomiting or diarrhea
   - Signs/symptoms of acute adrenal crisis[1]
   - Fever of greater than or equal to 38ºC or signs of infection

AND

2) Medical history of any **one** of the following:
   - 3 weeks or more of chronic glucocorticoid use
   - Malcompliance or cessation of chronic glucocorticoid medication within 3 months
   - Addison's Disease
   - Congenital Adrenal Hyperplasia
   - Pituitary insufficiency/hypopituitarism (i.e.: tumors, previous radiation, hypopituitary disorders)
   - Bilateral adrenalectomy (removal of adrenal glands)
   - Patient presents a home adrenal insufficiency kit containing a glucocorticoid medication
   - Patient is wearing a Medic-Alert stating the patient has adrenal insufficiency

NOTES

- PMO maintains a low therapeutic threshold to administer hydrocortisone in the acutely ill or injured patient suspected to have adrenal insufficiency. There is little to no risk from a single stat dose of hydrocortisone. The risk of a low glucocorticoid level during crisis far outweighs the risk of unnecessary hydrocortisone administration.
- IV route is preferred for the administration of hydrocortisone. IM route via lateral thigh may be used if an IV is unsuccessful or otherwise delayed.
- Stress is defined as a circumstance that changes the physiological norm for the patient, and includes illness, trauma, and mental health crisis.
- Administer hydrocortisone regardless of any recent self-administration prior to EMS arrival
- Glucocorticoids are used to support treatment of a multitude of medical conditions, including but not limited to: autoimmune disorders, inflammatory bowel disease, asthma, cancer, autism, chronic allergies, and genetic enzyme deficiencies.
- Commonly prescribed glucocorticoids include, but are not limited to: prednisone, prednisolone, methylprednisolone, dexamethasone, betamethasone, triamclinolone, cortisone acetate, hydrocortisone (cortisol).
- Past history of adrenal crisis presents increased risk for repeat adrenal crisis.

CAUTION

- It is preferable to administer hydrocortisone prior to transport, as some patients in adrenal crisis may not have sufficient adrenal reserves to manage movement, even to the ambulance. These patients may deteriorate rapidly.
- Do not ambulate these patients to the ambulance.
- In the rare event that a patient with adrenal insufficiency presents with anaphylaxis, administer epinephrine first, followed immediately by hydrocortisone.

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PART II: PEDIATRIC EMERGENCY PROTOCOLS

PEDIATRIC RESPIRATORY DISTRESS WITH BRONCHOSPASM

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature
5. Administer **Salbutamol** based on dosing below:

Age	**MDI + aerochamber [1]**		**Nebulized with O_2**
Less than 5 years	5 puffs (100 mcg/puff)	**OR**	2.5 mg
Greater than or equal to 5 years	10 puffs (100 mcg/puff)		5 mg
Repeat every 5 minutes if indicated (Not to exceed a maximum total of 3 administrations)			

[1] Each puff must be followed by at least 4 breaths

6. Consider **ipratropium bromide** administration with **2nd and 3rd doses of salbutamol** as per dosing guidelines below:

Age	**MDI + aerochamber [1]**		**Nebulized with O_2**
All ages	3 puffs (20 mcg/puff) following dose of salbutamol	**OR**	500 mcg (mix with salbutamol)
Repeat **once** in 5 minutes if indicated (Not to exceed a maximum total of 2 administrations)			

[1] Each puff must be followed by at least 4 breaths

7. Request ACP intercept (if available)

Contact OLMC for patients that are unrelieved by **salbutamol** and/or **ipratropium bromide** and condition is deteriorating for consideration of the following:

1. Continued administration of **salbutamol**
2. **Epinephrine 1:1000** 0.01 mg/kg (0.01 mL/kg) IM [Not to exceed a maximum single dose of 0.3 mg (0.3 mL)]

NOTES

- Patients should be treated with MDI with aerochamber unless it is deemed inappropriate, ineffective or patient cannot tolerate
- **Salbutamol** or **ipratropium bromide** may be administered singularly if the patient has hypersensitivity to one of the other medications

PEDIATRIC RESPIRATORY DISTRESS WITH INSPIRATORY STRIDOR
(Laryngotracheitis / Croup)

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**

   - Humidified O_2 (Blow-by O_2 acceptable if child refuses mask)

3. Continuous cardiac, SpO_2 and BP monitoring
4. Keep child as comfortable as possible as agitation may worsen condition
5. Consider **nebulized epinephrine 1:1000** in accordance with dosing guidelines below if **Indications for nebulized epinephrine[1]** present:

Nebulized Epinephrine 1:1000	
Age	**Dose**
Less than 1 year AND less than 5 kg	0.5 mg (0.5 mL) in 2 mL 0.9% NaCl
Less than 1 year AND greater than or equal to 5 kg	2.5 mg (2.5 mL)
Greater than or equal to 1 year	5 mg (5 mL)

Contact OLMC for refractory stridor and respiratory distress for consideration of:

1. Repeat administration of **nebulized epinephrine 1:1000**

[1] INDICATIONS FOR NEBULIZED EPINEPHRINE 1:1000

1) Current history of upper respiratory infection with a “barking cough”

   AND

2) Severe respiratory distress

   AND

3) Stridor at rest

PEDIATRIC ALLERGY AND ANAPHYLAXIS

FINDINGS OF ANAPHYLAXIS

1) Acute onset (minutes to hours) of **TWO OR MORE** of the following after exposure to a **LIKELY ALLERGEN**:

- Skin symptoms (hives, itching, flushing)
- Oropharyngeal edema (lips, tongue, uvula)
- Respiratory compromise (dyspnea, wheeze, stridor, hypoxemia)
- Gastrointestinal symptoms (crampy abdominal pain, vomiting, diarrhea)
- Reduced blood pressure or associated symptoms (hypotonia, collapse, syncope)

OR

2) Age-Specific Hypotension **(Pg 113)** alone after exposure to a **KNOWN ALLERGEN** for patient

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. IV access
5. If age-specific hypotension **(Pg 113)** present, administer a fluid bolus as per **Pediatric Fluid Therapy Protocol (Pg 79)**
6. If **Findings of Anaphylaxis** present administer**:**

- **Epinephrine 1:1000** 0.01 mg/kg (0.01 mL/kg) IM [Not to exceed a maximum single dose of 0.3 mg (0.3 mL)]
  - Repeat once in 5 minutes if no improvement

AND

- **DiphenhydrAMINE[1]** 1 mg/kg IV (Not to exceed a maximum single dose of 50 mg)

7. If respiratory distress present (including wheezing), administer **salbutamol:**

Age	**MDI + aerochamber [2]**		**Nebulized with O_2**
Less than 5 years	5 puffs (100 mcg/puff)	**OR**	2.5 mg
Greater than or equal to 5 years	10 puffs (100 mcg/puff)		5 mg
Repeat every 5 minutes if indicated (Not to exceed a maximum total of 3 administrations)			

[2]Each puff must be followed by at least 4 breaths

8. Request ACP intercept (if available)

Contact OLMC if severe and refractory airway compromise, respiratory failure or shock for consideration of:

- Additional IV fluid administration for refractory hypotension

[1] NOTE

- **DiphenhydrAMINE** should be avoided in pediatric patients with isolated hives, alternative oral medications (such as cetirizine) are preferred and available in Emergency Departments.
- May administer **diphenhydrAMINE** 1 mg/kg IM (Not to exceed a maximum single dose of 50 mg) if anaphylaxis **AND** unable to establish an IV.
- **There is NO absolute contraindication to epinephrine in a patient with anaphylaxis.**
- **DiphenhydrAMINE DOES NOT improve angioedema or respiratory symptoms in anaphylaxis.**
- Patients should be treated with MDI with aerochamber unless it is deemed ineffective or patient cannot tolerate

PEDIATRIC CARDIAC ARREST

If patient meets criteria outlined in **DNR Protocol (Pg 18)** or **Obvious Death Protocol (Pg 17)** do not proceed with resuscitation

1. Confirm Vital Signs Absent (VSA) and initiate chest compressions
2. 100% O_2 via BVM (15 L/min)
3. Request ACP intercept (if available)
4. Continuous cardiac and SpO_2 monitoring
5. Consider and treat **Reversible Causes[1]**
6. IV access **(DO NOT delay or interrupt CPR)**

GENERAL GUIDELINES

- Confirm absence of pulse – pulse check **NOT** exceeding 10 seconds
- Initiate compressions immediately: **C-A-B Sequence**
- If arrest secondary to hypoxia suspected, proceed with **A-B-C Sequence**
- Begin CPR and immediately attach defibrillator – Analyze and **defibrillate without delay if indicated**

	Compressions : Ventilation Ratio	**Depth**	**Rate**
One Rescuer	30:2	**1/3 chest depth** Infants: 4 cm Child: 5 cm	At least 100 per minute
Two Rescuers	15:2		

- Ensure high quality CPR
  - Minimize interruptions in CPR
  - Allow full recoil of the chest between compressions
  - Rotate rescuers every 2 minutes (if resources allow) concurrent with pulse checks
- After third rhythm analysis initiate transport
- **Analyze patient every 10 minutes**. Continue CPR
- If return of spontaneous circulation (ROSC) proceed immediately with **Pediatric Post Cardiac Arrest Care Protocol (Pg 65)**
- If re-arrest occurs during transport, resume Cardiac Arrest Protocol

HYPOTHERMIC CARDIAC ARREST (CORE TEMPERATURE LESS THAN 32ºC)

- Hypothermic patients are to be resuscitated as per Pediatric Cardiac Arrest Protocol
- Resuscitation will be continued until active re-warming has returned core temperature to normal or there has been ROSC

[1] REVERSIBLE CAUSES OF CARDIAC ARREST

Hypovolemia
Hypoxia
Hypothermia
Hypoglycemia
Drug Overdose

PEDIATRIC POST CARDIAC ARREST CARE (RETURN OF SPONTANEOUS CIRCULATION)

1. Manage airway
2. O_2 via NRB or BVM as appropriate (15 L/min)

- Assist ventilations with BVM if signs of inadequate ventilation are present:
  - Abnormal sounds with breathing, such as snoring, gurgling or stridor
  - Fatigue with respiratory effort
  - Gasping
  - Irregular breathing pattern with periods of apnea
  - Little or no chest rise
  - Decreased or absent breath sounds ("silent chest")
  - Rate and/or depth of breathing grossly insufficient for age
  - Apnea

- If assisted ventilation is indicated, deliver ventilations by BVM in accordance with the following parameters:

Patient Age	**Target Respiratory Rate**
Infants (29 days to 12 months)	20 – 30 breaths per minute (1 breath every 2-3 seconds)
Children (1 year to puberty)	16 – 20 breaths per minute (1 breath every 3-4 seconds)
Adolescents (Pre-puberty to adult)	12 breaths per minute (1 breath every 5 seconds)

- Inspiratory time should not exceed 1 second
- Deliver only enough tidal volume to make the chest rise

3. If defibrillator was used, leave pads in place
4. Request ACP intercept (if available)
5. Continuous cardiac, SpO_2 and BP monitoring
6. Perform 12 Lead ECG
7. Two peripheral IVs (initiate second IV during transport)
8. Treat **Reversible Causes[1]**
9. Adjust ventilation, oxygenation and fluid resuscitation to target values of:

- **SBP** – greater than age-specific hypotension **(Pg 113)**
- **SpO_2** – greater than or equal to 95%

10. If re-arrest occurs, resume **Pediatric Cardiac Arrest Protocol (Pg 64)** and appropriate algorithm
11. If persistent hypotension, proceed with **Pediatric Shock Protocol (Pg 67)**
12. A copy of the code summary and PCR must be left with the receiving facility

[1] REVERSIBLE CAUSES OF CARDIAC ARREST

Hypovolemia	Hypo / Hyperkalemia
Hypoxia	Hypoglycemia
Hypothermia	Drug Overdose

PEDIATRIC ALTERED LEVEL OF CONSCIOUSNESS

1. Manage airway and assist ventilations as necessary
2. O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Consider Spinal Motion Restriction
4. Continuous cardiac, SpO_2 and BP monitoring
5. Measure temperature and blood glucose
6. IV Access
7. Perform 12 lead ECG
8. Consider ACP intercept if available
9. Consider and treat underlying causes of altered mental status[1]

- If suspected infection, proceed with **Pediatric Septic Shock Protocol (Pg 69)**
- If suspected seizure, proceed with **Pediatric Convulsive Seizure Protocol (Pg 74)**
- If suspected allergy, proceed with **Pediatric Allergy and Anaphylaxis Protocol (Pg 62)**
- If suspected overdose, proceed with **Pediatric General Approach To Toxin Management Protocol (Pg 78)**
- If suspected trauma, proceed with **Trauma Alert Protocol (Pg 42)**
- If suspected agitated/combative, proceed with **Pediatric Agitated/Combative Protocol (Pg 76)**
- If suspected hypoglycemia, proceed with **Pediatric Symptomatic Hypoglycemia Protocol (Pg 70)**
- If suspected hypothermia, proceed with **Pediatric Hypothermia Protocol (Pg 81)**
- If suspected hyperthermia, proceed with **Pediatric Heat Related Illness Protocol (Pg 80)**
- If unknown etiology, consider **Pediatric Shock Protocol (Pg 67)**

[1] CAUSES OF ALTERED MENTAL STATUS

- **A**lcohol, Acidosis, Allergy
- **E**pilepsy, Electrolytes, Endocrine
- **I**nfection
- **O**piates, Overdose, Oxygen deprived
- **U**remia, Underdose

- **T**rauma
- **I**nsulin
- **P**oisoning, Psychosis
- **S**troke, Seizure, Shock

- **H**eart Attack (MI)
- **E**mbolism
- **A**ortic Obstruction
- **R**hythm disturbance
- **T**achycardia

- **H**ypoxia
- **H**ypo/hyperthermia
- **H**ypotension

PEDIATRIC SHOCK
(Symptomatic Age-Specific Hypotension[1])

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Control bleeding (if applicable)
4. Assess for **Signs and Symptoms of Shock[1]**
5. Continuous cardiac, SpO_2 and BP monitoring
6. Measure temperature and blood glucose
7. Two IVs (Initiate second IV during transport)
8. Perform 12 lead ECG
9. Consider causes of shock and treat accordingly:

    - If shock due to anaphylaxis, proceed with **Pediatric Allergy and Anaphylaxis Protocol (Pg 62)**
    - If shock due to sepsis, proceed with **Pediatric Septic Shock Protocol (Pg 69)**

10. For all other causes of shock or when the cause of shock is unknown, administer a fluid bolus as per **Pediatric Fluid Therapy Protocol (Pg 79)**
11. Request ACP intercept (if available)

Contact OLMC if age-specific hypotension persists after initial fluid bolus for consideration of additional IV fluid administration.

[1]SIGNS AND SYMPTOMS OF SHOCK

Patients in shock will often present with the following clinical features:

1) Hypotension (Age dependent)

Age	Hypotension (Systolic Blood Pressure)
0 – 28 days	Less than 60 mmHg
1 month – 12 months	Less than 70 mmHg
1 year – 10 years	[70 + (2 x age in years)] mmHg
Greater than 10 years	Less than 90 mmHg

AND

2) Any one or more of the following signs of inadequate tissue perfusion:
    - Altered mental status
    - Age adjusted tachycardia
    - Rapid and / or shallow breathing
    - Cool and / or clammy skin
    - Rapid and / or weak pulse(s)
    - Near fainting and / or fainting
    - Weakness
    - Dry mucous membranes

NOTE

- Shock is a life-threatening, progressive medical condition that results from the inadequate flow of oxygenated blood to critical organs and tissues of the body
- When the blood pressure is inadequate to sustain a regular flow of oxygenated blood to the organs and tissues of the body, end-organ will ensue and shock will eventually result.
- Shock may result from a number of medical conditions including sepsis, trauma, blood loss, anaphylaxis, severe dehydration and various medical conditions.

