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Use of the Protocols and Patching to Base Hospital Physicians

Paramedics may use their skill set to initiate treatment of a patient via the Medical Directives without direct verbal contact with a physician. The Medical Directives for these skills may not cover every situation a paramedic may encounter and Base Hospital contact may be required.

Paramedics will attempt to contact their Base Hospital Physician (BHP) when:

• A Base Hospital Medical Directive indicates a paramedic must contact the BHP;
• A patient does not stabilize after protocol treatment and further advanced intervention is indicated;
• Any time the paramedic wishes BHP advice for situations which are not covered by the Medical Directives.

Where a treatment is to be initiated or continued only after BH physician contact and if every attempt to contact the BHP has failed, the paramedic may continue with the protocol. This is provided that the patient meets the indications and no contraindications exist. The paramedic should continue to attempt to contact the BHP.

The protocols have been written with built in “patch points”. The physician receiving the patch will be authorizing the paramedic to proceed with the rest of the medical directive to be carried out as written and taught.

The requirement of patching at these “patch points” remains at the discretion of the individual Base Hospital program and its Medical Director. In a protocol if there is a requirement to patch, a patch should be initiated unless there is a medical directive/policy from your BH Medical Director indicating a patch is not required.
Consent to Treatment & Capacity Assessment

All health professionals including paramedics must obtain consent prior to treatment:

1. **Implied Consent** (presumed consent) covers necessary lifesaving procedures that it is presumed any reasonable person would wish to have when they are unable to give consent.

2. **Implied Consent** is also used for simple procedures such as blood glucose determination when the patient puts out their arm after the procedure is announced.

3. **Informed Consent** is usually a more formal process and can be either verbal or written and is detailed below.

The following elements are required for a valid informed consent to treatment:

- Consent must relate to the treatment
- Consent must be informed
- Consent must be given voluntarily and must not have been obtained through misrepresentation or fraud.

The paramedic who proposes a treatment to a person shall ensure that consent is obtained. An exception to informed consent is in an emergency. A health care practitioner may administer treatment to a person without consent, if in their opinion:

1. the person is incapable of understanding the treatment; and
2. the person is experiencing severe suffering and if the treatment is not administered, the person is at risk of suffering serious bodily harm; and
3. it is not reasonably possible to obtain a consent or refusal on the person’s behalf, or the delay required to do so will prolong suffering or will put the person at risk of suffering serious bodily harm.

A person ≥16 is presumed capable of giving/refusing consent in connection with his/her own care. A person <16 may be capable but this needs to be assessed. A capacity assessment may be required and involves ensuring the patient is:

- Able to **understand** the treatment and alternatives being proposed; and
- Able to **appreciate** the reasonably foreseeable consequences of a decision.
Refusal of Treatment

When a patient refuses to give consent for assessment, management, or transport, the paramedic will ensure that the patient has capacity and ensure the refusal is informed. If the patient does not have capacity, is a danger to themselves or others, or is suspected to be suffering from a life-threatening condition, then the paramedic will seek help in ensuring the patient receives appropriate care. The options open to the paramedic include calling dispatch to request police assistance, contacting their on-duty supervisor, and calling the BHP for advice (where available). If the patient makes an informed refusal and will not be transported, the paramedic will make every reasonable attempt to leave the patient with a responsible person. The paramedic will document on the Ambulance Call Report (ACR) that the patient has capacity and that an informed refusal was obtained (in addition to a signature on the back of the ACR). If the parent or guardian makes an informed refusal on behalf of their child, paramedics are to be especially careful in this process when dealing with any cases of the parent or guardian changing their mind about care and transport of their children.

Remember that consent is a process and not just a signature. If the paramedic has any concerns regarding the patient’s capacity or refusal, the fleet supervisor and then the BHP may be contacted for advice (where possible).
Cardiac Monitoring and Oxygen Administration

The order of events should normally be: oxygen, cardiac monitor, medication administration, then initiation of transportation. If there are exceptional circumstances and oxygen was not delivered or the monitor was not applied this should be documented on the ACR.

In addition to calls where symptom relief medications are administered, there are a wide variety of call types where the patient would benefit from oxygen administration. The Basic Life Support Patient Care Standards outline many of these and this should also include any patient you feel may benefit from monitoring and/or oxygen. In general, patients receiving oxygen will also have the cardiac monitor applied.

Notes:

1. Oxygen saturation measurement may be utilized (where available) to monitor a patient’s condition but should not be used to make decisions to restrict oxygen delivery when the patient appears ill or has a condition that may require supplemental oxygen.
2. **Remember to treat the patient not the monitor.** If the patient appears ill and you feel oxygen will benefit the patient, give oxygen!  
3. Oxygen should normally be applied within 2 minutes of patient contact.  
4. If a patient who is on home oxygen does not have any acute reason to require 100% oxygen (chronic SOB and not acute), they may receive oxygen by nasal cannula at their usual flow rate during assessment and transportation.
Symptom Relief and Cardiac Arrest
Medical Directives for PCPs and ACPs
Pediatric Croup Protocol

When the following conditions exist, a paramedic may administer nebulized epinephrine 1:1000, according to the following protocol. A maximum of two (2) doses of epinephrine may be administered regardless of any previous self-administration.

Indications

A current history of an upper respiratory infection with a “barking” cough AND stridor at rest with severe respiratory distress.

Conditions

Patient is <8 years of age.

Contraindications

Monitor heart rate or pulse rate ≥200/min.

Procedure

1. Allow the patient to assume a position of comfort and interfere as little as possible. Provide reassurance to the patient and parents.
2. Administer 100% oxygen while preparing your equipment. It is permissible to use “blow by” oxygen if an oxygen mask is not tolerated. Initiate cardiac monitoring and pulse oximetry (if available) as tolerated.
3. Administer nebulized epinephrine 1:1000 with O₂ at 6-8 lpm according to the following chart:

<table>
<thead>
<tr>
<th>AGE</th>
<th>DOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 y/o AND &lt;5 kg</td>
<td>0.5 mg (0.5 ml) in 2 ml NS</td>
</tr>
<tr>
<td>&lt;1 y/o AND ≥5 kg</td>
<td>2.5 mg (2.5 ml)</td>
</tr>
<tr>
<td>≥1 y/o</td>
<td>5.0 mg (5.0 ml)</td>
</tr>
</tbody>
</table>

4. Repeat the administration of nebulized epinephrine using the same dose if no improvement is observed immediately following the first treatment.
5. All patients to be transported without delay. Monitor and document vital signs every five (5) minutes enroute.
6. Paramedics trained and certified in IV initiation and fluid administration should not initiate an intravenous unless advanced resuscitation is required.
Notes

1. Continuous monitoring is essential, but procedures that distress the patient are to be avoided.

2. Croup is an upper airway infection made worse by agitating the child. Do not attempt to examine the throat. Do not attempt to initiate an IV unless it is required for essential medications or fluid resuscitation.

3. Note that not all victims of infectious respiratory illnesses are febrile. Personal Protective Equipment (PPE) and universal precautions are required for all persons within 3 meters of a patient.

4. If parents or legal guardian refuse transport to hospital, attempt to contact BHP. If not available, notify your CACC/ACS for appropriate support from your supervisor or the BHP.
SOB/Respiratory Distress Protocol

When the following conditions exist, a paramedic may administer salbutamol (Ventolin) according to the following protocol and algorithm. A maximum of three (3) doses of salbutamol may be administered regardless of any previous self-administration.

Indications

Any patient with a complaint of shortness of breath or exhibiting respiratory distress not thought to be related to acute cardiogenic pulmonary edema.

Conditions

The patient must have evidence of bronchoconstriction or wheezing.

Contraindications

For nebulization only:

- The patient has a suspected or known fever ($\geq 38.0 \, ^\circ C$) OR
- In the case of a declared outbreak of a severe respiratory illness (SRI) by the local Medical Officer of Health.

Procedure

1. Ensure a patent airway, administer 100% $O_2$, and document vital signs.
2. Initiate cardiac monitoring and pulse oximetry (if available).
3. Administer salbutamol (Ventolin):
   a. Administer salbutamol via MDI and spacer preferentially, if available.
      (1 puff = 100 mcg of salbutamol):

<table>
<thead>
<tr>
<th>for patients &lt;30 kg</th>
<th>total of 6 puffs (= 1 dose)</th>
</tr>
</thead>
<tbody>
<tr>
<td>for patients $\geq 30$ kg</td>
<td>total of 9 puffs (= 1 dose)</td>
</tr>
</tbody>
</table>

   Each puff to be followed by 4 breaths.

   OR

   b. Administer salbutamol via nebulizer with $O_2$ at 6-8 lpm (only if MDI and spacer unavailable or if patient is unable to use MDI/spacer properly (due to severity of SOB, neurologic or systemic illness, or communication difficulty, or child <1 year of age):

<table>
<thead>
<tr>
<th>for patients &lt;30 kg</th>
<th>2.5 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>for patients $\geq 30$ kg</td>
<td>5.0 mg</td>
</tr>
</tbody>
</table>

4. Transport to hospital immediately following the initiation of salbutamol.
5. If reassessment reveals that the patient’s clinical condition has not significantly improved following completion of the initial dose, the paramedic may immediately repeat the dosage of salbutamol enroute to the hospital (to a maximum of 3 doses). Give 100% oxygen and document vital signs.
SOB/Respiratory Distress Protocol Continued

6. If the patient requires assisted ventilations by BVM or intubation:
   a. Follow the Moderate to Severe Asthma Exacerbation Protocol.
   b. Salbutamol can be concurrently administered to an intubated patient via MDI and ETT spacer device or a patient assisted with BVM and spacer device:
      (1 puff = 100 mcg of salbutamol):

      | for patients <30 kg | total of 6 puffs (= 1 dose) |
      | for patients ≥30 kg | total of 9 puffs (= 1 dose) |

      Each puff to be followed by four (4) assisted ventilations of the patient.
   c. Drug delivery along with patient ventilation will be provided by the bag-valve attached to a 100% oxygen source.
   d. Repeat salbutamol dose immediately if clinical condition does not significantly improve and contact BHP.

Notes

1. Be aware of the silent chest as severe bronchospasm may present with absent air entry and no evidence of wheezing. If this occurs and the patient requires assisted ventilation, consider the patient for subcutaneous epinephrine via the Moderate to Severe Asthma Exacerbation Protocol.

2. Oxygen should be administered continuously during nebulization or via non-rebreather to all patients in respiratory distress. If salbutamol administration is delayed, 100% O₂ should be applied.

3. Wheezing could be an early sign of congestive heart failure or acute pulmonary edema. If you suspect the patient is SOB due to these causes, consult the Acute Cardiogenic Pulmonary Edema Protocol first and consider contacting the BHP before administering salbutamol if uncertain.

4. Note that not all victims of infectious respiratory illnesses are febrile.

5. The risks involved in administering nebulized medications involve the increased potential for droplet contamination as the patient coughs and exhales. All persons within 3 meters of a patient are at risk and require PPE.

6. At the end of the protocol, if the patient is not improving, the paramedic should contact the BHP, and if every attempt to contact the BHP has failed, the paramedic may re-initiate the protocol. The paramedic should continue to attempt to contact the BHP.
SOB/Respiratory Distress Protocol Diagram

Chief Complaint: SOB
History and exam

Physical examination shows evidence of bronchoconstriction:
• Expiratory wheezing
• Prolonged expiratory phase
• Poor air entry
• Intercostal indrawing
• Sternal retractions

NO
Transport Care as required
Vitals q 5 minutes
Perform secondary assessment of patient.
Consider other treatment

YES
Administer salbutamol via nebulization if cannot use spacer:
for patients <30 kg 2.5mg
for patients ≥30 kg 5.0 mg
NOTE: contraindicated if fever or SRI outbreak
Use appropriate PPE

or

Administer salbutamol, MDI/spacer preferred, if available:
for patients <30 kg total of 6 puffs
for patients ≥30 kg total of 9 puffs
Each puff to be followed by 4 breaths.

Perform secondary assessment of patient.
Consider other treatment

Consider Moderate to Severe Asthma Exacerbation Protocol
If clinical condition does not significantly improve:
Repeat salbutamol dose/set immediately

Notes
1. Transport to hospital immediately following the initiation of salbutamol.
2. Be aware of the SILENT CHEST as severe bronchoconstriction may be present with absent air entry and no evidence of wheezing. If this occurs and the patient requires assisted ventilations, consider patient for Moderate to Severe Asthma Exacerbation Protocol.
Moderate to Severe Asthma Exacerbation Protocol

When the following conditions exist, a paramedic may administer epinephrine (1:1000) subcutaneously (SC) or intramuscularly (IM), according to the following protocol. A maximum of two (2) doses of epinephrine may be administered regardless of any previous self-administration.

**Indications**

Any patient with **severe** shortness of breath from a suspected asthma exacerbation **AND** requires ventilatory support via bag-valve-mask (BVM) and or severe agitation, confusion, and cyanosis.

For patients with **moderate** shortness of breath (defined by the inability to speak full sentences) **WHEN** nebulized salbutamol is contraindicated and MDI/spacer is unavailable.

**Conditions**

The patient must have a history of Asthma.
The patient is <50 years of age.

**Procedure**

1. Ensure a patent airway, ventilate with 100% O₂ via a BVM, and document vital signs.
2. Initiate cardiac monitoring and pulse oximetry (if available).
3. Administer epinephrine (1:1000) SC/IM using a 1 ml syringe:
   - administer 0.01 mg/kg SC/IM (rounded to nearest 0.05 mg) to a maximum dose of 0.3 mg SC/IM.
4. Epinephrine (1:1000) will be administered even if the patient has already received salbutamol therapy.
5. Transport to hospital immediately after the administration of the first dose of SC/IM epinephrine. If the patient continues to require BVM ventilatory support (or be at least moderately distressed if salbuamol is contraindicated) 10 minutes after the first epinephrine dose, a second epinephrine dose will be administered SC/IM enroute to the hospital.
6. **Caution** - in patients <10 kg, or in patients with ischemic heart disease. For these patients the BHP should be contacted before a second dose is administered. If every attempt to contact the BHP has failed and the patient is not improving a second dose may be given. The paramedic should continue to attempt to contact the BHP.
7. If the patient improves to the point where BVM ventilatory support is no longer required, the paramedic can administer salbutamol as detailed in the SOB/Respiratory Distress Protocol.
Moderate to Severe Asthma Exacerbation Protocol  Continued

Notes

1. Note that not all victims of infectious respiratory illnesses are febrile. Personal Protective Equipment (PPE) and universal precautions are required when any patient requires airway control and/or BVM ventilation.

2. Paramedics certified in intubation should consider intubation if VSA or pre-arrest.

3. Pediatric Epinephrine Dosing Chart:
   The following chart describes the dosage for pediatric epinephrine based on the formula: 
   \((\text{[age} \times 2] + 10 \text{ kg}) \times 0.01\), rounded to closest 0.05 mg (ml).

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight kg (2 x age) + 10</th>
<th>DOSE mg or ml</th>
<th>100 Unit/1cc Syringe</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6 M</td>
<td>0.05</td>
<td></td>
<td>05 Units</td>
</tr>
<tr>
<td>6-12 M</td>
<td>0.10</td>
<td></td>
<td>10 Units</td>
</tr>
<tr>
<td>1</td>
<td>0.10</td>
<td></td>
<td>10 Units</td>
</tr>
<tr>
<td>2</td>
<td>0.15</td>
<td></td>
<td>15 Units</td>
</tr>
<tr>
<td>3</td>
<td>0.15</td>
<td></td>
<td>15 Units</td>
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<tr>
<td>4</td>
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<td>20 Units</td>
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<td>5</td>
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<td>7</td>
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<td>8</td>
<td>0.25</td>
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<td>25 Units</td>
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<td>9</td>
<td>0.30</td>
<td></td>
<td>30 Units</td>
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<tr>
<td>10</td>
<td>0.30</td>
<td></td>
<td>30 Units</td>
</tr>
</tbody>
</table>
Anaphylaxis/Allergic Reaction Protocol

When the following conditions exist, a paramedic may administer epinephrine (1:1000) subcutaneously (SC) or intramuscularly (IM), and/or diphenhydramine (Benadryl) (ACP only, if available) intravenously (IV) or intramuscularly (IM) according to the following protocol. A maximum of two (2) doses of epinephrine and one (1) dose of diphenhydramine may be administered regardless of any previous self-administration.

Indications

Patient has a confirmed or suspected history of exposure to a probable allergen AND

a. demonstrates signs and symptoms of a severe anaphylactic reaction for administration of epinephrine and diphenhydramine

OR

b. demonstrates signs and symptoms of a moderate allergic reaction for administration of diphenhydramine.

Procedure

1. Ensure a patent airway, administer 100% O₂, and document vital signs.
2. Initiate cardiac monitoring and pulse oximetry (if available).
3. If evidence of a severe reaction, administer epinephrine (1:1000) SC/IM using a 1 ml syringe:
   • 0.01 mg/kg SC/IM (rounded to nearest 0.05 mg) to a maximum dose of 0.3 mg SC/IM.

   OR

   For services that only carry epinephrine auto injector(s):
   • Patient <10 kg: contact BHP. If not able to contact the BHP and allergic signs and symptoms worsening consider pediatric epinephrine auto injector (0.15 mg) and continue attempting contact with BHP
   • Patient ≥10 kg and <30 kg: administer pediatric epinephrine auto injector (0.15 mg)
   • Patient ≥30 kg: administer epinephrine auto injector (0.3 mg)
4. Transport to hospital immediately after the administration of the first dose of SC/IM epinephrine. If reassessment reveals that the patient’s clinical condition has not significantly improved 10 minutes after the initial dose, the paramedic can repeat the dosage of epinephrine SC/IM once.
5. Caution - in patients <10 kg, or in patients with ischemic heart disease. For these patients the BHP should be contacted before a second dose is administered. If every attempt to contact the BHP has failed and the patient is not improving a second dose may be given. The paramedic should continue to attempt to contact the BHP.
6. Paramedics certified in IV initiation and fluid management should attempt IV access if not already done. Consult the Intravenous Access & Fluid Administration Protocol.
Anaphylaxis/Allergic Reaction Protocol Continued

7. Administer diphenhydramine (ACP only, if available) for a moderate reaction or for a severe reaction after epinephrine has been administered:
   • 1 mg/kg IV to a maximum of 50 mg OR
   • 1 mg/kg IM (but not subcutaneously) to a maximum of 50 mg

Notes

1. If the patient has wheezing as a feature of the anaphylaxis, they should be additionally considered for the SOB/Respiratory Distress Protocol after the paramedic has administered the first dose of epinephrine.
2. Urticaria on its own does not constitute a severe life-threatening anaphylactic reaction. At least one other sign must be present before giving epinephrine.
3. If at any time the symptoms become severe then the patient should be considered for epinephrine.
4. Pediatric Epinephrine Dosing Chart:
   The following chart describes the dosage for pediatric epinephrine based on the formula: \((\text{[age x 2]} + 10 \text{ kg}) \times 0.01, \text{rounded to closest 0.05 mg (ml)}\).

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight kg (2 x age) + 10</th>
<th>DOSE mg or ml</th>
<th>100 Unit/1cc Syringe</th>
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<tr>
<td>0-6 M</td>
<td>0.05</td>
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<td></td>
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<tr>
<td>6-12 M</td>
<td>0.10</td>
<td>10 Units</td>
<td></td>
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<tr>
<td>1</td>
<td>0.10</td>
<td>10 Units</td>
<td></td>
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<tr>
<td>2</td>
<td>0.15</td>
<td>15 Units</td>
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<td>3</td>
<td>0.15</td>
<td>15 Units</td>
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<td>6</td>
<td>0.20</td>
<td>20 Units</td>
<td></td>
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<tr>
<td>7</td>
<td>0.25</td>
<td>25 Units</td>
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<tr>
<td>8</td>
<td>0.25</td>
<td>25 Units</td>
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</tr>
<tr>
<td>9</td>
<td>0.30</td>
<td>30 Units</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>0.30</td>
<td>30 Units</td>
<td></td>
</tr>
</tbody>
</table>
Anaphylaxis/Allergic Reaction Protocol Diagram

ABC's
100% O₂
Cardiac Monitor
Pulse Oximetry, if available

Chief Complaint:
Possible Anaphylaxis

History:
• Acute onset
• Exposure to possible allergen

YES

Vital Signs

Primary and Secondary Assessment.
Consider other treatment
Transport
Care as required
Vitals q 5 minutes

NO

Perform secondary assessment of patient.
Consider other treatment

Other treatment: Repeat epinephrine x 1 if clinical condition does not improve or deteriorates 10 minutes after the initial dose
ACP only: diphenhydramine

Suction as required. Assist ventilation as required.