CAUTION:

- Trendelenburg positioning should not be used in the treatment of shock
- Position the patient supine unless they are in severe respiratory distress
- If the patient is suffering from severe respiratory distress position them semi-sitting and assist ventilations as indicated

PEDIATRIC SEPTIC SHOCK

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature and blood glucose:

   - Treat hypoglycemia in accordance with **Pediatric Symptomatic Hypoglycemia Protocol (Pg 70)**
   - Treat hyperglycemia in accordance with **Pediatric Symptomatic Hyperglycemia Protocol (Pg 72)**

5. Two IVs (Initiate second IV during transport)
6. If patient meets **Pediatric Septic Shock Inclusion Criteria[1]** administer fluid bolus in accordance with **Pediatric Fluid Therapy Protocol (Pg 79)**
7. Request ACP intercept (if available)

[1] PEDIATRIC SEPTIC SHOCK INCLUSION CRITERIA

1) History suspicious for infection **OR** confirmed infection

   AND

2) Age-specific hypotension **(Pg 113)**

   AND

3) Any **ONE OR MORE** of the following clinical findings:
   - Temperature less than 36ºC or greater than 38.5ºC
   - Altered mental status
   - Abnormal heart rate
     - **Infants** – less than 90 or greater than 160 per minute
     - **Children** – less than 70 or greater than 150 per minute

8. If fever (temperature greater than 38.5ºC) present, administer **acetaminophen** 15 mg/kg PO. If acetaminophen already administered within the last 4 hours, administer a "top-up" dose so total dose administered within the last 4 hours is equal to 15 mg/kg.
9. If hypotension persists after initial fluid bolus repeat IV fluid bolus to resolve age-specific hypotension **(Pg 113)**

NOTE

- Age specific hypotension may be a late finding in pediatric septic shock. Suspect shock even when normotensive if signs of inadequate tissue perfusion as per **Pediatric Shock Protocol (Pg 67)**

Contact OLMC if age-specific hypotension persists after second fluid bolus for consideration of:

1. Additional IV fluid administration

PEDIATRIC SYMPTOMATIC HYPOGLYCEMIA

CAUTION

- This protocol is **NOT** intended for routine management of hypoglycemia in patients that have just been born.
- For patients that have just been born refer to **Neonatal Assessment and Resuscitation Protocol (Pg 91)**.
- In neonatal patients (other than those who have just been born), if BGL is less than 2.6 mmol/L proceed with IV dextrose or glucagon administration as outlined in this protocol.

For neonatal patients (other than those who have just been born) with BGL between 2.6 and 4 mmol/L, contact OLMC for direction.

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature and blood glucose
5. IV access
6. If BGL is less than 4 mmol/L in the non-neonate, administer ONE of the following medications and recheck BGL in accordance with tables below:

Patient able to maintain own airway (Awake and able to cough and swallow)	**IV established**	**Unable to establish IV**
Oral glucose options: 1) **Dex 4**® tablets 20 g (5 tablets) 2) **Insta-glucose**® 1 tube (30 g) 3) 1 cup (250 mL) of juice or pop (Non-diet) 4) 4 teaspoons (20 mL) or 4 packets of table sugar dissolved in water	IV **dextrose** as per dosing guidelines below	**Glucagon**[1] as per dosing guidelines **(Pg 71)**
Recheck BGL in 15 minutes	Recheck BGL in 10 minutes	Recheck BGL in 20 minutes

DEXTROSE DOSING GUIDELINES (See Pg 132 for instructions on preparing Dextrose 10% and 25%)	
Weight	**Volume-based Dosing mL/kg (0.5 g/kg SIVP)**
Less than 10 kg	**Dextrose 10%** - 5 mL/kg SIVP
10 – 20 kg	**Dextrose 25%** - 2 mL/kg SIVP
20 – 40 kg	**Dextrose 50%** - 1 mL/kg SIVP [to a maximum of 50 mL (25 g)]
Greater than 40 kg	**Dextrose 50%** - 50 mL (25 g) SIVP

PEDIATRIC SYMPTOMATIC HYPOGLYCEMIA Cont'd

[1]GLUCAGON DOSING GUIDELINES	
Weight	**Dose**
Less than 20 kg	0.5 mg IM
Greater than or equal to 20 kg	1 mg IM

7. Repeat Step 6 ONCE if necessary

All pediatric hypoglycemic patients must be transported for assessment. If a parent, guardian or mature minor is refusing transport, contact OLMC for direction

[1] NOTES

- Anticipate that it could take up to 20 minutes to observe an effect from glucagon
- While waiting for glucagon to take effect, manage patient's airway as indicated and initiate transport

CAUTION

- If head injury or stroke suspected administer half of the usual dose of dextrose, recheck BGL and then administer the second half dose if necessary
- The goal is to correct hypoglycemia while avoiding transient hyperglycemia that may lead to cerebral edema

PEDIATRIC SYMPTOMATIC HYPERGLYCEMIA

This protocol is intended for patients who demonstrate findings of significant dehydration and presentations suggestive of diabetic ketoacidosis (DKA). Many diabetic patients may have blood glucose levels greater than 15 mmol/L during times of physiologic stress in the absence of dehydration and age-specific hypotension will NOT require fluid administration.

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature and blood glucose
5. IV access
6. If **Indications for IV Fluid Administration in Pediatric Hyperglycemia**[1] present administer **10 mL/kg** 0.9% NaCl IV over 1 hour[4]

Contact OLMC if you are uncertain as to whether the patient meets criteria for fluid administration or if age-specific hypotension persists despite administration of 10 mL/kg 0.9% NaCl IV for consideration of administration of additional IV fluids

[1] INDICATIONS FOR IV FLUID ADMINISTRATION IN PEDIATRIC HYPERGLYCEMIA

1) BGL greater than 15 mmol/L

AND

2) Signs and Symptoms of DKA[2] **OR** Signs of Dehydration[3]

AND

3) Age-Specific Hypotension **(Pg 113)**

[2] SIGNS AND SYMPTOMS OF DKA	[3] SIGNS OF DEHYDRATION
• Polyuria • Polydipsia • Polyphagia • Tachypnea • Tachycardia • Nausea and vomiting • Abdominal pain • Signs of dehydration	• Dry mucous membranes • Absence of tears • Sunken fontanelle • Delayed capillary refill • Mottled skin • Decreased urine output (oliguria) • Tachycardia • Age-specific or postural hypotension • Weakness or lethargy

[4] CAUTION

- Rapid bolus administration of 20 mL/kg IV fluid bolus is **contraindicated** in pediatric patients with DKA due to the risk of cerebral edema.

SIGNS AND SYMPTOMS OF CEREBRAL EDEMA

Early Warning Sign

- Headache

Additional Warning Signs

- Drowsiness
- Altered behavior
- Decreasing level of consciousness

MANAGEMENT OF CEREBRAL EDEMA

1) Manage airway, assist ventilations as necessary
2) O_2 via NRB (15 L/min)
3) Stop IV fluids
4) Measure blood glucose and treat hypoglycemia as per **Pediatric Symptomatic Hypoglycemia Protocol (Pg 70)**
5) Provide early notification to receiving facility of change in mental status

PEDIATRIC CONVULSIVE SEIZURES

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Spinal immobilization as indicated by mechanism of injury or evidence of injury above the clavicles
4. Position patient

    - Actively seizing – place supine and protect from injury
    - Postictal – place left lateral recumbent and maintain airway

5. Continuous cardiac, SpO_2 and BP monitoring
6. Measure temperature and blood glucose

    - Treat hypoglycemia as per **Pediatric Symptomatic Hypoglycemia Protocol (Pg 70)**

7. IV access
8. If available, request ACP intercept for active seizures or recurrent seizures (status epilepticus)

PEDIATRIC NAUSEA AND VOMITING

1. Manage airway and assist ventilations as necessary
2. O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2, and BP monitoring
4. Measure temperature and blood glucose

   - Treat shock in accordance with **Pediatric Shock Protocol (Pg 67)**

5. Position the patient in a position of comfort
6. If symptoms **severe AND** the patient is **actively** vomiting:

   - Establish IV access
   - Administer **DimenhyDRINATE** 1mg/kg IV (Not to exceed a maximum single dose of 25 mg)

     OR

   - **Metoclopramide** 0.1 mg/kg SIVP (Over 2 to 5 minutes) (Not to exceed a maximum single dose of 10 mg) if any of the following criteria apply:

     - o Severe nausea and vomiting refractory to **dimenhyDRINATE** after 15 minutes since last dose
     - o Allergy or contraindication to **dimenhyDRINATE**
     - o Altered LOC or head injury

7. If **metoclopramide** has been administered and acute **extrapyramidal signs or symptoms**[1] develop, reassure patient and administer **diphenhydrAMINE** 1 mg/kg IV (Not to exceed a maximum single dose of 50 mg)

[1] EXTRAPYRAMIDAL SIGNS AND SYMPTOMS

- **Akathisia** – a severe and unpleasant sensation of restlessness in patients causing them severe anxiety and inability to sit still
- **Dystonia** – increased rigidity or muscle contraction that may result in twisting or abnormal postures
- **Dyskinesia** – abnormal or repetitive movements (e.g.: lip smacking, eye twitching, etc.)

Administration of diphenhydramine is not indicated for treatment of chronic extrapyramidal signs and symptoms

NOTES

- Treatment of nausea and vomiting with parenteral anti-emetics should be reserved for cases of severe nausea and vomiting only. Current in-hospital treatment guidelines of pediatric nausea and vomiting secondary to gastroenteritis favor oral medication and rehydration without the need for IV access, except in severe cases.

PEDIATRIC AGITATED / COMBATIVE
(Patient is danger to self or others)

1. Contact police and request that they attend the scene immediately
2. Manage airway and assist ventilations as necessary
3. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
4. Continuous cardiac, SpO_2 and BP monitoring
5. Measure temperature and blood glucose

    - Treat hypoglycemia as per **Pediatric Symptomatic Hypoglycemia Protocol (Pg 70)**

6. Consider and treat **Reversible or Treatable Causes of Altered Mental Status[1]**
7. IV access
8. Attempt verbal management techniques for crisis intervention to de-escalate the situation and calm the patient
9. If **Indications for Physical Restraint[2]** present, apply the least amount of physical restraint necessary to protect the patient from harming themselves or bystanders until the police arrive as per **Agitated Combative / Physical Restraint Reference (Pg 110)**

[1] REVERSIBLE OR TREATABLE CAUSES OF ALTERED MENTAL STATUS

- Hypoxia
- Hypotension
- Hypoglycemia
- Medications or Toxins
- Sepsis

[2] INDICATIONS FOR PHYSICAL RESTRAINT

1) Imminent danger[3] to life OR threat of physical harm to patient and/or bystanders

AND

2) Attempts at verbal de-escalation have failed

AND

3) Attempts to restrain do NOT place the practitioner(s) at significant risk of harm to themselves

NOTES

[3] Imminent Danger – an immediate threat of significant harm to one's self or others, up to and including death

Examples of Imminent Danger:

- Actively attempting suicide
- Actively attempting to cause serious bodily injury to others
- Attempting to jump from a building or moving vehicle

CAUTION

- There is a high risk of positional asphyxia and/or aspiration in patients undergoing chemical or physical restraint. Close and continuous monitoring of these patients, including airway patency and adequacy of respirations is mandatory
- At **NO TIME** should the patient be restrained in the prone (face or chest-down) position
- Always maintain an ability to escape the scene. Position yourself between the patient and the exit at all times to maintain a safe exit should the situation escalate
- Be alert for potential weapons and hazards. If the patient has a weapon, do not attempt to disarm them. Instead, leave the scene and stage until the police declare the scene safe to re-enter
- Be aware of signs of increased agitation or aggression including, but not limited to:
  - Tense posture
  - Loud speech
  - Pacing
  - Threatening statements
  - Clenched hands
  - Hostile or aggressive body language

PEDIATRIC GENERAL APPROACH TO TOXINS MANAGEMENT

1. Scene safety: protect rescuers and patients from immediate danger and contamination
    - **Toxic exposures might require special precautions, including CBRNE precautions or decontamination, before patient treatment begins**
2. Manage airway and assist ventilations as necessary
3. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
4. Continuous cardiac, SpO_2 and BP monitoring
5. Measure temperature and blood glucose
6. IV access
7. Perform 12 Lead ECG
8. If seizure occurs refer to **Pediatric Convulsive Seizure Protocol (Pg 74)**
9. Request ACP intercept (if available). Do not delay transport in cases of severely symptomatic patients

PEDIATRIC OPIOIDS

This protocol is intended for management of the severely symptomatic pediatric patient with suspected or confirmed ingestion or use of an opioid[1] agent.

Therapy is not intended to return patient to a normal level of consciousness. The goal of treatment is a respiratory rate greater than 10 per minute with adequate ventilation.

If **ALL** of the following criteria are met proceed with **naloxone** administration as outlined:

- Impaired consciousness
- Respiratory rate less than 10 per minute
- Pupil constriction (except in suspected meperidine (Demerol) or tramadol ingestion)
- Requiring assisted ventilation

Administer **naloxone[2]** 0.2 mg - 0.4 IM/IV

- Repeat every 2 - 3 minutes if indicated, titrated to improved respiratory drive

[1] EXAMPLES OF OPIOIDS INCLUDE BUT ARE NOT LIMITED TO:

- Morphine
- Hydromorphone (Dilaudid)
- Codeine
- Oxycodone (Percocet, OxyContin, OxyNEO)
- Fentanyl
- Tramadol (Tramacet)
- Meperidine (Demerol)
- Methadone
- Buprenorphine (Butrans)
- Heroin

[2] NOTES

- Return to normal alertness is not a required outcome following naloxone administration
- Meperidine (Demerol) or tramadol are opioids that do not cause pupil constriction
- Examine patient for transdermal opioid patches (placed on the skin), including fentanyl and buprenorphine (Butrans) and remove with a gloved hand

Contact OLMC for guidance if required.

PEDIATRIC FLUID THERAPY

When IV medication or fluid therapy may be required, start a peripheral IV line or lock using 0.9% NaCl solution.

Unless otherwise directed by protocol or OLMC the drip rate will be set at TKVO rate as outlined below:

- **If age less than 8 years**: 15 mL/hour
- **If age greater than or equal to 8 years**: 30-60 mL/hour

Fluid bolus should be initiated as follows unless otherwise specified by a specific treatment protocol.

FLUID ADMINISTRATION IN TRAUMA CASES

Bolus administration of IV fluid is to be reserved for cases of hypotension **AND** evidence of poor perfusion. When indicated, administer IV 0.9% NaCl as outlined below:

- 20 mL/kg bolus until **SBP** greater than or equal to age-specific hypotension guidelines **(Pg 113)**
- There is no limit to the amount of fluid that may administered to achieve the desired target SBP

Routine administration of bolus IV fluids in the absence of age-specific hypotension is CONTRAINDICATED in the trauma patient.

IV fluid boluses are only to be administered when above criteria is met to avoid inducing coagulopathy.