Transport
Care as required
Vitals q 5 minutes

• Administer epinephrine (1:1000)
SC/IM using a 1 ml syringe:
• administer 0.01 mg/kg SC/IM
(rounded to nearest 0.05 mg) to a maximum dose of 0.3 mg SC/IM

Physical examination shows signs of severe, life-threatening anaphylactic reaction:
• Wheezing
• Stridor
• Generalized edema
• Systolic BP <90

NO

YES

Notes
1. If the patient has wheezing as a feature of the anaphylaxis, they should be additionally considered for the SOB/Respiratory Distress Protocol after the paramedic has administered the first dose of epinephrine.
2. Urticaria on its own does not constitute a severe life-threatening anaphylactic reaction. At least one other sign must be present before giving epinephrine.
3. Caution in patients <10 kg, or in patients with ischemic heart disease. For these patients the BHP should be contacted before a second dose is administered. If every attempt to contact the BHP has failed and the patient is not improving, a second dose may be given. The paramedic should continue to attempt to contact the BHP.
Intravenous Access & Fluid Administration Protocol

When the following conditions exist, a paramedic certified in IV therapy may establish intravenous access and administer fluid therapy according to the following protocol.

Indications

Actual or potential need for:

- Intravenous medication administration OR
- Intravenous fluid therapy

For Primary Care Paramedics certified in IV therapy:

- Patients must be ≥2 years and ≥12 kg

Procedure

1. Intravenous access will be by saline lock or IV line with 0.9% normal saline (NS) set to Keep Vein Open (KVO) unless otherwise specified below. KVO rate is 30-60 ml/hour for patients ≥40 kg and 15 ml/h for patients <40 kg.

2. When the patient is symptomatically hypotensive/ hypovolemic without signs of fluid overload on chest auscultation, and has a systolic BP <100 (or SBP <[2 x patient age + 70] in patient <40 kg) the paramedic may:
   a. For patients ≥40 kg: Give an IV fluid bolus to a maximum of 20 ml/kg. Repeat vitals and perform a chest auscultation after every 250 cc. Return to KVO when bolus completed, SBP is ≥100 or chest auscultation reveals crackles.
   b. For patients <40 kg: Give an IV fluid bolus to a maximum of 20 ml/kg. Repeat vitals and perform a chest auscultation after every 100 ml. Return to KVO when bolus completed, SBP is ≥(2 x patient age + 70) or chest auscultation reveals crackles. In patients <40 kg with suspected diabetic ketoacidosis, give IV fluid boluses to a maximum of 10 ml/kg.

3. Return the IV rate to KVO after bolus administration.

4. Notify the receiving hospital of any patient with serious hypovolemia.
Intravenous Access & Fluid Administration Protocol Continued

Notes

1. If starting an IV, the paramedic will make attempts in the following order of site preference:
   a. Peripheral upper extremity including those enroute (preference to a distal site).
   b. If the patient is unconscious or in an arrest situation and needs IV medications or fluid bolus, the paramedic may attempt lower limb access.
   c. If the patient is unconscious or in an arrest situation and needs IV medications or fluid bolus, the ACP may attempt an external jugular (one side only except if VSA).
   d. In an arrest or pre-arrest situation CVAD access may be attempted by an ACP only if certified (see Auxiliary Drug Fluid Administration Using a Central Venous Access Device [CVAD] Protocol).

2. If IV access in trauma patients would delay transport, it should be attempted enroute rather than on scene. A second IV line can be initiated for patients with major trauma enroute.

3. When administering IV fluid resuscitation, the paramedic must carefully observe for signs of fluid overload (e.g. crackles on chest auscultation).

4. Use fluid boluses with caution in dialysis patients.

5. Microdrips and/or volume control administration sets (Buretrols) should be considered when IV access is indicated on patients <40 kg. An exception may exist if the patient requires IV fluid resuscitation as per protocol.
Suspected Cardiac Ischemia Chest Pain Protocol

When the following indications and conditions exist, a paramedic can administer nitroglycerin 0.4 mg spray sublingually (SL) and/or ASA two (2) 80 mg chewable tablets, and ACPs may also administer morphine sulfate IV, according to the following protocol. A maximum of six (6) doses of nitroglycerin and one (1) dose of ASA may be administered regardless of any previous self-administration.

Indications

An alert patient experiencing chest pain consistent with that caused by cardiac ischemia OR experiencing his or her typical angina/MI pain.

Conditions

To receive nitroglycerin: The patient must:
- be $\geq 40$ kg.
- be alert and responsive
- have used nitroglycerin in the past (this includes spray, tablets, or transdermal patch) or an IV is established and the paramedic is certified in IV therapy
- NOT have taken a prescription erectile dysfunction medication (i.e. Viagra, Levitra, Cialis, etc.) within the past 48 hours
- have a systolic BP $\geq 100$ mmHg and a heart rate $\geq 60$ bpm and $<160$ bpm.

To receive ASA: The patient must:
- be $\geq 40$ kg.
- be alert and responsive
- NOT have an allergy to ASA or other NSAID
- NOT have current active bleeding (GI or other bleeding disorders)
- have NO evidence of CVA or head injury within 24 hours prior to paramedic assessment
- have a history of previous use of ASA with no adverse reaction if a known asthmatic

To receive morphine sulfate (ACP only): The patient must:
- have a systolic BP $\geq 100$ mmHg
- NOT have an allergy to morphine sulfate

Procedure

1. Administer 100% $O_2$, and document vital signs.
2. Initiate continuous cardiac monitoring and pulse oximetry (if available).
3. Place the patient in a sitting or semi-supine position.
4. If certified in IV therapy, attempt an IV (NS TKO). If an intravenous is not established, the paramedic may administer nitroglycerin only in patients with a history of previous nitroglycerin use.
5. Confirm the systolic BP is $\geq 100$ mmHg and the heart rate is $\geq 60$ bpm and $<160$ bpm.
Suspected Cardiac Ischemia Chest Pain Protocol

6. Administer one (1) dose of nitroglycerin 0.4 mg spray SL, every five (5) minutes as needed for chest pain, to a maximum of six (6) doses.

7. Administer ASA 160 mg (2 x 80 mg) for the patient to chew and swallow.

8. Check vital signs before each dose of nitroglycerin. Stop nitroglycerin administration if systolic BP drops by more than 1/3 of the initial systolic blood pressure. Should the patient’s vital signs fall outside of the designated parameters at any time during the call, nitroglycerin will be discontinued and the patient will not receive any additional nitroglycerin for the remainder of the call.

9. If the patient’s vital signs have changed then follow the Intravenous Access & Fluid Administration Protocol.

10. ACP only:
    If after a total of three (3) doses of nitroglycerin and the patient is still complaining of chest pain, an ACP needs to confirm that the patient is not allergic to morphine sulfate and systolic BP ≥100 mmHg. An ACP may then administer 2 mg morphine sulfate IV. This may be repeated every five (5) minutes provided systolic BP is ≥100 mmHg and the pain has not been relieved by morphine and additional nitroglycerin, to a maximum of five (5) doses (10 mg total) of morphine sulfate. Nitroglycerin may still be administered to a maximum of six (6) doses.

11. Obtain a 12-lead ECG (if available) according to the Auxiliary 12-Lead Acquisition Protocol.

12. Contact the BHP if further orders are required.

Notes

1. If the patient’s chest pain fully resolves and then recurs, it is treated as a new episode of chest pain and the nitroglycerin protocol is repeated, but not the ASA.

2. Patients may be reluctant or refuse to take ASA. In such cases, respect the patient’s wishes and notify the receiving hospital staff on arrival.

3. Administer ASA even if the patient has already taken their normal dose prior to your arrival, or even if the chest pain has resolved.
Suspected Cardiac Ischemia Chest Pain Protocol Diagram

1. **Chief Complaint:**
   - Chest pain, presumed cardiac origin

2. **Physical Examination:**
   - Responsive and alert
   - Weight ≥40 kg

3. **Vital Signs**

4. **Assess for nitroglycerin administration. Any contraindications?**
   - Systolic BP <100 mmHg
   - Heart Rate <60 or >160 bpm
   - No history of nitroglycerin use
   - No history of angina/CAD
   - Has used ED medications in past 48 hrs

5. **Administer nitroglycerin spray sublingually**
   - Initiate transport
   - May repeat q 5 min prn (max. 6 doses)

6. **Assess for ASA administration. Any contraindications?**
   - Allergy to ASA or Non Steroidal Anti-inflammatory
   - Current Active Bleeding
   - Recent Head Injury or CVA <24 hrs
   - Asthma with no previous use of ASA

7. **Transport Care as required**
   - Vitals q 5 minutes.

8. **Assess Patient**
   - Consider other treatment
   - Transport Care as required
   - Vitals q 5 minutes.

Notes

1. If the patient’s chest pain fully resolves and then recurs, it is treated as a new episode of chest pain and the nitroglycerin protocol is repeated, but not the ASA.

2. Patients may be reluctant or refuse to take ASA. In such cases, respect the patient’s wishes and notify the receiving hospital staff on arrival.

3. Administer ASA even if the patient has already taken their normal dose prior to your arrival or even if the chest pain has resolved.
Acute Cardiogenic Pulmonary Edema Protocol

When the following conditions exist a paramedic can administer nitroglycerin 0.4 mg per dose or 0.8 mg per dose sublingually (SL) according to the following protocol. A maximum of six (6) doses of nitroglycerin may be administered regardless of any previous self-administration.

Indications

Patient is in moderate to severe respiratorviy distress AND suspected of being in acute cardiogenic pulmonary edema.

Conditions

To receive nitroglycerin: The patient must:

- be ≥40 kg.
- have used nitroglycerin in the past (this includes spray, tablets, or transdermal patch) or an IV is established and the paramedic is certified in IV therapy
- NOT have taken prescription erectile dysfunction medication (i.e. Viagra, Levitra, Cialis, etc.) within the past 48 hours
- have a systolic BP ≥100 mmHg and a heart rate ≥60 bpm and <160 bpm.