FLUID ADMINISTRATION IN MEDICAL CASES (NON-TRAUMA)

When indicated as per protocol administer IV 0.9% NaCl as outlined below:

- 20 mL/kg bolus until **SBP** greater than or equal to age-specific hypotension guidelines **(Pg 113)**
- May repeat bolus administration once while indications persist
- If indications for additional IV fluid persist despite administration of two IV fluid boluses, contact OLMC

NOTES

- Carefully observe for signs of pulmonary edema and auscultate chest for crackles after every 10 ml/kg. If crackles are detected stop IV fluid bolus
- Delivery of IV fluid bolus using a buretrol or syringe is mandatory in pediatric patients less than 8 years old and should be considered in all pediatric patients greater than or equal to 8 years old

CAUTION

- Neonates and pediatric patients with hyperglycemia (Greater than 15 mmol/L) must be restricted to 10 mL/kg over 1 hour to maintain SBP greater than age-specific hypotension to avoid induction of cerebral edema
- Contact OLMC to administer additional IV fluid if age-specific hypotension persists after initial IV bolus of 10 mL/kg of 0.9% NaCl in the hyperglycemic patient

PEDIATRIC HEAT RELATED ILLNESS

This protocol is intended for the management of patients with exposure to high temperatures or high levels of exertion and without history of recent infection

1. Manage airway and assist ventilations as necessary
2. O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature and blood glucose
   - Treat hypoglycemia as per **Pediatric Symptomatic Hypoglycemia Protocol (Pg 70)**
5. IV access
   - If signs of dehydration present, administer fluid bolus as per **Pediatric Fluid Therapy Protocol (Pg 79)**
6. Begin cooling measures[1] if signs of heat exhaustion or heat stroke present[2]. Continue until temperature is less than 39°C or patient starts shivering
7. If severe agitation or combativeness is present, concurrently manage as per **Pediatric Agitated / Combative Protocol (Pg 76)**
8. If seizure occurs, proceed with **Pediatric Convulsive Seizure Protocol (Pg 74).** Continue cooling
9. Request ACP intercept (if available)

[1]COOLING MEASURES (STOP if patient starts shivering)

1) Remove the patient from hot environment and cool ambient temperature in the ambulance.
2) Remove patient's clothing and apply cool water to patient's skin.
3) Promote evaporation by using a fan or open window.
4) Apply ice packs to the groin, neck and axilla. DO NOT APPLY DIRECTLY TO SKIN

[2]SIGNS OF HEAT EXHAUSTION and HEAT STROKE

Patients with heat related illness may exhibit one or more of the following:

Heat Exhaustion

- Decreased coordination
- Sweating
- Tachycardia and hypotension
- Hyperventilation
- Headache
- Abdominal pain and/or nausea and vomiting

Heat Stroke

1) Temperature greater than 40°C **AND**
2) Altered mental status or CNS dysfunction

NOTES:

- Patients may have normal to slightly elevated temperature with heat exhaustion
- Lack of perspiration is a late sign of heat stroke
- Patients with exertional heat illness may have profound sinus tachycardia as a normal physiological response
- Dehydration may induce a profound tachycardic response in the pediatric patient

PEDIATRIC HYPOTHERMIA

This protocol is intended for the management of patients with exposure to environmental conditions consistent with hypothermia.

1. Manage airway and assist ventilations as necessary
2. O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. Measure temperature and blood glucose
   - Treat hypoglycemia as per **Pediatric Symptomatic Hypoglycemia Protocol (Pg 70)**
5. IV access
   - Treat hypotension as per **Pediatric Fluid Therapy Protocol (Pg 79)**
6. If signs of frostbite present:
   - Splint or pad effected area to minimize injury
   - Remove jewelry if required
   - Pad between effected digits and bandage effected tissue loosely with a soft, sterile dressing. Do not put pressure on the effected parts.
7. If signs of hypothermia proceed with steps for rewarming[1]
8. Request ACP intercept (if available)
9. If Cardiac Arrest occurs proceed to **Pediatric Cardiac Arrest Protocol (Pg 64)**

[1]STEPS FOR REWARMING

- Remove patient from cold environment
- Remove wet clothing (cutting preferred)
- Cover with blankets
- Increase ambient temperature in ambulance
- Apply radiant heat and/or warm blankets to core
- Use warmed IV fluids for resuscitation

Mild Hypothermia	Severe Hypothermia
1) 32°C-35°C	1) Temperature less than 32°C
2) Normal mental status	2) Decreased LOC, slurred speech and ataxia
3) Shivering	3) Decreased heart rate and respiratory rate
4) Normal to slightly elevated vital signs	4) Shivering absent below 30°C

CAUTION

- Patients in severe hypothermia often become extremely bradycardic.
- Hypothermic patients are at a high risk for VF if handled roughly. Patient movement should be limited and a horizontal position maintained whenever possible.
- Severely hypothermic patients should have their core areas warmed first. Warming extremities before core can precipitate a secondary drop in temperature.
- **DO NOT** attempt to thaw frostbitten areas.
- **DO NOT** ambulate patients with hypothermia.

PEDIATRIC ADRENAL INSUFFICIENCY

1. Manage airway and assist ventilations as necessary
2. O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2, and BP monitoring
4. Measure temperature **AND** closely monitor blood glucose
   - Treat hypoglycemia as per **Symptomatic Hypoglycemia Protocol (Pg 70)**

5. IV access
   - Administer 20 mL/kg bolus NaCl 0.9% if signs or symptoms of adrenal crisis[1] present

6. If patient meets **Criteria for Hydrocortisone Administration**[2], administer **hydrocortisone**, as outlined below:

Age	**Dose[3]**
Less than 3 years	25 mg IV
3 to 10 years	50 mg IV
Greater than 10 years	100 mg IV

[3]IM route permitted if IV is delayed or otherwise unattainable

[1]SIGNS AND SYMPTOMS OF ADRENAL CRISIS

- Nausea/Vomiting
- Hypoglycemia
- Abdominal pain
- Arrhythmia
- Age specific hypotension **(Pg 113)**
- Altered LOC
- Weakness
- Dizziness
- Pallor
- Confusion
- Lethargy

[2]CRITERIA FOR HYDROCORTISONE ADMINISTRATION

1) Patient has any **one** of the following:
   - Trauma or significant physical stressor
   - Significant emotional crisis
   - Vomiting or diarrhea
   - Signs/symptoms of acute adrenal crisis[1]
   - Fever of greater than or equal to 38ºC or signs of infection

   AND

2) Medical history of any **one** of the following:
   - 3 weeks or more of chronic glucocorticoid use
   - Malcompliance or cessation of glucocorticoid medication within 3 months
   - Addison's Disease
   - Congenital Adrenal Hyperplasia
   - Pituitary insufficiency/hypopituitarism (i.e.: tumors, previous radiation, hypopituitary disorders)
   - Bilateral adrenalectomy (removal of adrenal glands)
   - Patient presents a home adrenal insufficiency kit containing a glucocorticoid medication
   - Patient is wearing a Medic-Alert stating the patient has adrenal insufficiency

NOTES

- PMO maintains a low therapeutic threshold to administer hydrocortisone in the acutely ill or injured patient suspected to have adrenal insufficiency. There is little to no risk from a single stat dose of hydrocortisone. The risk of a low glucocorticoid level during crisis far outweighs the risk of unnecessary hydrocortisone administration.
- IV route is preferred for the administration of hydrocortisone. IM route via lateral thigh may be used if an IV is unsuccessful or otherwise delayed.
- Stress is defined as a circumstance that changes the physiological norm for the patient, and includes illness, trauma, and mental health crisis.
- Administer hydrocortisone regardless of any recent self-administration prior to EMS arrival
- Glucocorticoids are used to support treatment of a multitude of medical conditions, including but not limited to: autoimmune disorders, inflammatory bowel disease, asthma, cancer, autism, chronic allergies, and genetic enzyme deficiencies.
- Commonly prescribed glucocorticoids include, but are not limited to: prednisone, prednisolone, methylprednisolone, dexamethasone, betamethasone, triamclinolone, cortisone acetate, hydrocortisone (cortisol).
- Past history of adrenal crisis presents increased risk for repeat adrenal crisis.

CAUTION

- It is preferable to administer hydrocortisone prior to transport, as some patients in adrenal crisis may not have sufficient adrenal reserves to manage movement, even to the ambulance. These patients may deteriorate rapidly.
- Do not ambulate these patients to the ambulance.
- In the rare event that a patient with adrenal insufficiency presents with anaphylaxis, administer epinephrine first, followed immediately by hydrocortisone.

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PAGE INTENTIALLY LEFT BLANK FOR FUTURE PROTOCOL

PART III: OBSTETRICAL EMERGENCY PROTOCOLS

CHILDBIRTH

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Request ACP intercept (if available)
4. Examine patient and determine if **crowning[2]** present **(Pg 88)**

- **If NO crowning** – place in left lateral recumbent position, discourage patient from bearing down and initiate transport
- **If crowning present** – place supine and prepare for imminent delivery

IMMINENT DELIVERY AND POST-PARTUM CARE

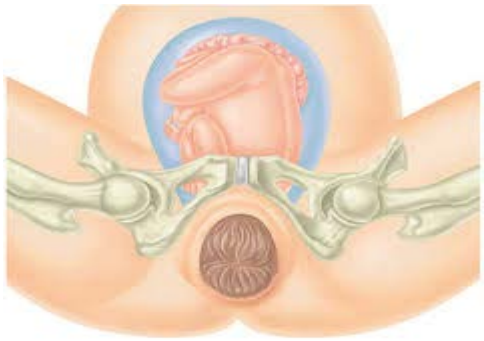
1) Call for second crew or additional resources (if available)
2) Warm ambient temperature and prepare equipment
   - Neonatal resuscitation equipment
   - Warm blankets
   - Clamps and scissors to cut umbilical cord
   - Bag for placenta
3) Apply gentle pressure to the perineum (skin stretched between the vagina and rectum) using a cupped hand and encourage a controlled (non-explosive) delivery
4) Upon delivery of the head sweep your finger around the newborn's neck to determine if the umbilical cord is wrapped around the neck (a nuchal cord). **If a nuchal cord is present**:
   - Discourage pushing and attempt to guide the loop of cord over the newborn's head prior to delivery of the shoulders
   - If the cord is tight and you are unable to guide over the head, double clamp the cord approximately 2.5 cm apart and cut the cord[1]
5) Gently guide the delivery of the anterior shoulder (shoulder up against the pubic bone) followed by the posterior shoulder (shoulder directed towards the rectum)
6) As the delivery proceeds keep the newborn below the level of the cord
7) 30-60 seconds after delivery of the newborn clamp the umbilical cord approximately 8 cm from the newborn and cut between the clamps
8) Proceed immediately with the **Neonatal Assessment and Resuscitation Protocol (Pg 91)**
   - If full-term, breathing or crying spontaneously and with good tone, wrap the newborn and place on the mothers chest to encourage skin to skin contact and reduce risk of hypothermia
9) Calculate APGAR Score at 1 and 5 minutes **(Pg 112)**
10) Prepare for delivery of placenta
   - Do not pull on umbilical cord. Allow placenta to deliver without being forced.
   - Upon delivery of the placenta, place in a plastic bag along with the umbilical cord
11) Perform **uterine fundal massage[3] (Pg 88)**

[1] NOTES

- When the cord is cut be aware that supply of oxygenated blood to the baby has been terminated
- Do not delay delivery after the nuchal cord has been cut
- Encourage active delivery once the nuchal cord has been cut

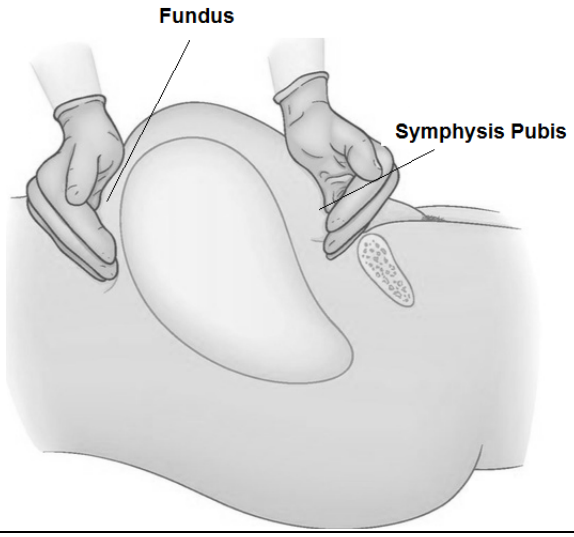
[2] CROWNING

- The phase at the end of labor in which the fetal head is seen at the opening of the vagina



[3] UTERINE FUNDAL MASSAGE

1. Place one hand horizontally across the abdomen, just above the Symphysis Pubis (Pubic bone)
2. Cup the other hand across the top of the uterus (Fundus).
3. Using a kneading or circular motion, massage the uterus between your two hands



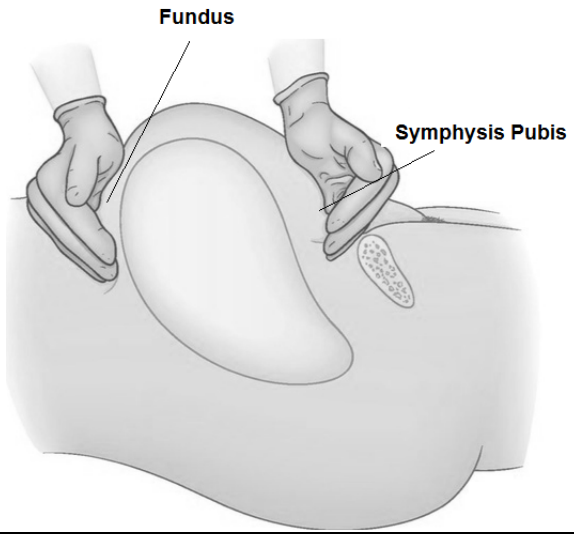
POST-PARTUM HEMORRHAGE

This protocol is intended for persistent and heavy vaginal bleeding post-vaginal delivery that is estimated to be greater than 500 mL and is refractory to conservative measures including firm uterine fundal massage.

1. Manage airway and assist ventilations as necessary
2. Administer O_2 as per **Oxygen Therapy Protocol (Pg 49)**
3. Continuous cardiac, SpO_2 and BP monitoring
4. IV access
5. Apply pressure to any bleeding perineal tears or lacerations of the perineum
6. Perform immediate **uterine fundal massage[1]**
7. Initiate fluid bolus as per **Adult Fluid Therapy Protocol (Pg 48)**
8. Request ACP Intercept (if available)

[1] UTERINE FUNDAL MASSAGE

1. Place one hand horizontally across the abdomen, just above the Symphysis Pubis (Pubic bone)
2. Cup the other hand across the top of the uterus (Fundus).
3. Using a kneading or circular motion, massage the uterus between your two hands



COMPLICATIONS OF DELIVERY

SHOULDER DYSTOCIA

- Place patient in semi-fowler's position and perform **McRoberts Maneuver[1]**
- Have assistant stand beside the patient and facing the feet, use the heel of their hand to apply downward suprapubic pressure (just above pubic bone) to encourage the anterior shoulder (shoulder up against the pubic bone) to slip beneath pubic bone
- During contraction, encourage mom to push while assistant continues application of suprapubic pressure – attempt to deliver the anterior shoulder from under the pubic bone
- If all methods fail to deliver the newborn then initiate rapid transport and notify receiving hospital immediately

BREECH PRESENTATION (BUTTOCKS FIRST)

If delivery not imminent:

- Discourage pushing and initiate rapid transport and notify receiving hospital immediately

If delivery imminent:

- Place patient in semi-fowler's position and perform **McRoberts Maneuver[1]**
- Sweep out legs and allow the buttocks and trunk to deliver spontaneously
- Support the body with your dominant forearm positioned under the newborn's torso and attempt to guide head from beneath pubic bone

LIMB PRESENTATAION

- Place patient in semi-fowler's position and perform **McRoberts Maneuver[1]**
- Keep prolapsing limb warm and moist (cover with saline towel or gauze)
- Discourage mother from pushing with contractions

PROLAPSED CORD

- Place patient in supine position and perform **McRoberts Maneuver[1]** with the hips elevated
- Avoid unnecessary manipulation of the cord
- Digitally elevate presenting part off the umbilical cord in order to maintain pulsation
- Cover exposed cord with moist, sterile dressing (saline soaked gauze)
- Initiate rapid transport and notify receiving hospital immediately

[1] MCROBERTS MANEUVER

1. Place mother positioned supine or semi-sitting
2. With knees bent and out to the side, have patient pull knees towards her shoulders
3. Have assistant push on the bottom of the feet to bring knees as high as possible to increase the anterior-posterior diameter of the pelvis

NEONATAL ASSESSMENT AND RESUSCITATION

1. Determine gestational age and proceed with **Neonatal Resuscitation Algorithm (Pg 93)** and in accordance with **General Guidelines** outlined below
2. Request ACP intercept (if available)
3. Employ strategies to prevent hypothermia in term or pre-term newborns[1]

GENERAL GUIDELINES

- Determine heart rate by continuous cardiac monitoring if resuscitation is required

NEONATAL CPR (VENTILATIONS AND COMPRESSIONS)

- Use a two-thumb, encircling the chest, technique
- Ensure high quality CPR
  - Minimize interruptions in CPR
  - Allow full recoil of the chest between compressions
  - Deliver each breath over 1 second
  - Deliver only enough volume to produce visible chest rise

Compressions : Ventilation Ratio	Depth	Rate
3:1	1/3 chest depth	90 compressions / minute 30 breaths / minute

ASSISTED VENTILATION (WITHOUT COMPRESSIONS)

- To be provided if newborn demonstrates ineffective or absent spontaneous respirations without need for chest compressions
- Rate: 40-60 breaths / minute
- Deliver each breath over 1 second
- Deliver only enough volume to produce visible chest rise
- Avoid excessive ventilation

[1] TEMPERATURE CONTROL IN THE JUST-BORN PRETERM PATIENT (LESS THAN 37 WEEKS)

- Hypothermia will have significant harmful effects on the preterm patient
- Warm ambient temperature in anticipation of delivery (above 26ºC where possible)
- Dry the newborn
- Cover newborn, from the neck down, with loose fitting plastic “wrap” (circumferential) or a plastic bag
- Cover head with a hat or part of a warmed blanket
- Wrap newborn a warm blanket or place skin-to-skin with mother and cover both mother and newborn with a warm blanket

BLOOD GLUCOSE MEASUREMENT AND HYPOGLYCEMIA IN THE JUST BORN PATIENT

- Patients that have just been born will typically have blood sugars below normal adult values
- Routine measurement of BGL in the just born patient is not recommended

INDICATIONS FOR BGL MEASUREMENT IN THE JUST-BORN PATIENT

- BGL measurement is required **ONLY** if the patient is:

  1) Pre-term

     OR

  2) Full-term **AND** requiring intervention or resuscitation beyond routine post-natal supportive care

- If BGL is less than 2.6 mmol/L – administer **dextrose** 10% 5 mL/kg SIVP

Contact OLMC if BGL between 2.6 and 4 mmol/L in the populations indicated above to discuss need for intervention and management options

NEONATAL RESUSCITATION

Assess patient:
- Term gestation?
- Breathing or crying spontaneously?
- Good tone?

YES →

Routine Post-Natal Care
- Clear airway if necessary
- Warm and dry
- Provide ongoing evaluation

Initiate resuscitation
- Provide warmth
- Clear airway if necessary[1]
- Dry and stimulate

[1] **IF MECONIUM PRESENT AND NON-VIGOROUS** (Poor respiratory effort, poor tone **OR** heart rate less than 100):
- Suction mouth, oropharynx and then nose

Evaluate heart rate and breathing
- Heart rate less than 100?
  OR
- Gasping or apnea?

NO → Proceed with **Routine Post-Natal Care (Above)**

YES

Initiate BMV, SpO_2 / Cardiac monitoring

15 sec

Heart rate less than 100?

NO →

Post-Resuscitation Care
- Keep warm
- Continuous cardiac and SpO_2 monitoring
- Measure BGL and treat hypoglycemia **(Pg 92)**

YES

Evaluate for Chest Movement, Take Ventilation Corrective Steps[2] if needed, Continue BVM

30 sec

Heart rate less than 60?

NO ↑

YES

Initiate CPR
- Coordinate chest compressions with BMV, 100% O_2

60 sec

Heart rate less than 60?

NO ↑

YES

Continue CPR
- Continue chest compressions coordinated with BMV
- Consider and treat **Reversible Causes[3]**

[2] **VENTILATION CORRECTIVE STEPS**

M: Mask readjustment
R: Reposition airway

S: Suction mouth and nose
O: Open mouth
P: Pressure increase
A: Airway alternative

[3] **REVERSIBLE CAUSES**
1) Hypovolemia
2) Hypoglycemia **(Pg 92)**
3) Hypothermia
4) Pneumothorax

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PART IV: REFERENCES

12 LEAD ECG GUIDELINES

INDICATIONS FOR 12 LEAD ECG

12 lead acquisition is required in any patient presenting with:

- Chest pain
- Jaw pain
- Left arm pain
- Epigastric pain
- Non-traumatic back pain
- Shortness of breath
- Syncope
- Palpitation
- Weakness
- Nausea or vomiting
- Altered LOC
- Toxic ingestion or overdose
- Suspected electrolyte disturbance
- Dysrhythmia on 3 lead ECG
- Irregular pulse
- Diaphoresis disproportionate to environment

In addition to the indications listed above a 12 lead ECG should be performed any time the paramedic feels it is indicated

SERIAL 12 LEAD ECGs

If the initial 12 lead does not show evidence of ST elevation in a patient experiencing chest pain serial 12 lead ECGs must be performed as outlined below:

1) In ambulance just prior to transport
2) Every 15 minutes during transport (if transport time greater than 30 minutes)
3) Just prior to arrival to receiving health care facility
4) Any time patient condition or ECG rhythm changes

If the initial 12 lead demonstrates evidence of ST elevation MI serial 12 leads are not required unless there is a change in patient condition or ECG rhythm changes

NOTES

- Acquiring a 12 lead ECG should not prolong scene time or transport more than 2 minutes
- 12 lead acquisition should be performed concurrent with other assessment and care and should not interfere with treatment protocols
- Any time a 12 lead has been acquired a copy of the 12 lead must be attached (stapled) to the PCR to be left at the receiving facility and labeled with the patient's surname and MCP number. A second copy of the 12 lead ECG must be attached (stapled) in an identical manner to the copy of the PCR to be kept by the ambulance service provider.
- You must document the device interpretation of the 12 lead ECG in the narrative portion of the PCR

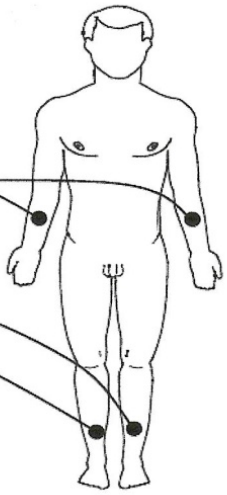
12 LEAD ECG ACQUISITION TECHNIQUE

Procedure

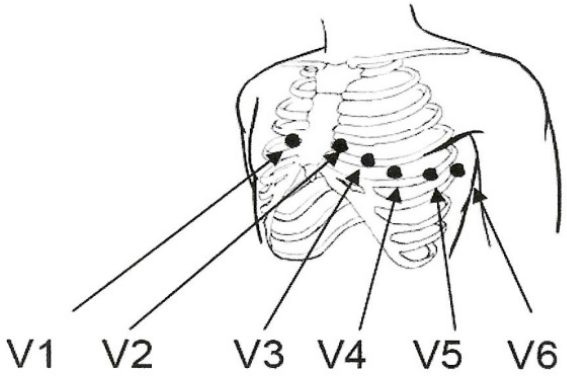
1. Place the patient in a supine or semi-sitting position
2. Expose chest enough to acquire a 12 lead ECG. Take all steps necessary and possible to protect the patient's dignity and privacy
3. Prep the skin with alcohol or other wipe. Remove excess chest hair where needed for good contact. If patient is large breasted or obese, be sure to place leads correctly.
4. Attach the four limb and chest leads to the patient
5. Reduce causes of artifact. Stop patient movement. If en route to hospital, stop ambulance to acquire ECG.

Limb lead placement (wherever possible, avoid large muscle mass)

- **RA**: right forearm or wrist
- **LA**: left forearm or wrist
- **LL**: left lower leg
- **RL**: ground lead is generally placed on the right lower leg



Precordial Leads: V1 – V6



VI: 4th intercostal space, right sternal border
V2: 4th intercostal space, left sternal border
V3: between V2 and V4
V4: 5th intercostal space, mid-clavicular line
V5: anterior axillary line, in straight line with V4
V6: mid-axillary line, in straight line with V4 and V5

NON-EMS MEDICAL PERSONNEL ON SCENE

The medical care provided at the scene is the responsibility of the highest level provider dispatched to the scene.

A physician, nurse or other medical personnel will only assist in patient care with the approval of the EMS provider.

Physician on Scene

- If the physician provides orders in agreement with the EMS provider's protocols, you may work with that physician within the confines of the provider's protocols
- If the physician provides orders that are in conflict with protocols or that are outside the scope of practice of the provider, the physician must:
  1. Agree to take responsibility for the patient's care
  2. Agree to accompany the patient to the receiving facility
  3. Document their involvement on the PCR and sign the PCR
- If the physician does not agree to the above or at any time terminates care they have initiated, notify the physician that you are required to discuss the case with the OLMC physician and that the OLMC physician may wish to discuss the patient care provided
- Any concerns regarding patient care must discussed with OLMC

Nurse or Other Medical Personnel on Scene

- The nurse or other medical personnel's assistance must follow the EMS provider's protocols
- If the nurse or other medical personnel wish to deviate from the EMS provider's protocols, they shall be informed that care **will not** deviate from the protocols

Off-duty EMS providers may participate in patient care as per the Off-Duty EMS Personnel Protocol **(Page 99)**. If the Off duty EMS provider does not meet the criteria in this protocol, they are considered "Other Medical Personnel" for the purposes of this protocol and are advised to have valid personal errors and omissions insurance.

Off-duty providers without privately obtained errors and omissions insurance will not be covered by their employer's insurance if they provide patient care while off duty and will be held personally liable in the event of legal action resulting from the patient encounter.

OFF-DUTY EMS PERSONNEL

Off-duty EMS personnel who are at the scene of an incident may assist members of the responding unit only if:

- Approval is granted by the lead provider
- They agree to take responsibility for patient care, document their involvement on the patient care report and accompany the patient to the hospital if administering a higher level of care than the responding provider
- They have active errors and omissions insurance through one of the following options:
  - A preexisting written memorandum of understanding specifically granting errors and omissions insurance coverage during off-duty hours and for when a practitioner is placed in a humanitarian situation
  - Obtaining appropriate personal errors and omissions insurance

Off-duty providers without errors and omissions insurance will be held personally liable in the event of legal action resulting from the patient encounter.

PMO encourages all practitioners to obtain private errors and omissions insurance, regardless of their employers insurance, to protect themselves in the event of personal litigation.

ACP INTERCEPT

If identified by protocol or when the PCP deems it necessary, an ACP Intercept may be requested.

Intercepts should be activated as early as possible. They may be cancelled by the requesting crew if reassessment determines that it is not required.

The following list of conditions indicate the need for an ALS intercept:

- Abdominal pain with unstable vital signs
- Accident/assault victims with multiple trauma or high-risk injuries and/or unstable vital signs
- Airway compromise/potential compromise
- Altered LOC: unstable or declining
- Anaphylaxis: unresponsive to initial treatment
- Arrest: cardiac or respiratory
- Chest pain or cardiac problems
- GI bleed with unstable vital signs
- Hemorrhage: internal/external – uncontrollable or with signs of shock
- Respiratory distress unresponsive to initial treatment
- Seizures: ongoing (greater than 5 minutes) or repetitive
- Abnormal vital signs

CAUTION

- Do not delay patient transport to await arrival of the intercepting unit at the scene
- Initiate transport and rendezvous with intercepting crew en route to hospital

INTERCEPT DOCUMENTATION

- The original responding crew must document all patient care activities up to and including, the point of transfer of care on the initial (Primary Claim) PCR. This must also include all patient identifiers and information necessary for billing purposes.
- Once care is transferred to the intercepting crew, the intercepting crew must complete a second PCR documenting all patient care activities from the point of transfer of care until transfer of care to hospital staff. The second PCR must also include all patient identifiers and information necessary for billing purposes.
- The intercepting crew MUST document the Primary Claim ID Number of the initial PCR used by the crew that initially responded to the call.
- The original responding crew MUST document the PCR number belonging to the intercepting crew in the narrative portion of the original (Primary Claim) PCR.

REFUSAL OF CARE

Adult patients (or a **mature minor**[1]) with medical decision-making capacity have the right to refuse pre-hospital assessment, management or transport. These patients must sign a Refusal of Care Form provided they meet the criteria outlined below.

Persons that meet the criteria below can refuse treatment:

1) An adult over the age of 18
2) A mature minor[1]
3) A parent or legal representative[2] of a minor
4) Legal representative of dependent adults[3]

Procedure

1. Determine the patient's **capacity[4] for decision making** and document on PCR. The patient has the capacity for medical decision-making if they meet **ALL** of the following criteria:

The patient may be considered to have capacity for medical decision-making if they meet **ALL of the following criteria:**

a) GCS of 15
b) Converse spontaneously
c) **FULLY** oriented and follow commands
d) **DO NOT** have impairment due to drugs or alcohol
e) Not in a postictal state
f) Have a reasonable understanding of :

- the nature of the illness/injury
- the recommendations made
- the benefits that could result from treatment or transport
- the risks involved in not seeking treatment or transport (as outlined and documented by the practitioner)

g) The decision of non-transport is consistent with the patient's normal set of values and beliefs (e.g. Is this a decision that the patient would normally make under similar circumstances?)

2. Ensure absence of medical conditions that may affect patients capacity for medical decision-making including but not limited to:

- Hypoglycemia
- Hypotension
- Hypoxia
- Delirium
- Dementia
- Developmental disability
- Intoxication

REFUSAL OF CARE Cont'd

3. If it is determined that the patient has capacity for medical decision-making, contact with OLMC is **NOT** required. Practitioners must ensure to:

- Explain and document on the PCR the possible risks and consequences of refusal of treatment or transport
- Educate patient and bystanders to call back if patient worsens or if they change their mind regarding treatment and transport
- Recommend that contact be made with the patient's family physician
- Offer assistance in arranging alternative transportation
- Have patient and witness sign the Refusal of Care Form

4. If it is determined that the patient does **NOT** have capacity for medical decision-making and is suicidal, poses a risk of bodily injury to themselves or others as a result of mental illness or is intoxicated and in need of medical treatment, contact Police and/or OLMC for assistance.