Procedure

1. Place patient in sitting or semi-supine position, administer 100% O₂, and assist respirations via BVM as required.
2. Initiate cardiac monitoring and pulse oximetry (if available).
3. If certified in IV therapy, attempt IV access.
4. Administer doses of nitroglycerin q 5 minutes to a maximum of six (6) doses according to the following chart:

<table>
<thead>
<tr>
<th>IV established;</th>
<th>systolic BP ≥140 mmHg</th>
<th>0.8 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV not established;</td>
<td>systolic BP ≥140 mmHg</td>
<td>0.4 mg</td>
</tr>
<tr>
<td>IV established;</td>
<td>systolic BP ≥100 mmHg - 139 mmHg</td>
<td>0.4 mg</td>
</tr>
<tr>
<td>IV not established;</td>
<td>systolic BP &lt;140 mmHg</td>
<td>None</td>
</tr>
</tbody>
</table>

5. Check vital signs before each dose of nitroglycerin. Stop nitroglycerin administration if systolic BP drops by more than ½ of the initial systolic blood pressure. Should the patient’s vital signs fall outside of the designated parameters at any time during the call, nitroglycerin will be discontinued and the patient will not receive any additional nitroglycerin for the remainder of the call.

Notes

1. Salbutamol should generally not be administered for patients with pulmonary edema.
2. If BP ≥100 and <140 and the patient has chest pain, then a paramedic may administer nitroglycerin as per the Suspected Cardiac Ischemia Chest Pain Protocol.
Altered LOC – Suspected Hypoglycemia Protocol

When the following conditions exist, a paramedic may administer glucagon subcutaneously (SC) or intramuscularly (IM) or dextrose intravenously (IV) (if certified in IV therapy) according to the following protocol. A maximum of two (2) doses of glucagon or dextrose may be administered regardless of any previous self-administration.

Indications

Patient who exhibits any of the following serious symptoms: agitation, decreased LOA/LOC, confusion, seizure or symptoms of stroke.

Conditions

- Patient ≥ 2 years who has a blood sugar reading of < 4.0 mmol/L.
- Neonates and children < 2 years of age who have a blood sugar of < 3.0 mmol/L

Contraindications

Glucagon is contraindicated in the following:

1. Allergy to glucagon
2. History of pheochromocytoma (rare adrenal gland tumor), if known.

Procedure

1. Administer 100% O₂, manage airway and assist ventilations as required.
2. Initiate cardiac monitoring and pulse oximetry (if available).
3. Perform blood glucometry to confirm a reading of < 4.0 mmol/L in patient ≥ 2 years of age or < 3.0 mmol/L in neonates and children < 2 years of age.
4. Establish IV access NS TKO (if possible and certified in IV therapy).
5. Administer dextrose according to the following chart:

<table>
<thead>
<tr>
<th>AGE</th>
<th>DOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥12 y/o</td>
<td>50 ml (25 grams) of 50% dextrose (D50W)</td>
</tr>
<tr>
<td>2-11 y/o</td>
<td>1 ml/kg (0.5 g/kg) of 50% dextrose to max 25 g (50 ml)</td>
</tr>
<tr>
<td>&lt;2 y/o (ACP only)</td>
<td>2 ml/kg (0.5 g/kg) of D25W (dilute 1:1 with sterile NS)</td>
</tr>
<tr>
<td>&lt;28 days (ACP only)</td>
<td>2 ml/kg (0.2 g/kg) of D10W (dilute D50W 1:4 with sterile NS)</td>
</tr>
</tbody>
</table>

6. If IV access is unobtainable, not permitted, or delayed, administer glucagon according to the following chart:

<table>
<thead>
<tr>
<th>AGE</th>
<th>DOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20 kilograms</td>
<td>0.5 mg SC/IM</td>
</tr>
<tr>
<td>≥20 kilograms</td>
<td>1.0 mg SC/IM</td>
</tr>
</tbody>
</table>
Altered LOC – Suspected Hypoglycemia Protocol Continued

7. Transport to hospital immediately after the administration of dextrose or glucagon. If the patient responds to dextrose or glucagon, the patient may receive oral glucose or other simple carbohydrate (providing the patient is awake and able to protect their airway).

8. If the patient still meets the requirements for treatment the paramedic may repeat a second dose of dextrose after 10 minutes or administer a second dose of glucagon after 20 minutes.

Notes

1. A paramedic may perform blood glucometry on a patient with signs or symptoms that may be related to a glucose problem (hypo- or hyperglycemia).

2. If only mild signs and symptoms are exhibited, and the patient does not meet the above indications, the patient may receive oral glucose or other simple carbohydrate (providing the patient is awake and able to protect their airway).

3. If glucometry indicates the patient’s reading is ≥25 mmol/L, consider that these patients may be significantly dehydrated. Consider establishing IV access and contacting BHP for fluid administration orders (if certified).

4. The patient is at high risk for developing recurrent episodes of hypoglycemia and should be transported to hospital for assessment. Patients who have taken oral hypoglycemic agents or require more than one dose of D50W are at highest risk of developing recurrent hypoglycemia and often require admission to hospital. Patients refusing care/transport must be evaluated to determine if they have capacity to make that decision and have the risks explained to them.

5. If a competent patient makes an informed refusal, every attempt must be made to ensure that complex carbohydrate food is available, that a reliable adult can care for the patient, and that they will call 911 or other emergency number if needed. A final set of vitals including blood glucometry should be obtained. Contact your CACC/ACS, your supervisor, or a BHP if the paramedic has further concerns or blood glucose level is <4.0 mmol/L.
Altered LOC – Suspected Hypoglycemia Protocol Diagram

ABC’s
100% O₂
Cardiac Monitor
Pulse Oximetry (if available)

Chief Complaint:
Suspect Hypoglycemia

Vital Signs

If the patient still meets the requirements for treatment the paramedic may repeat
• dextrose x 1 after 10 minutes or
• glucagon x 1 after 20 minutes.

Transport
Care as required
Vitals q 5 minutes

Administer dextrose IV:
• If ≥12 y/o, 50 ml D50W
• If 2-11 y/o, 1 ml/kg D50W
• If <2 y/o (ACP only):
  2 ml/kg D25W
• If <28 days (ACP only):
  2 ml/kg D10W
Administer glucagon:
• If <20 kg, 0.5 mg SC/IM
• If ≥20 kg, 1.0 mg SC/IM

Establish IV access
(if possible and certified in IV therapy)

Take and record
Glucometer reading.

Is blood sugar
<4.0 mmol/L if ≥2 y/o or
<3.0 mmol/L if <2 y/o?

Notes

1. The patient is at high risk for developing recurrent episodes of hypoglycemia and should be transported to hospital for assessment. Patients who have taken oral hypoglycemic agents are at highest risk of developing recurrent hypoglycemia and often require admission to hospital. Patients refusing care/transport must be evaluated to determine if they have capacity to make that decision and have the risks explained to them.

2. If a competent patient makes an informed refusal, every attempt must be made to ensure that complex carbohydrate food is available, that a reliable adult can care for the patient, and that they will call 911 or other emergency number if needed. A final set of vitals including blood glucometry should be obtained. Contact your CACC/ACS, your supervisor, or a BHP if the paramedic has further concerns or blood glucose level is <4.0 mmol/L.
General Traumatic Arrest Protocol – Adult & Pediatric

When a patient is found to be in cardiac arrest (vital signs absent - VSA) and has sustained trauma, the paramedic will manage the patient according to the following protocol.

Indications

A patient who is in cardiac arrest (vital signs absent - VSA) secondary to obvious severe blunt or penetrating trauma.

Conditions

Defibrillator use:

1. AED without pediatric attenuator cables, applies to patients \( \geq 8 \text{ years old} \).
2. AED with automated rhythm analysis and pediatric attenuator cables, applies to patients \( \geq 1 \) and \(< 8 \text{ years old} \).
3. Manual defibrillation, applies to patients of all ages.

Patch for consideration of trauma - Termination of Resuscitation (trauma-TOR):

1. Patient must be \( \geq 16 \) years old to consider TOR. All patients \(< 16 \) years old will be resuscitated and transported according to the following algorithm.

Contraindications

Patients who meet conditions for “obvious death” according to the Basic Life Support Patient Care Standards OR who meet conditions of the DNR Standard.

Procedure

Blunt Trauma:

1. Confirm cardiac arrest by absence of spontaneous respiration and palpable pulse in a patient with obvious external signs of significant blunt trauma.
2. Initiate management and CPR according to the Basic Life Support Patient Care Standards for the Trauma Patient. (Including immobilization as required)
3. Attach AED/defibrillator pads (as per the conditions above).
   a. PCP:
      If the patient is in a “shock advised” rhythm, deliver a single shock. Continue CPR if needed. Initiate transport. No further AED analysis to be done enroute.
      If “No Shock Advised/Check Pulse”, check pulse and continue CPR if needed. If no pulse and:
      • Monitor heart rate \( > 0 \), initiate transport.
      • Monitor heart rate is 0, contact BHP for possible trauma-termination of resuscitation (trauma-TOR) only for patients \( \geq 16 \text{ years old} \).
General Traumatic Arrest Protocol – Adult & Pediatric  Continued

b. ACP:

If a shock is required (VF/VT), deliver a single shock. Continue CPR if needed. Initiate transport. No further defibrillation to be done enroute.

If asystole or PEA, continue CPR. Contact BHP for possible trauma-termination of resuscitation (trauma-TOR) only for patients ≥16 years old.

4. If no obvious external signs of significant blunt trauma, consider medical cardiac arrest and treat according to appropriate medical Cardiac Arrest Protocol.

Penetrating Trauma:

1. Confirm cardiac arrest by absence of spontaneous respiration and palpable pulse in a patient with obvious external signs of significant penetrating trauma. Also determine if there is absence of pupillary response and absence of spontaneous movement.

2. Initiate management and CPR according to the Basic Life Support Patient Care Standards.

3. Do not attach AED/defibrillation pads. Attach monitor chest leads.

   a. PCP & ACP:

      • If monitor heart rate is 0, no pupillary response and no spontaneous movement, contact BHP for possible “trauma-TOR” only for patients ≥16 years old.

      • If monitor heart rate >0, and nearest ED or trauma centre <20 minutes away, initiate transport.

      • If monitor heart rate >0, no pupillary response and no spontaneous movement, and nearest ED or trauma centre ≥20 minutes away, contact BHP for possible “trauma-TOR” only for patients ≥16 years old.

4. If no obvious external signs of significant penetrating trauma, consider medical cardiac arrest and treat according to appropriate medical Cardiac Arrest Protocol.
PCP Blunt Traumatic Arrest Algorithm – Adult & Pediatric

Obvious or multisystem blunt trauma present
Establish absent respiration and absent palpable pulse
Turn on defibrillator/AED

CPR
Attach pads - Assemble airway equipment

Analyze

Shock given
CPR if needed/Transport

“Check Pulse”
Monitor Heart Rate >0
Monitor Heart Rate =0

CPR/Transport
Patient is ≥16 yr old

NO
YES

CPR/Transport
Contact BHP for possible “trauma - TOR”

AED = Automated External Defibrillator
BHP = Base Hospital Physician
HR = Heart Rate
PEA = Pulseless Electrical Activity
TOR = Termination of Resuscitation

Notes
1. If no obvious external signs of significant blunt trauma, consider medical cardiac arrest and treat according to appropriate medical Cardiac Arrest Protocol.
ACP Blunt Traumatic Arrest Algorithm – Adult & Pediatric

Obvious or multi-system blunt trauma present
Establish absent respiration and absent palpable pulse
Turn on defibrillator/AED

CPR
Attach pads - Assemble airway equipment

Rhythm Check

VF/VT
Shock given
CPR if needed/Transport

Asystole/PEA
Patient is ≥16 yr old

NO
CPR/Transport

YES
Contact BHP for possible “trauma - TOR”

AED = Automated External Defibrillator
BHP = Base Hospital Physician
HR = Heart Rate
PEA = Pulseless Electrical Activity
TOR = Termination of Resuscitation

Notes
1. If no obvious external signs of significant blunt trauma, consider medical cardiac arrest and treat according to appropriate medical Cardiac Arrest Protocol.
PCP & ACP Penetrating Traumatic Arrest Algorithm – Adult & Pediatric

Obvious penetrating trauma present
Establish absent respiration, palpable pulse
pupillary reflexes, spontaneous movement

CPR
Do not attach AED/defibrillator pads
Attach monitor chest leads
Assemble airway equipment

NO

CPR/Transport

YES

Patient is ≥16 yr old

Monitor
Heart Rate >0

ED or Trauma Unit <20 minutes away

CPR/Transport

ED or Trauma Unit ≥20 minutes away

CPR/Contact BHP for possible “trauma - TOR”

Monitor
Heart Rate =0 (Asystole)

CPR/Contact BHP for possible “trauma - TOR”

AED = Automated External Defibrillator
BHP = Base Hospital Physician
ED = Emergency Department
Cardiac Arrest General Protocol (Non-traumatic) – Adult & Pediatric

When the following indications and conditions exist, a paramedic may treat patients in cardiac arrest according to the following protocol.

Indications

- Patient ≥30 days old who is in non-traumatic cardiac arrest (vital signs absent - VSA).
- For patient <30 days old, refer to Neonatal Resuscitation Protocol.

Conditions

Defibrillator use:

1. AED without pediatric attenuator cables, applies to patients ≥8 years old.
2. AED with automated rhythm analysis and pediatric attenuator cables, applies to patients ≥1 and <8 years old.
3. Manual defibrillation, applies to patients ≥30 days.

Contraindications

Patients who meet conditions for “obvious death” as per Basic Life Support Patient Care Standards OR who meet conditions of the DNR Standard.

Procedure

1. Confirm cardiac arrest while your partner turns on the AED/defibrillator.
2. If the arrest is NOT witnessed by the paramedic, initiate or continue chest compressions and ventilation for approximately 2 minutes (i.e. CPR according to Basic Life Support Patient Care Standards).
3. If the arrest is witnessed by the paramedic, proceed quickly to the next step to minimize the duration of CPR.
4. Attach defibrillation pads. (Attach pads while chest compressions are continuing.)
5. Press analyze or perform a manual interpretation rhythm check and follow the appropriate PCP or ACP Cardiac Arrest Algorithm.

Notes

1. PCPs will contact the Base Hospital Physician when:
   a. There is a DNR or Termination of Resuscitation program in your region requiring BH contact.
2. ACPs will contact the Base Hospital Physician when:
   a. Other intervention/management may be required and not under protocol.
   b. Completion of the sequence of procedures specified in the appropriate algorithm without a return of spontaneous circulation.
   c. Discovery of a Do Not Resuscitate (DNR) order.
   d. To obtain consultation or authority for transport of the patient, or to terminate resuscitation.

Ontario Base Hospital Group Provincial Medical Directives
Hamilton Health Sciences Base Hospital Program                    Medical Director: Dr. M. Welsford

October 2007
Cardiac Arrest General Protocol (Non-traumatic) –
Adult & Pediatric

3. **Transport of the Cardiac Arrest Patient**: initiate transport in the following circumstances:
   
a. **PCP**
   
   “Analyze” has been pressed four times (generally three times on-scene and one time in the ambulance) and the appropriate response has been taken. This includes actions taken by on-scene AED-equipped first responders.
   
   Note: Stop CPR and check for a carotid pulse enroute if the patient develops obvious signs of life (e.g. spontaneous movement or breathing).
   
   **OR**
   
   b. **PCP/ACP**
   
   You have detected a return of spontaneous circulation. (e.g. presence of a carotid pulse, patient movement).
   
   **OR**
   
   c. **PCP/ACP**
   
   You have been directed to transport by the Base Hospital Physician.

4. **Loss of Pulse During Transport After Obtaining an Initial ROSC**: once transport has been initiated, the procedure to follow after detecting a subsequent loss of a carotid pulse is:
   
a. Pull over and stop the vehicle or stretcher in safe location.
   
b. Perform a 10-second pulse check.
   
c. **PCP**: If no palpable carotid pulse is present, press “Analyze” and follow the voice prompt(s) given by the AED. Cease all radio transmissions while the AED performs an analysis of the heart rhythm.
   
d. **ACP**: If no palpable carotid pulse is present, perform a rhythm check. Follow the appropriate action according to the observed rhythm.
   
e. Resume CPR (if required) and resume transport.
   
f. Once transport has been resumed, complete transport to the receiving hospital without stopping.
   
g. Stop CPR and check for a carotid pulse enroute if the patient develops obvious signs of life (e.g. spontaneous movement or breathing).

5. **Initial Loss of Pulse During Transport**: if a patient goes into cardiac arrest for the first time during transport:
   
a. Pull over and stop the vehicle or stretcher in safe location.
   
b. Complete a full Cardiac Arrest General Protocol (Non-traumatic).
PCP Cardiac Arrest General Algorithm (Non-traumatic) – Adult & Pediatric

Establish VSA
Turn on AED

CPR x 2 min (only if NOT witnessed)
Attach Pads - Assemble airway equipment

Analyze

Shock → CPR x 2 min
“Check Pulse” + → ROSC Care

Shock → CPR x 2 min
“Check Pulse” + → ROSC Care

Analyze

Shock → Continue CPR
& Move to Ambulance (if not already done)
“Check Pulse” + → ROSC Care

Analyze

Shock → CPR
“Check Pulse” + → ROSC Care

Transport

ROSC = Return of Spontaneous Circulation

Notes: Always ignore all “Check Patient” voice or screen prompts. This prompt no longer serves a useful purpose during a cardiac arrest.
ACP Cardiac Arrest General Algorithm (Non-traumatic) – Adult & Pediatric

Establish VSA/Turn on Defibrillator

CPR x 2 min (only if NOT witnessed)
Attach Pads - Assemble airway equipment

Rhythm Check

VF/VT
Shock
CPR x 2 min
Attempt IV +/- ETT

Asystole
CPR x 2 min
Attempt IV +/- ETT
Administer medications concurrent with CPR
Epinephrine
Atropine (Adults only ≥12 years or ≥40 kg)

PEA
Pulse Check
+ ROSE Care

Rhythm Check

VF/VT
Shock
CPR x 2 min
Attempt IV/ETT if not done
Epinephrine q 4 min
alternate with Anti-arrhythmic
(max 2 doses)

Asystole
CPR x 2 min
Attempt IV/ETT if not done
Administer meds below only q 4 min.
(every 2nd CPR interval
Epinephrine
Atropine (Adults only ≥12 years or ≥40 kg)

PEA
Pulse Check
− ROSE Care

Rhythm Check

Repeat from until 3rd dose of Epinephrine is given

PATCH

bpm = beats per minute
ETT = Endotracheal Tube
NS = Normal Saline
PEA = Pulseless Electrical Activity
ROSC = Return of Spontaneous Circulation
VF = Ventricular Fibrillation
VSA = Vital Signs Absent
VT = Ventricular Tachycardia

October 2007
Cardiac Arrest Protocol –
Defibrillation, Medication and Procedure Notes

Defibrillation Notes:
Deliver single shocks only. “Stacks of 3 shocks” are no longer used.

1. Adults:
   • Monophasic - 360 J for all shocks
   • Biphasic – as determined by BH, default is 200 J (see below).

2. Pediatrics:
   • AED without pediatric attenuator cables (patients ≥8 years old) – as preprogrammed.
   • AED with pediatric attenuator cables and automated pediatric rhythm analysis
     (applies to patients ≥1 and <8 years old) - as preprogrammed
   • Manual (applies to patients ≥30 days old) monophasic and biphasic
     first shock = 2 J/kg. Remainder of shocks = 4 J/kg to maximum that indicated for adults

Due to the wide variety of defibrillators available, the energy level settings will be set according to Base Hospital direction.

Medication & Procedure Notes: (ACP Only)
IV administration is preferable in all cases. IO administration (if indicated and authorized for use in adult or pediatric cardiac arrest) is comparable to IV administration and preferable to ETT administration. Drug doses for IO are the same as for IV.

Once the IV is established the initial drug to deliver is epinephrine/± atropine (if indicated) then alternate with the anti-arrhythmic drug (if indicated, either amiodarone or lidocaine) during each 2-minute interval of CPR.

1. Adults:
   • Epinephrine (1:10,000): 1 mg (10 ml) IV/O or 2 mg ETT q 3-5 minutes as indicated in algorithm, with maximum of 3 doses prior to BHP patch.
   • Atropine (1 mg/10 ml): 1 mg (10 ml) IV/O or 2 mg (20 ml) ETT to maximum 3 doses.
   • Amiodarone 300 mg IV/O first dose; 150 mg IV/O second dose; maximum 2 doses.
   • Lidocaine 1.5 mg/kg IV/O or 3.0 mg/kg ETT each dose (replaces amiodarone if no IV/O established) maximum 2 doses.