NOTES

- A refusal of care or transport must be a patient-initiated request or inquiry. Practitioners must never suggest or encourage patients to refuse care and/or transport. Patients have a right to access the care provided in the Emergency Department via medical transport
- Medical decision-making and refusal of care or transport must be a decision made by the patient free of fear, constraint, compulsion, coercion or duress
- Patients who are minors (under age 19 and not considered to be a mature minor[1]) cannot refuse care. However, if the minor's parent or legal guardian demonstrates capacity for medical decision-making and agrees to assume responsibility for the minor, they must sign the Refusal of Care Form on behalf of the minor

DEFINITIONS

[1] **Mature minor:** A teenager who is assessed by a health care provider to have capacity to make a specific treatment decision based on a demonstrated ability to understand information surrounding his or her presentation including:

- Nature of his or her medical condition
- Proposed treatment and/or alternatives
- Risk and benefits of the proposed treatment and/or alternatives
- Risks or foreseeable consequences of consent to treatment or refusal of care

[2] **Legal representative**: Court appointed individual(s) responsible for making health care related decisions for dependent adult or minors

[3] **Dependent adult**: Any adult who is greater than or equal to 18 years of age, completely or partially dependent upon one or more other person(s) for care or support, has not established financial independence and would likely be in danger if care or support was withdrawn

[4] **Capacity**: The patient understands the nature of his or her medical condition, risks and benefits of care and/or transport, risks or foreseeable consequences or refusal of care or transport and the patient demonstrates this understanding of the explanation(s) of these elements by the attending practitioners

POTENTIAL COMMUNICABLE/QUARANTINABLE DISEASE

INDICATORS OF POTENTIAL COMMUNICABLE OR QUARANTINABLE DISEASE

1) Fever (Temperature greater than or equal to 38ºC)

AND

2) Any **ONE OR MORE** of the following:

- Appearing obviously unwell
- Shortness of breath (recent onset)
- Multiple ill travelers aboard conveyance
- Persistent cough or coughing blood
- Persistent vomiting or diarrhea
- Bruising or bleeding (without previous injury)
- Headache
- Confusion (recent onset)
- Sore throat
- Muscle pains
- Intense weakness
- Skin rash

QUARANTINE OFFICER (ATLANTIC REGION) – 902-873-7659

1. If the patient meets the above indicators of a potential communicable disease, alert all emergency responding agencies of appropriate personal protective equipment (PPE) requirements (to include, but not limited to: **gloves, gown, goggles and N95 mask for the emergency responder; mask and appropriate draping for the patient)**
2. If the patient meets the potential communicable/quarantinable indicators **OR** case involves a **Known Quarantinable Disease[1] AND** is an international traveler being picked up at a port of entry (air or sea) notify the Quarantine Officer (QO) before leaving the vessel or aircraft and passing through customs (902-873-7659) for further direction
3. Notify the receiving facility of a Potential Communicable/Quarantinable Disease
4. Notify dispatch that the transport vehicle will be unavailable after transport until decontamination has occurred (confer with local hospital Infection Control)

[1] KNOWN QUARANTINABLE DISEASES

Active pulmonary tuberculosis	Argentine hemorrhagic fever
Anthrax	Bolivian hemorrhagic fever
Botulism	Brazilian hemorrhagic fever
Cholera	Crimean-Congo hemorrhagic fever
Diphtheria	Ebola hemorrhagic fever
Measles	Marburg hemorrhagic fever
Pandemic Influenza Type A	Venezuelan hemorrhagic fever
Plague	Rift Valley Fever
Poliomyelitis	Tularemia
Smallpox	Typhoid Fever
Severe Acute Respiratory Syndrome (SARS)	Yellow Fever
	Lassa fever

QUARANTINE OFFICER (ATLANTIC REGION) – 902-873-7659

MASS CASUALTY INCIDENT MANAGEMENT

ORGANIZATION

1. Incident Command and Triage Coordinator are established by the first arriving unit
   - Roles may change as additional personnel arrive
2. Scene size up

INCIDENT COMMAND

1. Estimate number of victims and notify dispatch
2. Request appropriate number of responding units, special equipment, mutual aid units and additional resources as needed
3. Identify staging area, access and egress routes
4. Identify treatment area
5. Assign other positions as additional crews and help arrive:
   - Treatment Coordinator
   - Transport Coordinator
   - Litter bearers / extrication teams
   - Other duties as required

TRIAGE COORDINATOR (Lowest trained personnel)

1. Direct all walking wounded to a designated area
   - If possible, direct a few people to remain in the triage area and assist victims as required
2. Triage of victims should be initiated immediately using the **START (Pg 105)** or **JumpSTART** system **(Pg 106)**
3. Perform only the most life saving measures (open airway, stop bleeding)
4. Oversee and direct litter bearers to transport patients from the triage area to the treatment area according to triaged priority

TREATMENT COORDINATOR (Highest trained personnel)

1. Establish treatment areas
   - If incident is large, designate separate treatment areas for each triage level, including a morgue separate from other victims
2. Ensure aggressive treatment and rapid packaging of patients
3. Assign and supervise treatment teams
4. Assign transport priorities (transport highest priority first) and communicate this to transport coordinator

TRANSPORT COORDINATOR

1. Establish and supervise the Staging Area as well as access and egress routes
2. Establish and supervise the patient loading zone
3. Assign and supervise rapid and efficient loading of patients
4. Ensure smooth flow of ambulance traffic and avoid congestion of vehicles
5. Maintain a log containing the victim names, nature of injuries, time of transport, destination and triage tag number
6. Notify the receiving facility of patient transports, including a brief description of injuries

NOTES

- There must be adequate medical personnel working in the treatment area prior to initiating transportation of the patients to receiving facilities
- All personnel are to restrict radio communications to a minimum

SIMPLE TRIAGE AND RAPID TREATMENT (START) TRIAGE SYSTEM

The purpose of the **Simple Triage And Rapid Treatment (START)** system is to efficiently triage and transport adult victims of a multiple or mass casualty incident. This is used when the number of injured exceed the capabilities of the first arriving units or for large scale incidents.

GENERAL GUIDELINES

- Triage of victims should take no longer than 60 seconds per patient
- Assess "**R-P-M**" (Respirations, Perfusion and Mental Status) for each patient
- Tags of appropriate color should be placed on the upper extremity or in a visible location
- Reassessments may be conducted and priority may be changed once all patients have been triaged

PROCEDURE

1. Identify **"Walking Wounded"**
- Voice triage should be used to direct the walking wounded to a designated area
- If patient (s) able to walk to the designated area → Tag **GREEN – Minor**
- Proceed with evaluation of remaining patients as outlined in Steps 2 – 5

2. Assess **R – Respirations**

- If respiratory rate is greater than 30 → Tag **Red – Immediate**
- If patient is not breathing → Open airway and reassess
  - If patient remains apneic despite airway opening → **Tag Black – Deceased**

3. Assess **P – Perfusion** (Radial pulse and capillary refill)

- If absent radial pulse OR capillary refill greater than 2 seconds → Tag **Red – Immediate**

4. Assess **M – Mental Status**

- If patient is unconscious, disoriented OR unable to follow simple commands → Tag **Red – Immediate**

5. For all remaining patients → Tag **Yellow – Delayed**

JUMP SIMPLE TRIAGE AND RAPID TREATMENT (JumpSTART) TRIAGE SYSTEM

The purpose of the **Jump Simple Triage And Rapid Treatment (JumpSTART)** system is to efficiently triage and transport pediatric (Age 1-8 years) victims of a multiple or mass casualty incident. This is used when the number of injured exceed the capabilities of the first arriving units or for large scale incidents.

GENERAL GUIDELINES

- The JumpSTART system is to be utilized in pediatric patients (Age 1-8 years) only
- Triage of victims should take no longer than 60 seconds per patient
- Assess "**R-P-M**" (Respirations, Perfusion and Mental Status) for each patient
- Tags of appropriate color should be placed on the upper extremity or in a visible location
- Reassessments may be conducted and priority may be changed once all patients have been triaged

PROCEDURE

1) Identify **"Walking Wounded"**

- Voice triage should be used to direct the walking wounded to a designated area
- If patient (s) able to walk to the designated area → Tag **GREEN – Minor**
- The "walking wounded" categorization does not apply to pediatric patients being carried by an adult to the designated area
- Proceed with evaluation of remaining patients and those being carried, as outlined below

2) Assess **R-P-M**

1) **R – Respirations**
   - If respiratory rate is less than 15 or greater than 40 → Tag **Red – Immediate**
   - If patient is not breathing → Open airway and reassess
     - If breathing resumes → Tag **Red – Immediate**
     - If patient remains apneic → Check pulse
       - If no pulse → Tag **Black – Deceased**
       - **If pulse present → Perform BMV for 15 seconds (5 ventilations)**
         - If respirations resume → Tag **Red – Immediate**
         - If no respirations → Tag **Black – Deceased**

2) **P – Perfusion** (Radial and brachial pulse)
   - If absent radial **AND** brachial pulse → Tag **Red – Immediate**

3) **M – Mental Status** (AVPU)
   - Assess using the AVPU scale and proceed as outlined below:
     - If **A**lert, responsive to **V**erbal stimulus or appropriately responsive to **P**ain → Tag **Yellow – Delayed**
     - If **U**nresponsive or demonstrates an inappropriate response to **P**ain → Tag **Red – Immediate**

COMMUNICATIONS REFERENCE

RADIO REPORT TO RECEIVING FACILITY

Radio reports should be kept as **concise** as possible and contain essential information to ensure Emergency Department preparedness to receive the patient and provide necessary care without delay.

A concise radio report should be followed by a more detailed verbal report upon arrival to the receiving facility.

The purpose of the radio report is to provide an opportunity for the receiving facility to activate the appropriate resources and services to address the immediate needs of the patient.

RADIO REPORT COMPONENTS

1) Unit identification
2) Age and gender of patient
3) Level of consciousness
4) Chief complaint or primary reason for transport
5) History of present illness or injury
6) Relevant Past Medical History
7) Relevant medications (Contributing to presentation or taken by patient)
8) Relevant physical exam findings
9) Treatment rendered and response
10) Estimated time of arrival (ETA)

CONSULTATION WITH OLMC

Consultation with OLMC should take place when directed to do so by a protocol **OR** any time the practitioner requires the advice of a physician to care for his or her patient.

Be prepared to provide a comprehensive verbal report to the OLMC physician that includes all the necessary information in order for the physician to properly advise you with respect to patient care.

Upon being connected with the physician you must provide the physician with the following identifying information at the start of the conversation:

1) Your name
2) Level of training
3) Registration number

This identifying information must be repeated to the physician even if you have already provided this information to the dispatcher.

OLMC PATIENT REPORT COMPONENTS

When discussing the patient with the OLMC physician it is important that all necessary pieces of information are presented. This is important to ensure the physician has all the details necessary to provide you with the safest and most appropriate advice for each individual patient. Please be sure to include all of the following OLMC Report components in your case presentation:

1) Age and gender of patient
2) Chief complaint or primary reason for transport
3) History of present illness or injury
4) Past Medical History
5) Medications
6) Allergies
7) Physical exam findings
8) Complete set of vital signs
9) Treatment rendered
10) Specific questions practitioner has for the physician or request for order(s)

When orders are received from the physician the practitioner must repeat the order(s) including drug name, route of administration, dose and repeats to the physician for clarification.

It is essential that you state the numerical value of each vital sign rather than making a general statement such as "vital signs are normal". What is "normal" will vary depending on the case and the physician requires the actual vital sign result to make a medical recommendation.

COMMUNICATIONS FAILURE

In case of a communications failure with OLMC due to equipment (radio, cell phone and/or landline) malfunction or due to incident location, the following will apply:

- Practitioner(s), may within the limits of their Certification(s), perform necessary procedures, that are contained within the protocols that would require a direct physician order under normal circumstances
- Procedures performed must be limited to the minimum amount necessary to prevent the loss of life or the critical deterioration of a patient's condition
- All the procedures performed under this order and the conditions that contributed to the communications failure must be documented in detail on the patient care record
- Practitioner must continue to make efforts to contact OLMC during transport

Practitioners are required to contact PMO the following business day to report the details of the communications failure.

SPECIAL PATIENT PREHOSPITAL TREATMENT

Guideline

Patients with high-risk diagnoses requiring special treatment may be issued individual protocols by **Provincial Medical Oversight**. The unique circumstances are evaluated by PMO, and an identification card is issued to identify these patients. It is important to identify these patients as soon as possible to initiate care required. The patients are instructed to have the cards with them and present to EMS upon their arrival. The protocols on the card are developed by the Provincial Medical Director, in consultation with care givers and physicians involved with the management of the patient.

Procedure

1. Manage airway
2. O_2 as appropriate
3. Immediately request ACP Intercept
4. Verify special patient card information

Contact OLMC for Special Protocol Authorization.

NOTE:

[1] **Treatment indicated on card is to be limited to scope of practice**. In these rare circumstances, practitioners are permitted to allow the patient or care givers educated in the administration of medications or interventions to provide those interventions. Ultimate responsibility for patient management lies with the practitioner.

AGITATED COMBATIVE / PHYSICAL RESTRAINT

Physical restraint is an intervention of last resort that should only be utilized when there is an imminent danger to life or threat of physical harm to the patient and/or bystanders and reasonable attempts to defuse the situation with verbal de-escalation strategies have failed.

Practitioners should utilize the least amount of restraint necessary to protect the patient and/or bystanders from harm until police arrive. Practitioners may apply physical restraint up to the point where such force would reasonably be considered to be excessive or where practitioners are no longer able to safety apply restraint as a result of imminent danger of harm to them.

Provided that indications for physical restraint are present, such restraint may be applied regardless of whether or not the patient has been formally evaluated under the Mental Health Care and Treatment Act or if the patient is categorized as “voluntary” or “involuntary” under the Act.

INDICATIONS FOR PHYSICAL RESTRAINT

1) Imminent danger to life OR threat of physical harm to patient and/or bystanders

AND

2) Attempts at verbal de-escalation have failed

AND

3) Attempts to restrain do NOT place the practitioner(s) at significant risk of harm to themselves

Police attendance must be requested immediately if there is a need to physically restrain a patient or if a patient has been physically restrained based on the presence of the criteria listed above. If the estimated time of arrival for the police is anticipated to be prolonged, contact OLMC regarding the transport decision.

IMMINENT DANGER

Imminent danger refers to an immediate threat of significant harm to one’s self or others, up to and including death.

Examples of imminent danger include, but are not limited to the following:

- Actively attempting suicide
- Actively attempting to cause serious bodily injury to others
- Attempting to jump from a building or moving vehicle

AGITATED COMBATIVE / PHYSICAL RESTRAINT Cont'd

SITUATIONAL CONSIDERATIONS

Scene Calls

- If previous dispatch information alerts practitioners to a potentially dangerous situation and police are not on scene prior to crew arrival, crews should stage at a safe distance away from the scene and wait for police arrival prior to initiating patient contact
- If the patient becomes hostile while crew is on scene, exit the scene and remain in the ambulance a safe distance away until police arrive
- Request that police accompany the patient in the ambulance en route to hospital
- If hard restraints (i.e. hand cuffs) are placed by police, police must accompany the patient in the ambulance

Inter-facility Transfers (Prior to departure)

- Type of restraint should be ordered by the attending physician and applied before departure from the facility
- Patients requiring physical restraints must be accompanied by facility escort trained in the use of the applied physical restraints. If hard restraints (i.e. hand cuffs) are in place, police must accompany the patient in the ambulance.
- If chemical restraint is used, a facility escort must accompany the patient
- If practitioners feel that some sort of restraint is required and is not ordered, they should discuss their concerns with staff at the sending facility. If the matter cannot be satisfactorily resolved practitioners are required to contact OLMC to discuss need for chemical or physical restraint for safe transport. If deemed necessary, the OLMC physician will discuss patient care needs for safe transport with the attending physician at the sending facility.

If at any time during transport the patient's behavior escalates beyond the crew's ability to safely manage the situation (Scene calls or Interfacility transfers):

- Immediately call for the police assistance and ask the driver to pull the ambulance over to the side of the road
- Attempt verbal management techniques to de-escalate the situation and calm the patient
- If verbal management techniques are unsuccessful and indications for physical restraint are present, both crew members should attempt to physically restrain the patient as per Agitated / Combative Protocol
- If practitioners are unable to safely apply restraint as a result of imminent danger of harm to themselves, practitioners should exit the vehicle, remove the keys from the vehicle and move to a safe location, away from the road, while waiting for police to arrive

PEDIATRIC REFERENCE

CLASSIFICATION OF PEDIATRIC PATIENTS

Pediatric patient: Pre-pubescent. Signs of puberty include breast development on the female and underarm or chest hair on the male.