2. Pediatrics (≥30 days to <12 years and <40 kg):
   • Epinephrine (1:10,000): 0.01 mg/kg = 0.1 ml/kg IV/O, minimum dose = 0.1 mg (1 ml) OR ETT Epinephrine (1:1,000): 0.1 mg/kg = 0.1 ml/kg ETT, minimum dose = 1 mg (1 ml).
   • Lidocaine 1.0 mg/kg IV/O or 2 mg/kg ETT each dose; maximum 2 doses.
Cardiac Arrest Protocol –
Defibrillation, Medication and Procedure Notes Continued

3. Procedures:
   • Intubation should be deferred until the second 2-minute interval of CPR unless ventilation cannot be adequately accomplished with a BVM.
   • With limited resources on scene, it can be difficult to perform intubation/IV insertion/drug administration within a single 2-minute interval of CPR. It is acceptable to perform these procedures over more than one 2-minute interval of CPR. Do not rush the procedures; focus on high quality CPR a
Neonatal Resuscitation Protocol

A paramedic should manage a neonate immediately following delivery or an infant <30 days old and in need of resuscitation according to the following protocol.

Indications

All neonates immediately following delivery or <30 days old and in need of resuscitation.

Contraindications

Patients who meet conditions for “obvious death” as per Basic Life Support Patient Care Standards OR who meet conditions of the DNR Standard.

Procedure

1. Assess neonate for the presence of meconium, breathing, crying, good muscle tone and colour.
2. Provide warmth, position, and clear the airway by suctioning the mouth prior to suctioning the nose.
3. Dry, stimulate and reposition.
4. Give O₂ as necessary.
5. Evaluate respirations, heart rate and colour.
6. Provide positive - pressure ventilation (± ETT for ACP only) if neonate is apneic or HR <100.
7. If HR <60 provide positive pressure ventilation for 30 seconds and reassess. If HR is still <60 begin chest compressions (refer to CPR Guidelines Reference).
8. Initiate transport (PCP only).
9. If no response to ventilations and CPR, consider epinephrine administration as per the Neonatal Resuscitation Algorithm (ACP only).
Neonatal Resuscitation Algorithm

A paramedic may manage a neonate immediately following delivery or a neonate recently born (<24 hours) or <30 days and in need of resuscitation according to the following protocol.

**Birth**
- Clear of meconium?
- Breathing or trying?
- Good muscle tone?
- Colour pink?
- Term gestation?

**Routine Care**
- Provide warmth
- Clear airway
- Dry

**Evaluate respirations, heart rate and colour**
- Breathing
  - HR ≥100 & pink
- Apnea or HR <100

**Supportive Care**

**Provide positive-pressure ventilation (BVM)**
- Ventilating
  - HR ≥100 & pink
- HR <60
  - HR ≥60

**Ongoing Care**

**ACP only:**
- Administer epinephrine
  - 0.1 ml/kg of 1:10,000 (0.01 mg/kg) IV/IO
  - or 1 ml/kg of 1:10,000 (0.1 mg/kg) ETT
- Repeat q 3-5 minutes
- Initiate transport prior to 3rd dose, if possible

**Meconium present?**
- YES
  - Baby Vigorous?*
    - YES
      - Suction mouth, pharynx, consider ETT and suction
      - Provide BVM ventilation PRN
    - NO
      - Continue with remainder of Initial Steps:
        - Clear mouth and nose of secretions
        - Dry, stimulate, and reposition
        - Give O₂ (as necessary)
- NO

*Vigorous = Good muscle tone, strong respiratory efforts and HR ≥100
Foreign Body Airway Obstruction Cardiac Arrest Protocol – Adult & Pediatric

When a patient is found to be in cardiac arrest (vital signs absent - VSA) and it is apparent that the patient has an obvious foreign body airway obstruction, the paramedic will treat the patient according to the following protocol.

**Indications**

Patient who is in cardiac arrest (VSA) with an apparent foreign body airway obstruction.

**Procedure**

1. Confirm cardiac arrest while your partner assembles airway equipment.
2. Begin chest compressions.
3. Attempt to ventilate the patient when airway equipment is assembled.
4. If air entry does not occur, re-adjust the airway and re-attempt ventilation.
5. If the second ventilation does not enter the lungs, the patient is deemed to have an obstructed airway.
   - **PCP:** Visualize inside the patient’s mouth after every set of chest compressions and remove the obstruction if visualized.
   - **ACP:** Visualize the patient’s upper airway using a laryngoscope and Magill forceps (or equivalent). Remove foreign body if visualized.
6. Start the medical Cardiac Arrest General Protocol performing one analysis or manual rhythm check.
7. IV access should not be attempted until the foreign body airway obstruction is cleared.
8. If the foreign body airway obstruction cannot be cleared:
   - **PCP:** Initiate rapid transport after 2 minutes of attempting to clear the obstruction and responding to the first analysis.
   - **ACP:** Follow the Auxiliary Emergency Cricothyrotomy Protocol (if certified) after 2 failed attempts to remove the obstruction using Magill forceps. Initiate rapid transport.
9. If the obstruction is cleared, start the Cardiac Arrest General Protocol from the beginning, count any shocks/analyses that have already been completed.
Hypothermic Cardiac Arrest General Protocol – Adult & Pediatric

When a patient is found to be in cardiac arrest (vital signs absent - VSA) and convincing evidence exists that the patient is severely hypothermic, the paramedic will treat the patient according to the following protocol.

Indications
Patient who is in cardiac arrest (VSA) with severe hypothermia. Severe hypothermia suspected by:

- History indicating that the patient has suffered prolonged exposure to a cold environment.
- Central body temperature is cold to the touch (chest, abdomen, and under arms).
- Skin appears to be white/waxy in nature.
- May have stiff limbs.

Procedure

1. Confirm cardiac arrest by the absence of spontaneous respirations and palpable central pulses. A 45-second pulse check should be performed.
2. Initiate chest compressions and ventilation for approximately 2 minutes.
3. Attach AED or defibrillator while performing CPR.
4. Initiate therapy according to the PCP or ACP Cardiac Arrest General Protocol. Continue until the first AED Analysis or manual rhythm check has been performed and CPR has been re-initiated if necessary.
5. Transport should be initiated quickly. No further defibrillation efforts enroute. Update receiving facility enroute.
6. Establish IV access enroute (if certified). No IV drugs will be administered.
Return of Spontaneous Circulation (ROSC) Protocol – 
Adult & Pediatric

When the following indications and conditions exist, a paramedic may manage patients with return of palpable pulses after cardiac arrest according to the following protocol.

**Indications**

Patient with return of spontaneous circulation (ROSC) after resuscitation was initiated.

**Contraindications**

Dopamine is contraindicated in the following:

1. Tachydysrhythmias (excluding sinus tachycardia): Contact BHP
2. Mechanical shock states (tension pneumothorax, cardiac tamponade): Consider Tension Pneumothorax Protocol (if trauma) and/or BHP contact
3. Hypovolemia: Refer to Intravenous Access & Fluid Administration Protocol
4. History of Pheochromocytoma (Rare): Contact BHP

**Procedure**

1. Assess the airway and breathing, with appropriate support as required.
2. **Do not** remove the AED/defibrillation pads, as there is a possibility the patient may re-arrest.
3. Record the pulse rate, respiration rate and blood pressure during transport to the hospital.
4. Reassess the patient for a loss of pulse every 45-60 seconds by performing a 10-second carotid pulse check.
5. The unresponsive patient should have his/her head elevated approximately 30 degrees if it is not contraindicated by other factors.
6. For **PCP** (if certified in IV initiation) or **ACP**:
   a. When the patient has a clear chest on chest auscultation, and has a systolic BP <90 (or SBP <[2 x patient age + 70] in patient <40 kg) the paramedic may:
      a. For patients ≥40 kg: Give an IV fluid bolus to a maximum of 10 ml/kg. Repeat vitals and perform a chest auscultation after every 250 ml. Return IV TKVO when the fluid bolus is completed, SBP is ≥90 or chest auscultation reveals crackles.
      b. For patients <40 kg: Give an IV fluid bolus to a maximum of 10 ml/kg. Repeat vitals and perform a chest auscultation after every 100 ml. Return IV TKVO when the fluid bolus is completed, SBP is ≥(2 x patient age + 70) or chest auscultation reveals crackles.
Return of Spontaneous Circulation (ROSC) Protocol –
Adult & Pediatric Continued

7. For ACP only:
   After fluid bolus administration has been initiated (if indicated) as above, the ACP may
   initiate dopamine infusion if systolic BP <90 mmHg:
   a. Begin at 5 mcg/kg/min and increase by 5 mcg/kg/min every 3-5 minutes, if required, to
      achieve a systolic BP of 90 mmHg (or SBP >[2 x patient age + 70] in patient <40 kg), or a
      maximum of 20 mcg/kg/min.
   b. If discontinuing dopamine electively, do so gradually. If the dopamine infusion goes
      interstitial, stop infusion immediately and report findings to the receiving hospital.

8. If the patient becomes or remains bradycardic following dopamine initiation, contact the BHP.
Advanced Care Medical Directives for ACPs
Intubation Protocol

When the following conditions exist, an Advanced Care Paramedic may perform oral or nasal intubation according to the following protocol.

Indications

Patients requiring ventilatory assistance that is not adequately provided by BVM technique as defined by decreasing O₂ saturation, O₂ saturation <90%, or deterioration of vital signs such as RR increasing, HR increasing, and BP decreasing.

Contraindications

1. Patients <50 years suffering an acute exacerbation of asthma, unless the patient is in respiratory arrest or VSA.
2. Lidocaine is contraindicated in patients with evidence of 2nd or 3rd degree heart block or idioventricular rhythm.
3. Nasal intubation including the use of nasal phenylephrine or xylometazoline (Otrivin) is contraindicated in the following:
   • Respiratory arrest
   • Suspected basal skull fracture, and midface fractures
   • Age <8 years

Relative contraindications to nasal intubation:
   • Uncontrolled epistaxis
   • Coumadin or other anticoagulant therapy (excluding ASA) and other hemostatic disorders

Procedure

1. Attempt basic maneuvers as needed: positioning, suctioning, pharyngeal airway insertion, and BVM IPPV in addition to application of 100% O₂. Initiate cardiac monitoring and pulse oximetry (if available).
2. If patient has suspected severe head injury or suspected severe CVA, administer lidocaine 1.0 mg/kg IV over one minute, 3 minutes prior to intubation*.
3. When required, administer topical anesthesia and other adjuncts:
   a. Oral intubation: Administer lidocaine spray pre intubation in the hypopharynx or directly onto the vocal cords. Wait at least 60 seconds before instrumentation.
   b. Nasal intubation (≥8 years): Administer phenylephrine spray (0.5%) or xylometazoline (Otrivin) spray (0.1%) x 2 into each nare. Administer lidocaine spray into each nare. Administer lidocaine spray in the hypopharynx (if possible). Wait at least 60 seconds before instrumentation.
   c. Dose of lidocaine spray for topical anesthesia: lidocaine spray (10 mg/spray). Maximum dose is 5 mg/kg (5 sprays per 10 kg). Do not exceed 20 sprays total.

Note total dose of lidocaine including any given IV is 5 mg/kg.


**Intubation Protocol** Continued

4. Pre-oxygenate the patient for 30-60 seconds with 100% O₂ (and IPPV, if required).
5. Choose the appropriate size ETT and check the cuff.
6. Intubate the trachea, confirm tube placement, and secure the tube (see Intubation Confirmation Protocol). Consider use of C-spine collar to minimize the risk of ETT displacement.
7. If intubation is unsuccessful after 30 seconds, stop and re-oxygenate. The paramedic may repeat attempt beginning at Step 4 and/or initiate immediate transport.
8. Ventilate the patient with BVM.
9. If the patient is combative or agitated refer to the Auxiliary Patient Sedation Protocol.

**Notes**

1. *If urgent definitive airway management is required then the ACP should proceed directly to intubation and bypass Step 3.*
2. If 2 attempts at intubation on scene fail and repeat attempts would delay transport, ventilate with BVM and initiate transport. Any further attempts should be enroute.
3. Documentation and confirmation for placement of ETT follows the Intubation Confirmation Protocol.
4. Lidocaine bolus IV (but not sprays) are used in the calculation of the maximum intravenous lidocaine dosage a patient may receive, which is 3 mg/kg.
5. Alternative rescue airways should be readily available in the event of failed intubation. Refer to the Difficult Airway Protocol (in development).
Intubation Confirmation Protocol

The Advanced Care Paramedic must confirm and document on the ACR that the endotracheal tube (ETT) is in the trachea using the following protocol.

Indications

Any patient who is intubated (orotracheal or nasotracheal) for confirmation of initial placement or reconfirmation of ETT in the trachea.

Contraindications

Patients less than 15 kg (for disposable capnometry device only, unless pediatric colorimetric end-tidal CO₂ detector used)

Procedure

1. Immediately after intubation (oral or nasal), verification of ETT should be done using at least three of the methods listed below. A carbon dioxide detector device must be one of the methods for confirmation.
2. Reconfirmation should be performed by at least one method any time the patient is moved, or if ETT dislodgment is suspected.
3. Confirmation methods and findings should be documented on the ACR.
4. Confirmation of tube placement is to be checked (and documented on the ACR) by the receiving Emergency Physician or Respiratory Therapist, where required.

Confirmation Methods:

Primary methods:
1. Visualization of the distal end of the tube passing through the vocal cords.
2. Absence of breath sounds over the epigastrium.
3. Presence of equal breath sounds over all lung fields.
4. Rise and fall of the chest with ventilation.

Secondary methods:
1. Colorimetric end-tidal CO₂ monitoring.
2. Detection of exhaled carbon dioxide with an associated waveform.
3. Esophageal detector device.

Notes

1. If esophageal placement is suspected, the patient is to be immediately extubated, ventilated and reassessed prior to further intubation attempts.
2. Lighted stylette (when available) may be used to assist in confirmation of tube placement.
3. End-tidal CO₂ values (when available) should be documented on the ACR at regular intervals. See Intubation Confirmation Reference (Appendix 3) for further instructions on use.
Intraosseous Access Protocol

When the following conditions exist, an Advanced Care Paramedic may establish intraosseous (IO) access according to the following protocol.

Indications

Any critically ill pediatric patient who is:

- in cardiac arrest or a ‘pre-arrest’ state OR
- presenting with hypovolemic shock, major burns or trauma AND

IV access is unobtainable (see Procedure for details)

Conditions

Patient must be ≤12 years of age.

Contraindications

Placement of an IO in a bone with a suspected fracture or in a limb distal to a fractured bone.

Procedure

1. During cardiac arrest or pre-arrest (unconscious with rapidly deteriorating vital signs), if no peripheral veins can be palpated or seen, proceed directly to an intraosseous line. Initial drug therapy should not be delayed while securing IO access. Medication may be administered via ETT if IV/IO route is delayed.

2. During cardiac arrest or pre-arrest (unconscious with rapidly deteriorating vital signs), if peripheral veins can be seen or palpated, attempt at least one (1) peripheral IV. If IV access fails following two (2) attempts or after 90 seconds, proceed to an intraosseous line.

3. In suspected hypovolemic shock, extensive burns or major trauma (not in arrest or pre-arrest) attempt at least one (1) peripheral IV. If an IV cannot be established following two (2) attempts or after 90 seconds, contact the base hospital physician for a verbal order to proceed to intraosseous access.

4. Landmark the proximal tibia and prep the site. Secure the limb and attempt IO access (16 gauge if ≥1 year; 18 gauge for <1 year).

5. Place IV solutions in a pressure bag inflated to a maximum of 300 mmHg or “push” the fluid bolus with a large-bore syringe for more-rapid infusion. Infuse fluid volumes as per the Intravenous Access & Fluid Administration Protocol.

6. Intraosseous access will be limited to a maximum of two (2) attempts only.

7. Monitor the site and under the limb to ensure fluid not infiltrated. Update the receiving facility.
Unstable Bradycardia Protocol

When the following indications and conditions exist, an Advanced Care Paramedic may administer atropine or initiate transcutaneous pacing (TCP) according to the following protocol.

Indications

- Patient with a pulse and ventricular rate <50 AND
- Patient is clinically unstable secondary to bradycardia AND
- Systolic BP <100 mmHg.

Conditions

Patient is ≥40 kg.

Contraindications

Hypothermic patients.

Procedure

1. Administer 100% O₂, manage airway and assist ventilations as required. Initiate cardiac monitoring and pulse oximetry (if available).
2. Obtain 10 second cardiac strip to confirm rhythm.
3. Establish IV access and administer IV fluids (if indicated as per protocol).
4. If the patient is in a sinus bradycardia, atrial fibrillation, 1st degree or 2nd degree type I heart block:
   a. Administer atropine 0.5 mg IV.
   b. If the patient remains bradycardic and symptomatic after 3-5 minutes, repeat atropine 0.5 mg IV.
   c. If patient remains bradycardic and symptomatic, patch to the BHP for consideration of further atropine or to initiate TCP. If every attempt to contact the BHP has failed and the patient is worsening the paramedic may initiate TCP. The paramedic should continue to attempt to contact the BHP.
5. If the patient is in a 2nd degree type II or 3rd degree heart block:
   a. Do not administer atropine but initiate TCP then patch to BHP.
6. TCP procedure:
   a. Place pacing pads as per the manufacturer’s guidelines.
   b. Set pacing rate at 80 and increase output (milliamps) slowly until electrical and mechanical capture is achieved. Increase further by another 5-10 milliamps to ensure consistent capture.
   c. If capture is unsuccessful after one minute at maximum milliamps, discontinue pacing attempts and consult BHP.
Unstable Bradycardia Protocol Continued

7. If TCP is not available, patch the BHP for consideration of dopamine.
8. The paramedic may initiate dopamine infusion if systolic BP <100 mmHg:
   a. Begin at 5 mcg/kg/min and increase by 5 mcg/kg/min every 3-5 minutes, if required, to achieve a systolic BP of 100 mmHg, or a maximum of 20 mcg/kg/min.
   b. If discontinuing dopamine electively, do so gradually. If the dopamine infusion goes interstitial, stop infusion immediately and report findings to the receiving hospital.

Notes

1. Most conscious patients will require sedation and/or analgesia orders (see Auxiliary Patient Sedation Protocol).
2. Transplanted hearts will not respond to atropine. Go at once to TCP, and patch to the BHP for possible dopamine orders or a combination.
3. If the ACP encounters a patient with a symptomatic bradycardia that does not meet this protocol, contact the BHP for orders.
4. If at any point the patient becomes pulseless, treat according to the applicable Cardiac Arrest Protocol.
Stable Tachycardia Protocol

When the following indications and conditions exist, an Advanced Care Paramedic can manage the stable tachycardic patient according to the following protocol.

**Indications**

- Patient with a tachyarrhythmia (other than sinus tachycardia) at a rate ≥120 bpm (wide complex) and ≥150 (narrow complex) AND
- Patient is hemodynamically stable.

**Conditions**

Patient ≥40 kg.

**Contraindications**

Adenosine is contraindicated in the following:

1. Patients taking the following medications: dipyridamole (e.g. Persantine, Aggrenox) or Carbamazepine (e.g. Tegretol).
2. Patient in a 2nd or 3rd degree heart block or known sick sinus syndrome without functioning pacemaker.
3. Patients with sinus tachycardia, atrial fibrillation, or atrial flutter.

**Relative contraindications**

1. Patient with history of Asthma/COPD.

**Procedure**

1. Administer 100% O₂, obtain vital signs, and confirm that the patient is clinically and hemodynamically stable.
2. Initiate continuous cardiac monitoring and pulse oximetry (if available).
3. Obtain 10 second cardiac strip to confirm rhythm. If available perform a 12-lead ECG (as per Auxiliary 12-Lead Acquisition Protocol).
4. Initiate IV access (preferably antecubital fossa and large bore) and initiate fluid therapy as indicated.
Stable Tachycardia Protocol Continued

If narrow complex, regular tachycardia of suspected PSVT origin (not sinus, atrial fibrillation or known atrial flutter) follow Procedures 5 through 7.

5. Perform a Valsalva maneuver (maximum 2 attempts of 10-20 seconds per attempt).

6. If Valsalva is unsuccessful contact the BHP to receive further orders for management of tachycardia. (Note that the Valsalva is for narrow complex tachycardia in this protocol.)

7. If BHP order obtained for adenosine (where the drug is made available):
   a. Advise patient of potential side effects (e.g. flushing, dyspnea, chest pressure)
   b. Administer adenosine 6 mg rapid IV push followed by 10 ml NS flush.
   c. If tachycardia persists after 2 minutes, the Advanced Care Paramedic may administer adenosine 12 mg rapid IV push followed by 10 cc NS flush.
   d. If no improvement or patient worsens, re-establish BHP contact after transportation is in progress, for further orders.

If wide complex regular tachycardia

8. If BHP order obtained for lidocaine:
   a. Administer lidocaine 1.5 mg/kg IV over 2 minutes.
   b. If tachycardia persists after 5 minutes, the paramedic may administer 0.75 mg/kg IV over 2 minutes.
   c. If no improvement or patient worsens, re-establish BHP contact after transportation is in progress, for further orders.