- **Neonate** 0 to 28 days
- **Infant** 29 days to 12 months
- **Child** 1 year to puberty
- **Adolescent** pre-puberty to adult

MATURE MINOR

A teenager who is assessed by a health care provider to have capacity to make a specific treatment decision based on a demonstrated ability to understand information surrounding his or her presentation including, but not limited to:

- Nature of his or her medical condition
- Proposed treatment and/or alternatives
- Risks and benefits of the proposed treatment and/or alternatives
- Risks and foreseeable consequences of consent to treatment and/or alternatives
- Risks and foreseeable consequences of refusal of care

APGAR SCORE

Parameter	0	1	2
Appearance, color	Blue, pale	Centrally pink	Completely pink
Pulse, heart rate	None	Less than 100	Greater than 100
Grimace, reflex	No response	Grimace	Cough, gag, cry
Activity, attitude	Flaccid or limp muscle tone	Some flexion	Well-flexed or active motion
Respiratory effort	None	Weak, irregular irritable	Good, crying

PEDIATRIC HEART RATE AND RESPIRATIONS

Age	Heart Rate	Respirations
Less than 1 year	100 – 160	30 – 60
1 – 2 years	90 – 150	24 – 40
2 – 5 years	80 – 140	22 – 34
6 – 12 years	70 – 120	18 – 30
Greater than 12 years	60 – 100	12 – 16

PEDIATRIC REFERENCE Cont'd

AGE-SPECIFIC HYPOTENSION (5th PERCENTILE FOR SBP) GUIDELINES

Age	Hypotension SBP (Less than 5th Percentile for SBP)
0 – 28 days	Less than 60 mmHg
1 month – 12 months	Less than 70 mmHg
1 year – 10 years	[70 + (2 x age in years)] mmHg
Greater than 10 years	Less than 90 mmHg

PEDIATRIC WEIGHT ESTIMATION

- **Weight (Kg)** = $\frac{3 \times (\text{Age in years}) + 7}{}$

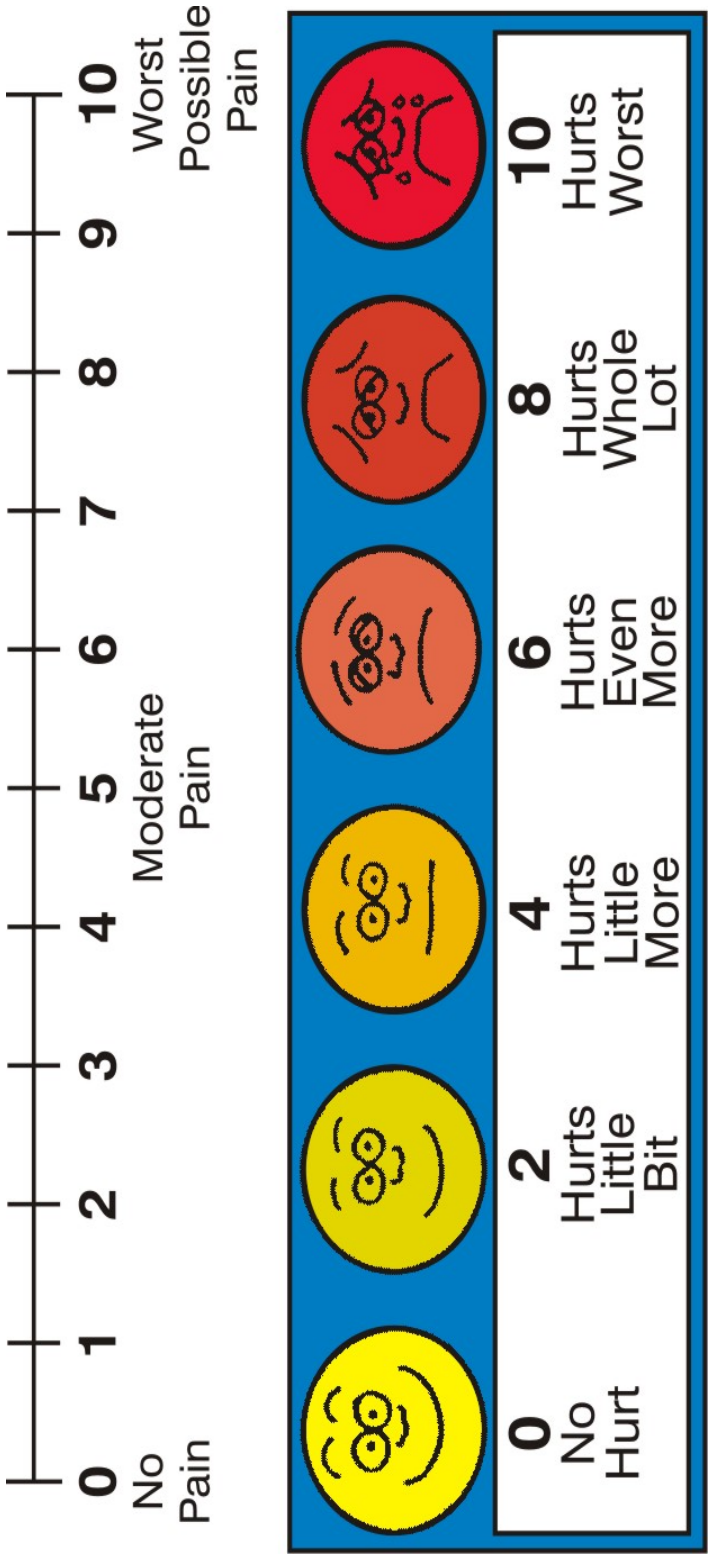
NOTES

- Broselow tape is one of the most accurate ways to estimate pediatric parameters including but not limited to vital signs and weight and should be used if available

PEDIATRIC DEVICE REFERENCE

Equipment	Under 3 kg	3-5 kg	6-7 kg	8-9 kg	10-11 kg	12-14 kg	15-18 kg	19-23 kg	24-29 kg	30-36 kg
Resuscitation Bag	Infant	Infant	Infant / Child	Child	Child	Child	Child	Child	Child	Adult
Oxygen Mask (NRB)	Infant	Infant	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric / Adult
OPA (mm)	30-40	40-50	50	50	60	60	60	70	80	80
Suction Catheter (F)	5-6	5-8	8	8	10	10	10	10	10	10-12
BP Cuff	Neonatal #5 / Infant	Infant / Child	Infant / Child	Child	Child	Child	Child	Child	Child	Small Adult

PAIN SCALE


0
No Pain
1
2
3
4
5
Moderate Pain
6
7
8
9
10
Worst Possible Pain
0
No Hurt
2
Hurts Little Bit
4
Hurts Little More
6
Hurts Even More
8
Hurts Whole Lot
10
Hurts Worst

DEFINITIONS SURROUNDING DNR, TOR AND DETERMINATION OF DEATH

SUBSTITUTE HEALTH CARE DECISION MAKER

The person appointed by the Maker of an advance health care directive to make health care decisions on his or her behalf. The first named person or a member of the category of persons on the following list may, **if he or she is at least 19 years of age**, act as a SHCDM; the patient's:

1) Appointed substitute decision maker or a guardian that has been appointed for the purpose by a court and named on the advance health care directive
2) Spouse
3) Children
4) Parents
5) Siblings
6) Grandchildren
7) Grandparents
8) Uncles and aunts
9) Nephews or nieces
10) Another relative
11) Health care professional who is responsible for the proposed health care

VALID ADVANCE HEALTH CARE DIRECTIVE (AHCD)

A document which sets out the Maker's instructions or the Maker's general principles regarding his or her health care treatment or in which a Maker appoints a substitute decision maker or both (Maker means a person who makes an advance health care directive).

An Advance Health Care Directive shall be:

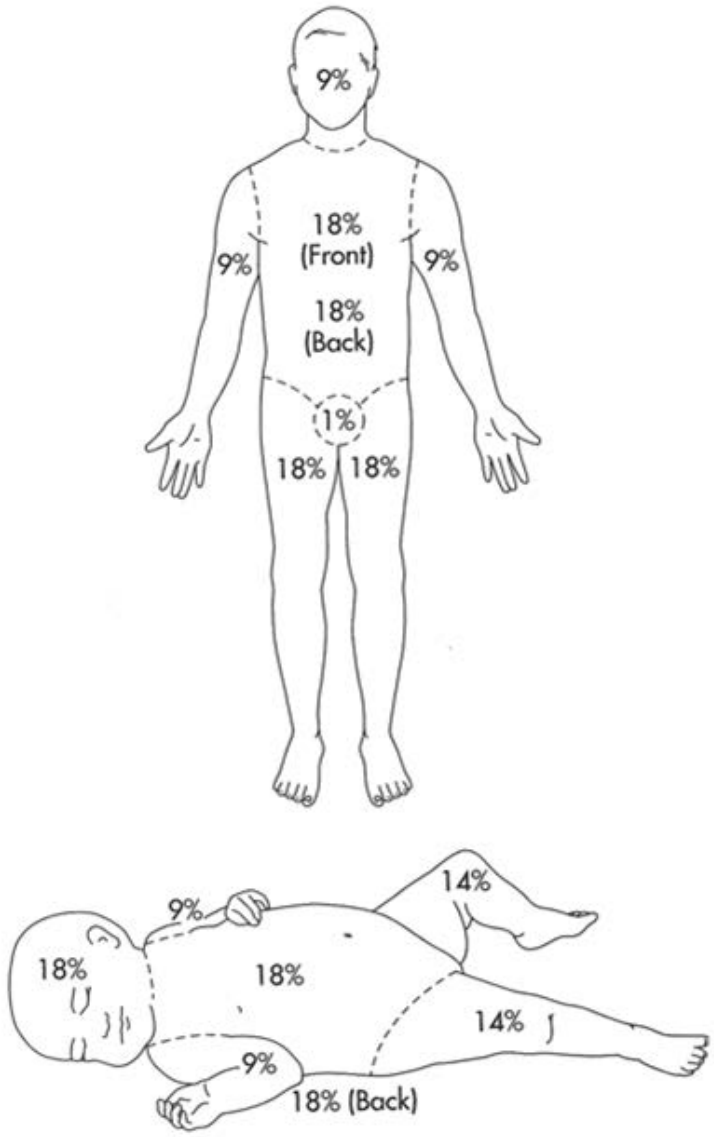
1) In writing
2) Witnessed by at least 2 independent persons
3) Signed by the Maker

VALID DO NOT RESUSCITATE (DNR)

Is a written order issued and signed by a physician that resuscitation should not be attempted if a person suffers cardiac or respiratory arrest. Such an order may be instituted on the basis of an AHCD from a person or from a substitute health care decision maker or by a physician and it is designed to prevent unnecessary suffering.

BURN REFERENCES

RULE OF NINES



- A method of estimating burn injury that divides the total body surface area (BSA) into sections that are multiples of 9%
- This method provides a rough estimate of burn injury size and is most accurate for adults and children greater than 10 years of age
- If burns are irregularly shaped or have a scattered distribution, the Rule of Palms may provide a better estimate of burn surface area. The surface of the patient's hand (palm and fingers) equals approximately 1% of the total BSA.

PARKLAND FORMULA

Formula used to estimate the total volume of fluid replacement required by the burn patient in the first 24 hours post-injury

- **Total fluid required in first 24 hours (mL)** = [4 x (Weight in Kg) x (TBSA[1])
  - Administer ½ of the total volume over 8 hours
  - Administer the second ½ of the total volume over the subsequent 16 hours

NOTES

[1] TBSA should be the whole number percent estimate of the TBSA rather than the percentage expressed as a decimal. For example – for a 40 Kg patient suffering 27% burns:

- Total fluid required in first 24 hours = [4 x 40 x **27**] = 4320 mL

GLASGOW COMA SCALE

The Glasgow Coma Scale is a clinical tool used to assess the degree of consciousness and neurological functioning - and therefore severity of brain injury - by testing eye opening, verbal response and motor activity.

	ADULT	CHILDREN	INFANT
EYE OPENING			
4	Spontaneously	Spontaneously	Spontaneously
3	To verbal stimulus	To verbal stimulus	To verbal stimulus
2	To painful stimulus	To painful stimulus	To painful stimulus
1	No opening	No opening	No opening
VERBAL RESPONSE			
5	Completely alert, oriented and appropriate	Completely alert, oriented and appropriate	Coos, babbles and smiles as normal
4	Confused	Confused	Irritable cries
3	Inappropriate words	Inappropriate words	Inappropriate cries, screams
2	Incomprehensible	Incomprehensible words or non-specific sounds	Moans in response to pain
1	No verbal response	No verbal response	No verbal response
MOTOR ACTIVITY			
6	Obeys commands	Spontaneous and appropriate	Spontaneous and appropriate
5	Localizes pain	Localizes pain	Localizes pain
4	Withdraws to pain	Flexion withdrawal	Flexion withdrawal
3	Abnormal flexion	Abnormal flexion	Abnormal flexion
2	Extension	Extension	Extension
1	No motor activity	No motor activity	No motor activity

OXYGEN TANK DURATION CHARTS

Table entries represent duration of tank use in minutes

D Cylinder (Minus safe residual of 200 PSI)															
PSI	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
2000	288	144	96	72	58	48	41	36	32	29	26	24	22	21	19
1900	272	136	91	68	54	45	39	34	30	27	25	23	21	19	18
1800	256	128	85	64	51	43	37	32	28	26	23	21	20	18	17
1700	240	120	80	60	48	40	34	30	27	24	22	20	18	17	16
1600	224	112	75	56	45	37	32	28	25	22	20	19	17	16	15
1500	208	104	69	52	42	35	30	26	23	21	19	17	16	15	14
1400	192	96	64	48	38	32	27	24	21	19	17	16	15	14	13
1300	176	88	59	44	35	29	25	22	20	18	16	15	14	13	12
1200	160	80	53	40	32	27	23	20	18	16	15	13	12	11	11
1100	144	72	48	36	29	24	21	18	16	14	13	12	11	10	10
1000	128	64	43	32	26	21	18	16	14	13	12	11	10	9	9
900	112	56	37	28	22	19	16	14	12	11	10	9	9	8	7
800	96	48	32	24	19	16	14	12	11	10	9	8	7	7	6
700	80	40	27	20	16	13	11	10	9	8	7	7	6	6	5
600	64	32	21	16	13	11	9	8	7	6	6	5	5	5	4
500	48	24	16	12	10	8	7	6	5	5	4	4	4	3	3
400	32	16	11	8	6	5	5	4	4	3	3	3	2	2	2
300	16	8	5	4	3	3	2	2	2	2	1	1	1	1	1
200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PSI	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**

← **Liters per minute** →

OXYGEN TANK DURATION CHARTS Cont'd

Table entries represent duration of tank use in minutes

E Cylinder - Minus safe residual of 200 PSI															
PSI	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
2000	504	252	168	126	101	84	72	63	56	50	46	42	39	36	34
1900	476	238	159	119	95	79	68	60	53	48	43	40	37	34	32
1800	448	224	149	112	90	75	64	56	50	45	41	37	34	32	30
1700	420	210	140	105	84	70	60	53	47	42	38	35	32	30	28
1600	392	196	131	98	78	65	56	49	44	39	36	33	30	28	26
1500	364	182	121	91	73	61	52	46	40	36	33	30	28	26	24
1400	336	168	112	84	67	56	48	42	37	34	31	28	26	24	22
1300	308	154	103	77	62	51	44	39	34	31	28	26	24	22	21
1200	280	140	93	70	56	47	40	35	31	28	25	23	22	20	19
1100	252	126	84	63	50	42	36	32	28	25	23	21	19	18	17
1000	224	112	75	56	45	37	32	28	25	22	20	19	17	16	15
900	196	98	65	49	39	33	28	25	22	20	18	16	15	14	13
800	168	84	56	42	34	28	24	21	19	17	15	14	13	12	11
700	140	70	47	35	28	23	20	18	16	14	13	12	11	10	9
600	112	56	37	28	22	19	16	14	12	11	10	9	9	8	7
500	84	42	28	21	17	14	12	11	9	8	8	7	6	6	6
400	56	28	19	14	11	9	8	7	6	6	5	5	4	4	4
300	28	14	9	7	6	5	4	4	3	3	3	2	2	2	2
200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PSI	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**

← Liters per minute→

OXYGEN TANK DURATION CHARTS Cont'd

Table entries represent duration of tank use in minutes

M Cylinder - Minus safe residual of 200 PSI															
PSI	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
2000	2808	1404	936	702	562	468	401	351	312	281	255	234	216	201	187
1900	2652	1326	884	663	530	442	379	332	295	265	241	221	204	189	177
1800	2496	1248	832	624	499	416	357	312	277	250	227	208	192	178	166
1700	2340	1170	780	585	468	390	334	293	260	234	213	195	180	167	156
1600	2184	1092	728	546	437	364	312	273	243	218	199	182	168	156	146
1500	2028	1014	676	507	406	338	290	254	225	203	184	169	156	145	135
1400	1872	936	624	468	374	312	267	234	208	187	170	156	144	134	125
1300	1716	858	572	429	343	286	245	215	191	172	156	143	132	123	114
1200	1560	780	520	390	312	260	223	195	173	156	142	130	120	111	104
1100	1404	702	468	351	281	234	201	176	156	140	128	117	108	100	94
1000	1248	624	416	312	250	208	178	156	139	125	113	104	96	89	83
900	1092	546	364	273	218	182	156	137	121	109	99	91	84	78	73
800	936	468	312	234	187	156	134	117	104	94	85	78	72	67	62
700	780	390	260	195	156	130	111	98	87	78	71	65	60	56	52
600	624	312	208	156	125	104	89	78	69	62	57	52	48	45	42
500	468	234	156	117	94	78	67	59	52	47	43	39	36	33	31
400	312	156	104	78	62	52	45	39	35	31	28	26	24	22	21
300	156	78	52	39	31	26	22	20	17	16	14	13	12	11	10
200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PSI	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**

← Liters per minute→

IV RATE CONVERSION CHART

	Drip rate (gtts / minute) according to drop set utilized			
Target administration rate (mL/hour)	**10 drop set**	**15 drop set**	**20 drop set**	**60 drop set**
30	5	8	10	30
40	7	10	13	40
60	10	15	20	60
100	17	25	33	100
125	21	31	42	125
150	25	38	50	150
175	29	44	58	175
200	33	50	67	200
250	42	63	83	250
300	50	75	100	300
350	58	88	117	350
400	67	100	133	400
450	75	113	150	450
500	83	125	167	500
550	92	138	183	550
600	100	150	200	600
650	108	163	217	650
700	117	175	233	700
750	125	188	250	750
800	133	200	267	800
850	142	213	283	850
900	150	225	300	900
950	158	238	317	950
1000	167	250	333	1000

CALCULATING DRIP RATE FOR CRYSTALLOID FLUID ADMINISTRATION

- **Drip rate (gtts / minute) =** $\dfrac{\text{Total amount to be administered (mL)} \times \text{Drip Factor}}{\text{Desired time frame (minutes)}}$

METRIC CONVERSION CHARTS

TEMPERATURE		WEIGHT		WEIGHT	
°F	°C	lbs	kg	lbs	kg
106	41.1	396	180	66	30
105	40.6	385	175	64	29
104	40	374	170	62	28
103	39.4	363	165	59	27
102	38.9	352	160	57	26
101	38.3	341	155	55	25
100	37.8	330	150	53	24
99	37.2	319	145	51	23
98.6	37	308	140	48	22
97	36.1	297	135	46	21
96	35.6	286	130	44	20
95	35	275	125	42	19
94	34.4	264	120	40	18
93	33.9	253	115	37	17
92	33.3	242	110	35	16
91	32.8	231	105	33	15
90	32.2	220	100	31	14
89	31.7	209	95	29	13
88	31.1	198	90	26	12
87	30.6	187	85	24	11
86	30	176	80	22	10
85	29.4	165	75	20	9
84	28.9	154	70	18	8
83	28.3	143	65	15	7
82	27.8	132	60	13	6
81	27.2	121	55	11	5
80	26.7	110	50	9	4
79	26.1	99	45	7	3
78	25.5	88	40	4	2
77	25	77	35	2	1

ACETAMINOPHEN DOSE CHART

Only For use with 80mg/ml concentration

Weight in Kg	Dose	ml of 80mg/ml Concentration
3	45mg	0.5ml
4	60mg	0.75ml
5	75mg	1ml
6	90mg	1.1ml
7	105mg	1.3ml
8	120mg	1.5ml
9	135mg	1.7ml
10	150mg	1.9ml
11	165mg	2ml
12	180mg	2.25ml
13	195mg	2.4ml
14	210mg	2.6ml
15	225mg	2.8ml
16	240mg	3ml
17	255mg	3.2ml
18	270mg	3.4ml
19	285mg	3.5ml
20	300mg	3.75ml
21	315mg	4ml
22	330mg	4.1ml
23	345mg	4.3ml
24	360mg	4.5ml
25	375mg	4.7ml
26	390mg	4.9ml
27	405mg	5ml
28	420mg	5.25ml
29	435mg	5.5ml
30	450mg	5.6ml
31	465mg	5.8ml
32	480mg	6ml
33	495mg	6.2ml
34	510mg	6.4ml
35	525mg	6.6ml
36	540mg	6.75ml
37	555mg	7ml
38	570mg	7.1ml
39	585mg	7.3ml
40	600mg	7.5ml
41	615mg	7.7ml
42	630mg	7.9ml
43	645mg	8ml
44	660mg	8.25ml
45	675mg	8.5ml
46	690mg	8.6ml
47	705mg	8.8ml
48	720mg	9ml
49	735mg	9.2ml
50	750mg	9.4ml

ACRONYMS / ABBREVIATIONS

A-B-C	Airway Breathing Circulation	**LPM**	Liters Per Minute
ACLS	Advanced Cardiac Life Support	**LSN**	Last Seen Normal
AC	Antecubital	**Lt**	Left
ACP	Advanced Care Paramedic	**MCC**	Motorcycle Crash
AED	Automated External Defibrillator	**mcg**	Micrograms
ALS	Advanced Life Support	**MDI**	Metered Dose Inhaler
AMI	Acute Myocardial Infarction	**mEq**	Milliequivalent
AP	Anterior Posterior	**mL**	Milliliter
ASA	Acetylsalicylic Acid	**mmHg**	Millimeters of Mercury
BG	Blood Glucose	**mmol/L**	Millimoles Per Liter
BLS	Basic Life Support	**MOI**	Mechanism of Injury
BMV	Bag Mask Ventilation	**MVC**	Motor Vehicle Crash
BP	Blood Pressure	**NIPPV**	Non-Invasive Positive Pressure Ventilation
BSA	Body Surface Area	**NRB**	Non Rebreather Mask
BVM	Bag Valve Mask	**NRP**	Neonatal Resuscitation Program
C	Celsius/Centigrade	**NS**	Normal Saline
C-A-B	Circulation Airway Breathing	**NYD**	Not Yet Diagnosed
CCP	Critical Care Paramedic	**OLMC**	Online Medical Control
CHF	Congestive Heart Failure	**PALS**	Pediatric Advanced Life Support
COPD	Chronic Obstructive Pulmonary Disease	**PCI**	Percutaneous Coronary Intervention
CPAP	Continuous Positive Airway Pressure	**PCP**	Primary Care Paramedic
CPR	Cardiopulmonary Resuscitation	**PCR**	Patient Care Report
CVA	Cerebral Vascular Accident	**PEA**	Pulseless Electrical Activity
D10/25/50	Dextrose 10,25 & 50%	**PMO**	Provincial Medical Oversight Program
DBP	Diastolic Blood Pressure	**PO**	Per Os (by mouth, orally)
DHCS	Department of Health and Community Services	**PPE**	Personal Protective Equipment
DKA	Diabetic Ketoacidosis	**PPV**	Positive Pressure Ventilation
DNR	Do Not Resuscitate	**PR**	Per Rectum
ECG	Electrocardiogram	**PSI**	Pounds per Square Inch

EMR	Emergency Medical Responder	**q**	Every
g	Gram	**QO**	Quarantine Officer
GCS	Glasgow Coma Scale	**RA**	Right Arm
GI	Gastrointestinal	**RL**	Right Leg
gtt(s)	Drop(s)	**ROM**	Range of Motion
HAZMAT	Hazardous Materials	**ROSC**	Return of Spontaneous Circulation
HR	Heart Rate	**RR**	Respiratory Rate
HTN	Hypertension	**Rt**	Right
Hx	History	**SBP**	Systolic Blood Pressure
IDDM	Insulin-Dependent Diabetes Mellitus	**SC**	Subcutaneous
IM	Intramuscular	**SHCDM**	Substitute Health Care Decision Maker
IN	Intra Nasal	**SIVP**	Slow Intravenous Push
IO	Intraosseous	**SL**	Sublingual
ITLS	International Trauma Life Support	**SpO2**	Saturation of Peripheral Oxygen
IV	Intravenous	**STEMI**	ST Elevated Myocardial Infarction
IVP	Intravenous Push	**SVT**	Supraventricular Tachycardia
J	Joules	**TIA**	Transient Ischemic Attack
JVD	Jugular Vein Distention	**TKVO**	To Keep Vein Open
kg	Kilogram	**TOR**	Termination of Resuscitation
LA	Left Arm	**VF**	Ventricular Fibrillation
lbs	Pounds	**VSA**	Vital Signs Absent
LL	Left Leg	**VT**	Ventricular Tachycardia
LOC	Level Of Consciousness	**WPW**	Wolff-Parkinson-White

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PART V: MEDICATION FORMULARY

FORMULARY

CAUTION

- All calculations contained within this formulary are to be used as a guide and must be verified by the individual practitioner
- The information contained herein is not a substitute for clinical judgment

ACETAMINOPHEN	
CLASS	Antipyretic, analgesic
INDICATIONS	Pediatric Fever (temperature greater than 38.5ºC)
CONTRAINDICATIONS	1) Hypersensitivity 2) Nausea and vomiting (PO)
PEDIATRIC DOSE	15 mg/kg PO
NOTES	• If acetaminophen already administered within the last 4 hours, administer a “top-up” dose to so total dose administered within the last 4 hours is equal to 15 mg/kg

ACETYLSALICYLIC ACID (ASA)	
CLASS	Platelet aggregation inhibitor
INDICATIONS	Ischemic Chest Pain
CONTRAINDICATIONS	1) Hypersensitivity to ASA or NSAIDS 2) History of active bleeding 3) Active bronchospasm or history of severe asthma with bronchospasm related to ASA or NSAIDS 4) Age less than 16 years
PRECAUTIONS	• Pregnancy • Bleeding disorders
ADULT DOSE	160-162 mg PO chewed
NOTES	• ASA should still be administered if patient has already taken their usual prescribed daily dose of ASA • If the patient has taken ASA on the advice of the dispatcher, confirm correct identity of medication, dose and expiration date. If able to confirm appropriate self-administration do not administer additional ASA. If ASA taken is enteric coated, administer ASA as per protocol. • Regular use of anticoagulants, such as warfarin, is not a contraindication to ASA administration.

DEXTROSE	
CLASS	Caloric Agent
INDICATIONS	Adult Symptomatic Hypoglycemia Pediatric Symptomatic Hypoglycemia
CONTRAINDICATIONS	1) Hypersensitivity to corn or corn products
PRECAUTIONS	• Head injury or suspected stroke **(Protocol modification)** o Administer half of the usual dose, recheck BGL within recommended time parameters and then administer the second half dose if indicated
ADULT DOSE	• **Dextrose 50% (D50%)** 25 g (50 mL) IVP • Repeat once in 10 minutes if indicated
PEDIATRIC DOSE	**WEIGHT LESS THAN 10 KG**
	• **Dextrose 10% (D10%)** 5 mL/kg SIVP • Repeat once in 10 minutes if indicated
	WEIGHT 10-20 KG
	• **Dextrose 25% (D25%)** 2 mL/kg SIVP • Repeat once in 10 minutes if indicated
	WEIGHT 20-40 KG
	• **Dextrose 50% (D50%)** 1 mL/kg SIVP [Not to exceed a maximum single dose of 50 mL (25g)] • Repeat once in 10 minutes if indicated
	WEIGHT GREATER THAN 40 KG
	• **Dextrose 50% (D50%)** 25 g (50 mL) IVP • Repeat once in 10 minutes if indicated
NOTES	• **To create dextrose 10% (D10%):** o Remove 40 mL from D50% preload syringe and replace with 40 mL 0.9% NaCl to yield a final concentration of 5 g of dextrose in 50 mL (D10%). • **To create dextrose 25% (D25%):** o Remove 25 mL from D50% preload syringe and replace with 25 mL 0.9% NaCl to yield a final concentration of 12.5 g of dextrose in 50 mL (D25%). • Extravasation may cause tissue necrosis

DIMENHYDRINATE (GRAVOL)	
CLASS	Antiemetic
INDICATIONS	Adult Nausea and Vomiting Pediatric Nausea and Vomiting
CONTRAINDICATIONS	1) Hypersensitivity to dimenhyDRINATE, diphenhydrAMINE or propylene glycol 2) Narrow angle glaucoma 3) Hypotension (SBP less than 100 mmHg in adults and less than age-specific BP criteria in pediatrics) 4) Altered LOC (Including alcohol or drug intoxication)
PRECAUTIONS	• Simultaneous administration with ipratropium bromide may cause enhanced anticholinergic effects • Elderly patients may be more sensitive to adverse effects. Consider administration of a lower dose in patients greater than 65 years of age
SIDE EFFECTS	• Sedation • Hypotension • Paradoxical excitation in children
ADULT DOSE	• 25 mg IV • Repeat once in 15 minutes if indicated (Not to exceed a maximum total dose of 50 mg) May administer 50 mg IM if indications are present **AND** you are unable to establish an IV
PEDIATRIC DOSE	• 1 mg/kg IV (Not to exceed a maximum single dose of 25 mg)
NOTES	• May cause stinging at the injection site

DIPHENHYDRAMINE (BENADRYL)	
CLASS	Antihistamine
INDICATIONS	Adult Allergy and Anaphylaxis Pediatric Allergy and Anaphylaxis Adult Nausea & Vomiting Pediatric Nausea & Vomiting
CONTRAINDICATIONS	1) Hypersensitivity to dimenhyDRINATE or diphenhydrAMINE 2) Narrow angle glaucoma
PRECAUTIONS	• Simultaneous administration with ipratropium bromide may cause enhanced anticholinergic effects • Elderly patients may be more sensitive to adverse effects.
SIDE EFFECTS	• Sedation • Hypotension • Paradoxical excitation in children
ADULT DOSE	**Adult Anaphylaxis**
	• 50 mg IVP May administer 50 mg IM if indications are present **AND** you are unable to establish an IV
	Adult Isolated Hives
	• 25-50 mg IV/IM
	Adult Extrapyramidal Reactions
	• 50 mg IV
PEDIATRIC DOSE	**Pediatric Anaphylaxis**
	• 1 mg/kg IV (Not to exceed a maximum single dose of 50 mg) May administer 1 mg/kg IM (Not to exceed a maximum single dose of 50 mg) if indications are present **AND** you are unable to establish an IV
	Pediatric Isolated Hives
	• Avoid giving for this indication, oral medication (such as cetirizine) are preferred and available in Emergency Departments
	Pediatric Extrapyramidal Reactions
	• 1 mg/kg IV (Not to exceed a maximum single dose of 50 mg)

EPINEPHRINE 1:1000	
CLASS	Sympathomimetic
INDICATIONS	Adult Respiratory Distress With Bronchospasm **(OLMC)** Adult Allergy and Anaphylaxis Pediatric Respiratory Distress with Bronchospasm **(OLMC)** Pediatric Respiratory Distress with Inspiratory Stridor Pediatric Allergy and Anaphylaxis
RELATIVE CONTRAINDICATIONS	1) Cardiac ischemia or infarction 2) Tachydysrhythmias (Greater than 150 beats per minute in adults and 180 beats per minute in pediatrics)
PRECAUTIONS	• Cardiac dysrhythmias • Cardiac valvular abnormalities
SIDE EFFECTS	
ADULT DOSE	**Adult Respiratory Distress With Bronchospasm (OLMC)**
	• 0.3 mg IM
	Adult Anaphylaxis
	• 0.3 mg IM • Repeat once in 5 minutes if no improvement
PEDIATRIC DOSE	**Pediatric Respiratory Distress with Bronchospasm (OLMC)**
	• 0.01 mg/kg (0.01 mL/kg) IM [Not to exceed a maximum single dose of 0.3 mg (0.3 mL)]
	Pediatric Respiratory Distress with Inspiratory Stridor
	AGE LESS THAN 1 YEAR AND LESS THAN 5 KG
	• 0.5 mg (0.5 mL) in 2 mL 0.9% NaCl nebulized
	AGE LESS THAN 1 YEAR AND GREATER THAN OR EQUAL TO 5 KG
	• 2.5 mg (2.5 mL) nebulized
	AGE GREATER THAN OR EQUAL TO 1 YEAR
	• 5 mg (5 mL) nebulized
	Pediatric Anaphylaxis
	• 0.01 mg/kg (0.01 mL/kg) IM [Not to exceed a maximum single dose of 0.3 mg (0.3 mL)] • Repeat once in 5 minutes if no improvement

GLUCAGON	
CLASS	Hyperglycemic Agent
INDICATIONS	Adult Symptomatic Hypoglycemia Pediatric Symptomatic Hypoglycemia
CONTRAINDICATIONS	1) Hypersensitivity to glucagon, glycerin or phenol 2) Anaphylaxis to lactose 3) Pheochromocytoma
PRECAUTIONS	• Glycogen depleted state (Starvation, chronic hypoglycemia, alcoholism) • Adrenal insufficiency • Insulinoma
SIDE EFFECTS	• Nausea and vomiting • Hypertension and hypotension • Tachycardia
ADULT DOSE	**Adult Symptomatic Hypoglycemia**
	• 1 mg IM • Repeat once in 20 minutes if indicated
PEDIATRIC DOSE	**Pediatric Symptomatic Hypoglycemia**
	LESS THAN 20 KG
	• 0.5 mg IM • Repeat once in 20 minutes if indicated
	GREATER THAN 20 KG
	• 1 mg IM • Repeat once in 20 minutes if indicated
NOTES	• Glucagon is unlikely to be effective in glycogen depleted states as glucagon requires sufficient storage of glycogen in the liver to be effective. • Inject the content of the pre-loaded syringe into the bottle of powdered glucagon and swirl to mix contents until all of the glucagon is dissolved. The resultant solution should be clear. • Response to glucagon is not immediate; anticipate that it may take up to 20 minutes to see an effect

GLUCOSE (ORAL)	
CLASS	Caloric Agent
INDICATIONS	Adult Symptomatic Hypoglycemia Pediatric Symptomatic Hypoglycemia
CONTRAINDICATIONS	1) Depressed mental status 2) Unable to cough or swallow
ADULT DOSE	ONE of the following options: 1) **Dex 4**® tablets 20 g (5 tablets) 2) **Insta-glucose**® 1 tube (30 g) 3) 1 cup (250 mL) of juice or pop (Non-diet) 4) 4 teaspoons (20 mL) or 4 packets of table sugar dissolved in water
PEDIATRIC DOSE	ONE of the following options: 1) **Dex 4**® tablets 20 g (5 tablets) 2) **Insta-glucose**® 1 tube (30 g) 3) 1 cup (250 mL) of juice or pop (Non-diet) 4) 4 teaspoons (20 mL) or 4 packets of table sugar dissolved in water

HYDROCORTISONE	
CLASS	Corticosteroid
INDICATIONS	Adult Adrenal Insufficiency Pediatric Adrenal Insufficiency
CONTRAINDICATIONS	1) Hypersensitivity to hydrocortisone or other corticosteroids
PRECAUTIONS	• History of seizure • Peptic ulceration or inflammatory bowel disease • Diabetes (monitor blood glucose levels) • Hypertension • Renal insufficiency • Tuberculosis • Chronic psychosis • Ocular herpes simplex
SIDE EFFECTS	• Hypertension • Agitation • Headache and/or vertigo
ADULT DOSE	• 100 mg IV/IM
PEDIATRIC DOSE	**AGE LESS THAN 3 YEARS**
	• 25 mg IV/IM
	AGE 3 TO 10 YEARS
	• 50 mg IV/IM
	GREATER THAN 10 YEARS
	• 100 mg IV/IM

IPRATROPIUM BROMIDE	
CLASS	Anticholinergic
INDICATIONS	Adult Respiratory Distress With Bronchospasm Pediatric Respiratory Distress With Bronchospasm
CONTRAINDICATIONS	1) Hypersensitivity to ipratropium bromide, atropinics or aerosol components 2) Cardiac ischemia or infarction
PRECAUTIONS	• Narrow angle glaucoma • Myasthenia gravis
ADULT DOSE	• 4-8 puffs (20 mcg/puff) via MDI with aerochamber **OR** • 500 mcg nebulized • Repeat every 5 minutes if indicated (Not to exceed a maximum total of 3 administrations)
PEDIATRIC DOSE	• 3 puffs (20 mcg/puff) via MDI with aerochamber **OR** • 500 mcg nebulized • To be administered with 2nd and 3rd dose of salbutamol if indicated • Repeat every 5 minutes if indicated (Not to exceed a maximum total of 2 administrations)
NOTES	• Patients should be treated with MDI and aerochamber unless it is deemed inappropriate, ineffective or patient cannot tolerate • Each puff administered via MDI with aerochamber must be followed by at least 4 breaths • Avoid contact with eyes. Ensure nebulizer mask is fitted well to the patient's face to minimize risk of mist getting into the eyes. • MDI must be primed by pressing downwards on the actuator a minimum of four times. Prime MDI outside of aerochamber • Hold pump in an upright position to ensure proper function • This is a single patient use medication only

KETOROLAC	
CLASS	NSAID
INDICATIONS	Adult Pain Management
CONTRAINDICATIONS	1) Hypersensitivity to ASA or NSAIDS 2) Active bronchospasm or history of severe asthma with bronchospasm related to ASA or NSAIDS 3) History of active bleeding or bleeding disorder 4) History of CVA or cardiovascular disease 5) Renal or hepatic insufficiency 6) Peptic ulcer or inflammatory bowel disease 7) NSAID use, including aspirin, in previous 6 hours 8) Age less than 16 years or greater than 65 years 9) Known or suspected hyperkalemia 10) Pregnancy
PRECAUTIONS	• Hypertension
SIDE EFFECTS	• Headache • Edema • GI bleeding • Hypertension • Nausea, abdominal pain and/or dyspepsia • Drowsiness • Dizziness • Rash
ADULT DOSE	• 15 mg SIVP/IM

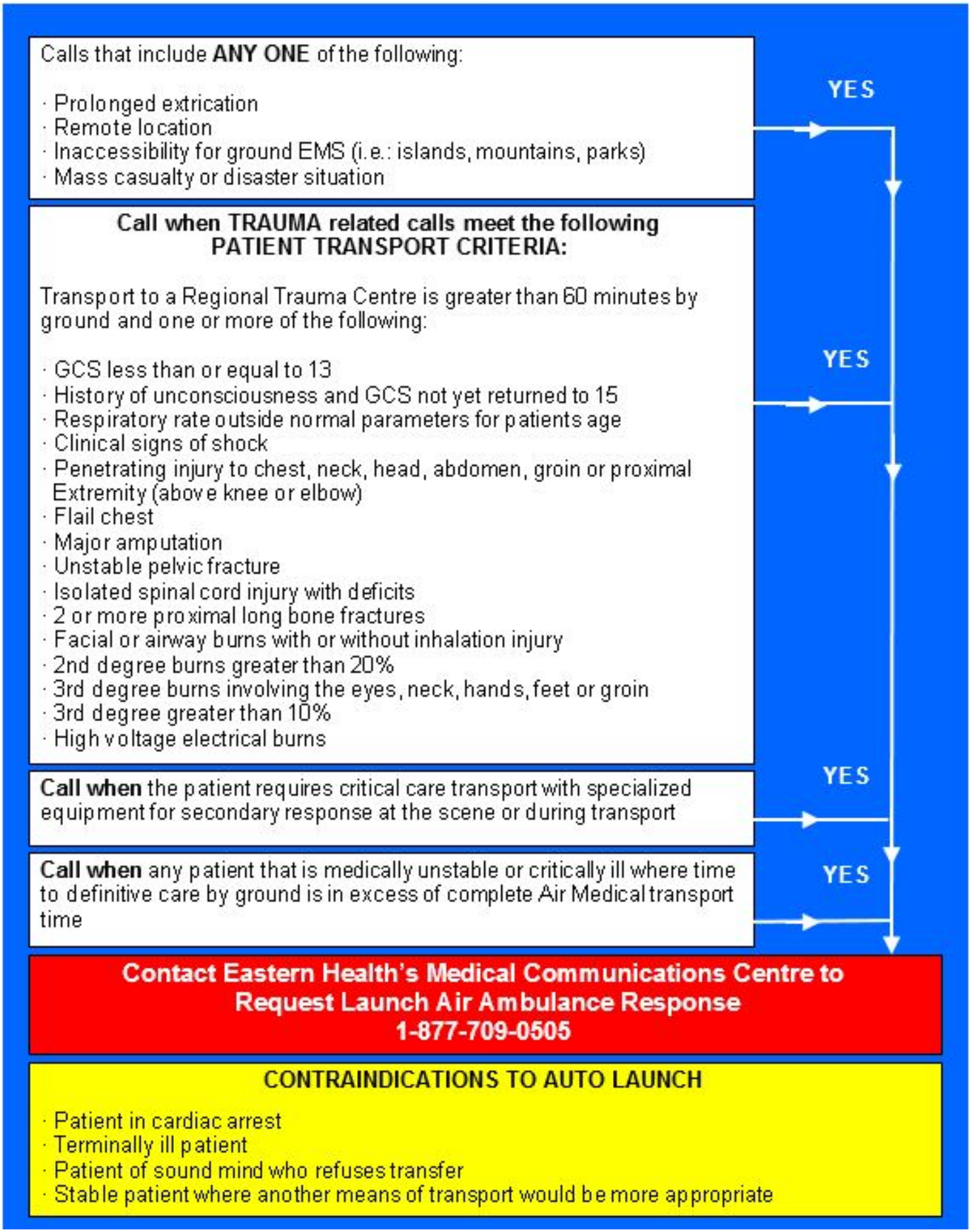
METOCLOPRAMIDE	
CLASS	Antiemetic
INDICATIONS	Adult Nausea and Vomiting Adult Pain Management (Migraine) Pediatric Nausea and Vomiting
CONTRAINDICATIONS	1) Hypersensitivity to metoclopramide or procainamide 2) Hypotension (SBP less than 100 mmHg in adults and less than age-specific BP criteria in pediatrics) 3) Pheochromocytoma 4) Suspected GI hemorrhage, bowel obstruction or perforation 5) Seizure disorders 6) Monoamine oxidase inhibitor (MAO) therapy within the last 14 days 7) Concurrent use of antipsychotic medications
PRECAUTIONS	• Parkinson's Disease • Altered LOC (Including alcohol or drug intoxication) • Elderly patients may be more sensitive to adverse effects. Consider administration of a lower dose in patients greater than 65 years of age
SIDE EFFECTS	• Sedation • Hypotension or hypertension • Bronchospasm • Bradycardia • Tachycardia • Extrapyramidal signs and symptoms
ADULT DOSE	**Adult Nausea and Vomiting**
	• 10 mg SIVP (Over 2 to 5 minutes) o May administer 10 mg IM if indications are present **AND** you are unable to establish an IV
	Adult Pain Management (Migraine)
	• 10 mg SIVP (Over 2 to 5 minutes) o May administer 10 mg IM if indications are present **AND** you are unable to establish an IV
PEDIATRIC DOSE	• 0.1 mg/kg SIVP (Over 2 to 5 minutes) (Not to exceed a maximum single dose of 10 mg)
NOTES	• Risk of development of extrapyramidal symptoms is reduced if metoclopramide is administered slowly when using an IV route. • If extrapyramidal signs and symptoms develop, reassure the patient and administer **diphenhydrAMINE** as per protocol.

NALOXONE HYDROCHLORIDE	
CLASS	Opioid antagonist
INDICATIONS	Adult Toxin Management, Opioids Pediatric Toxin Management, Opioids
CONTRAINDICATIONS	1) Hypersensitivity
SIDE EFFECTS	• Acute opioid withdrawal
ADULT DOSE	• 0.2-0.4 mg IM/IV • Repeat every 2-3 minutes if indicated, titrated to improved respiratory drive
PEDIATRIC DOSE	• 0.2-0.4 mg IM/IV • Repeat every 2-3 minutes if indicated, titrated to improved respiratory drive
NOTES	• Naloxone hydrochloride is light sensitive. If naloxone hydrochloride is contained in a glass ampoule it must be protected from light during storage. • The duration of action of the opioid may be longer than the duration of action of naloxone and repeat administration of naloxone may be required if respiratory depression recurs. • Be alert for potential acute agitation or combativeness following administration of naloxone to patients with opioid dependency. Titrate dose **only** to improve respiratory drive. • Examples of shorter acting opioids include, but are not limited to: fentanyl, hydromorphone (Dilaudid), morphine (Morphine-IR), meperidine (Demerol), codeine, heroin, sufentanyl, Darvon, oxycodone • Examples of longer acting opioids include, but are not limited to: methadone, MS-Contin, OxyNEO, OxyContin, Hydromorph-Contin, morphine-SR

NITROGLYCERIN	
CLASS	Antianginal Agent, Vasodilator
INDICATIONS	Adult Ischemic Chest Pain Adult Pulmonary Edema
CONTRAINDICATIONS	1) Hypersensitivity to nitrates 2) Hypotension (SBP less than 100 mmHg in adults) 3) Heart rate less than 50 or greater than 150 beats per minute 4) Suspected right ventricular myocardial infarction or ischemia 5) Concurrent use of phosphodiesterase inhibitor(s) (Erectile dysfunction medication) within preceding 48 hours 6) Altered LOC
PRECAUTIONS	• Hypertrophic cardiomyopathy
SIDE EFFECTS	• Hypotension • Headache • Dizziness
ADULT DOSE	**Adult Pulmonary Edema**
	• 0.4 mg SL • Repeat every 5 minutes if indicated to a maximum of 6 sprays, until symptoms are relieved or SBP less than 100 mmHg
	Adult Ischemic Chest Pain
	• 0.4 mg SL • Repeat every 5 minutes to a maximum of 6 sprays if indicated until chest pain resolved or SBP less than 100 mmHg
NOTES	• Blood pressure must be monitored and recorded before and after each administration • The patient should be sitting or lying prior to administration • Prime the pump by depressing down on the actuator, discarding the first spray away from the patient • Hold the pump in an upright position to ensure proper function • This is a single use medication only • Phosphodiesterase inhibitors include, but are not limited to: sildenafil (Viagra), tadalafil (Cialis), vardenafil (Levitra) • Phosphodiesterase inhibitors may be taken by both male and female patients

SALBUTAMOL	
CLASS	Beta2 Agonist
INDICATIONS	Adult Respiratory Distress With Bronchospasm Adult Allergy and Anaphylaxis Pediatric Respiratory Distress With Bronchospasm Pediatric Allergy and Anaphylaxis
CONTRAINDICATIONS	1) Hypersensitivity 2) Cardiac ischemia or infarction 3) Tachydysrhythmias (Heart rate greater than 150 in adults and greater than 180 in pediatrics)
PRECAUTIONS	• Cardiovascular disorders (Cardiac dysrhythmias, valvular heart disease)
SIDE EFFECTS	• Tachydysrhythmias • Hypertension and hypotension • Restlessness • Dizziness • Drowsiness • Headache • Nausea and vomiting • Dry mouth
ADULT DOSE	• 4-8 puffs (100 mcg/puff) via MDI with aerochamber **OR** • 5 mg nebulized • Repeat every 5 minutes if indicated (Not to exceed a total of 3 administrations)
PEDIATRIC DOSE	**AGE LESS THAN 5 YEARS**
	• 5 puffs (100 mcg/puff) via MDI with aerochamber **OR** • 2.5 mg nebulized • Repeat every 5 minutes if indicated (Not to exceed a total of 3 administrations)
	AGE GREATER THAN OR EQUAL TO 5 YEARS
	• 10 puffs (100 mcg/puff) via MDI with aerochamber **OR** • 5 mg nebulized • Repeat every 5 minutes if indicated (Not to exceed a total of 3 administrations)
NOTES	• Patients should be treated with MDI and aerochamber unless it is deemed inappropriate, ineffective or patient cannot tolerate • Each puff administered via MDI with aerochamber must be followed by at least 4 breaths • Avoid contact with eyes. Ensure nebulizer mask is fitted well to the patient's face to minimize risk of mist getting into the eyes. • MDI must be primed by pressing downwards on the actuator a minimum of four times. Prime MDI outside of aerochamber • Hold pump in an upright position to ensure proper function • This is a single patient use medication only

MEDFLIGHT NL – AUTO LAUNCH CRITERIA



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