9. If BHP order obtained for amiodarone (where the drug is made available):  
   a. Administer 150 mg IV over 10 minutes.
   b. If tachycardia persists after 5 minutes the paramedic may repeat a dose of 150 mg IV over 10 minutes.
   c. If no improvement or patient worsens, re-establish BHP contact after transportation is in progress, for further orders.

Notes

1. If at any point the patient becomes unstable, refer to the Unstable Tachycardia Protocol.

2. Stable patients with identified sinus tachycardia, atrial flutter or atrial fibrillation should not be treated with vagal maneuvers, adenosine or lidocaine in the field.

3. Patients with tachycardia secondary to hypovolemia should be treated with intravenous fluids and not according to this protocol.

4. Carotid Sinus massage is not to be done except under BHP direction.
Unstable Tachycardia Protocol

When the following indications and conditions exist, an Advanced Care Paramedic can manage the unstable tachycardic patient according to the following protocol.

**Indications**

- Patient with a tachyarrhythmia (other than sinus tachycardia) at a rate ≥120 bpm (wide complex) and ≥150 (narrow complex) AND
- Patient is clinically or hemodynamically unstable secondary to tachycardia:
  - significant chest pain
  - severe SOB
  - decreased LOC
  - hypotension (systolic BP <100 mmHg)
  - pulmonary edema
  - suspected acute MI

**Conditions**

Patient ≥40 kg.

**Procedure**

1. Administer 100% O₂, manage airway, and ventilate as indicated. Obtain vital signs and confirm that the patient is clinically or hemodynamically unstable.

2. Initiate continuous cardiac monitoring and pulse oximetry (if available).

3. Obtain 10 second cardiac strip to confirm rhythm.

4. Initiate IV access (preferably antecubital fossa and large bore) and initiate fluid therapy as indicated.

5. Contact the BHP for consideration of orders to administer synchronized cardioversion and for sedation, as necessary.
   a. Administer sedation/analgesia as per BHP order.
   b. Perform synchronized cardioversion as per BHP order. Initial shock would normally be 100 J. A specific order must be obtained from the BHP.
   c. If unable to perform synchronized cardioversion, adjust gain. If still unable to synchronize, deliver an unsynchronized shock at same settings as BHP order.
   d. Evaluate the patient after each shock is delivered. If the patient worsens, the rhythm changes, or cardioversion is unsuccessful, re-establish BHP contact enroute.
   e. If every attempt to contact the BHP has failed and the patient is worsening the paramedic may perform cardioversion as above. The paramedic should continue to attempt to contact the BHP.

6. Consider obtaining a 12-lead ECG (as per Auxiliary 12-Lead Acquisition Protocol) prior to cardioversion, if time permits.
Unstable Tachycardia Protocol Continued

Notes

1. If at any point the patient becomes pulseless, treat according to the applicable Cardiac Arrest Protocol.

2. In some patients the tachycardia may be a result of the chest pain and SOB and not be the cause. This is often difficult to determine and should be discussed with the BHP when discussing further treatment.

3. Patients with tachycardia secondary to hypovolemia should be treated with intravenous fluids and not according to this protocol.
Altered LOC – Suspected Opioid Overdose Protocol

When the following conditions exist, an Advanced Care Paramedic will manage the patient with a suspected opioid overdose according to the following protocol.

Indications
1. Patient with a GCS of <12 AND
2. Respiratory rate <10 AND
3. Suspected opioid overdose.

Procedure
1. Administer 100% oxygen and apply cardiac monitor. Manage airway and assist ventilations as required. Ventilatory management is of primary importance.
2. Consider initiating IV access. IV access may be difficult and should be limited to 2 attempts or 3 minutes on scene.
3. Perform blood glucometry. If <4 mmol/L then consult the Altered LOC – Suspected Hypoglycemia Protocol.
4. If blood sugar is greater than 4 mmol/L the paramedic may contact the BHP for orders to administer naloxone (Narcan). Naloxone may be administered (by BHP order) in an adult at a starting dose of 0.4 mg IV. If IV access is unavailable, naloxone 0.8 mg may be administered (by BHP order) subcutaneous (SC), intramuscular (IM), or intranasal (IN). This may be repeated every 5 minutes to a maximum dose of 2 mg.
5. Monitor respiratory status and initiate transport.
6. If no improvement, consider intubation if not already done.

Notes
1. The above protocol is only for a non-traumatic patient with a suspected opioid overdose. Suspicion may be based on one or more of the following: history from bystanders, presence of drug paraphernalia, fresh needle marks, hypventilation, poorly responsive, and small pupils.
2. Ventilatory management is of primary importance. Administration of naloxone should not take precedence over oxygenation and assisted ventilations.
3. The ACP should be cautious when dealing with a suspected opioid overdose patient. Naloxone can have a dramatic effect on a chronic opioid user, causing withdrawal and possible violent behavior. It is advisable to titrate small doses of naloxone only to restore the patient’s respiratory status. Naloxone administration subcutaneously has the advantage of a more gradual awakening of the patient with withdrawal less likely.
4. The patient must be transported to hospital. The duration of action of naloxone may be shorter than that of the opioid and thus the patient may have recurrent respiratory depression. If the patient refuses transport to hospital, contact your CACC/ACS for appropriate support from your supervisor or the BHP.
Seizure Protocol

When the following conditions exist, an Advanced Care Paramedic may administer diazepam or midazolam according to the following protocol to a maximum of two (2) doses.

Indications

Patient who is unresponsive AND
Currently experiencing a generalized motor seizure.

Procedure

1. Administer 100% O₂, manage airway and ventilate as indicated.
2. Initiate continuous cardiac monitoring and pulse oximetry (if available).
3. Perform blood glucometry. If blood glucose is ≤4 mmol/L, treat as per Altered LOC – Suspected Hypoglycemia Protocol before proceeding with this protocol.
4. Establish IV line. If after 2 attempts or 3 minutes, IV/IO access has not been secured, diazepam should be administered rectally or midazolam administered IM, IN or buccally.
5. Administer diazepam (over a 1-minute period if IV) according to the following chart:

<table>
<thead>
<tr>
<th>AGE</th>
<th>DOSE</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥5 y/o</td>
<td>5 mg IV/IO</td>
<td>10 mg PR (per rectum)</td>
</tr>
<tr>
<td>1-4 y/o</td>
<td>1.0 mg IV/IO per year of age</td>
<td>2 mg/year of age PR</td>
</tr>
<tr>
<td>&lt;1 y/o</td>
<td>0.5 mg IV/IO</td>
<td>1 mg PR</td>
</tr>
</tbody>
</table>

6. Alternatively, if no IV/IO is available, administer midazolam (if available) 0.2 mg/kg intramuscularly (IM), intranasal (IN), or transmucosal (buccal) to a maximum single dose of 5 mg.
7. If the seizure stops during the administration of the drug, terminate the administration.
8. If the seizure continues or recurs, repeat administration of diazepam after two (2) minutes over a 1-minute period to a maximum of two (2) doses by protocol. If the seizure stops during the administration of the drug, terminate the administration. Alternatively, if no IV/IO is available, repeat administration of midazolam after five (5) minutes to a maximum of two (2) doses by protocol.
10. Contact BHP if other intervention/management is required including treatment of focal seizures.

Notes

1. Intranasal midazolam must only be administered with an intranasal drug atomizer.
Analgesia for Trauma Protocol

When the listed indications exist, an Advanced Care Paramedic may administer morphine sulfate or fentanyl intravenously (IV) according to the following protocol.

Indications
Alert patient with isolated hip or extremity trauma, or significant burns AND severe pain.

Contraindications
1. Head, chest, abdominal, and pelvic injuries.
2. Allergy to morphine sulphate, or allergy to fentanyl.

Conditions
Patient is ≥40 kg AND Patient is alert

Contraindications
Systolic BP <100 mmHg

Procedure
1. Splint traumatized extremity if possible and applicable.
2. Establish intravenous access.
3. Confirm that patient is not allergic to the specific analgesic and systolic BP ≥100 mmHg.
4. Administer 2-5 mg morphine sulfate IV initially. This may be repeated every 5 minutes to a maximum 0.2 mg/kg or a total dose of 20 mg for ongoing pain OR
   Administer fentanyl 25-50 mcg IV. This may be repeated every 5 minutes to a maximum of 2 mcg/kg or a total dose of 200 mcg for ongoing pain.
5. Assess vitals after each dose of analgesic. If BP <100 systolic or there is a drop in systolic by ½ of the initial systolic blood pressure, discontinue administration of analgesic.
6. If respiratory depression or over sedation occurs, discontinue analgesic and contact BHP (for possible order to administer naloxone [Narcan]).

Notes
1. This protocol allows the Advanced Care Paramedic to administer morphine sulphate or fentanyl analgesia without BHP contact. If the ACP thinks that a patient may benefit from analgesia who does not meet this protocol, contact the BHP.
2. The goal is to decrease pain and anxiety; the patient may not become pain free.
3. The patient with severe burns may require larger amounts of analgesia.
**Tension Pneumothorax Protocol**

When the following conditions exist, an Advanced Care Paramedic may perform a needle thoracostomy according to the following protocol.

**Indications**

- A patient who presents with thoracic trauma or other possible cause of tension pneumothorax (severe asthma or bag-valve ventilation) **AND**
- **Severe and worsening** shortness of breath or respiratory distress **AND**
- Absent breath sounds on the affected side **AND**
- Systolic BP ≤90 mmHg, and clinical signs of shock

**Procedure**

1. Apply 100% $\text{O}_2$. Auscultate the chest and confirm suspicion of tension pneumothorax.
2. Contact the BHP for on-line medical direction to proceed with this protocol.
3. If every attempt to contact a BHP has failed, the Advanced Care Paramedic may continue with this protocol in a **life-threatening situation** if all other indications and conditions are met. The paramedic should contact the BHP (and the BH) as soon as possible after the procedure and document the patch failure and decision to proceed.
4. Locate the second intercostal space on the anterior chest wall in the mideclavicular line on the affected side. Prep the area quickly.
5. Insert a 14 gauge 2 inch catheter-over-needle attached to a syringe partly filled with saline along the upper border of the rib. Advance the catheter 1 to 2 inches while aspirating for free air.
6. Remove the needle and syringe. There may be a rush of air out of the needle.
7. Secure the catheter in place. The paramedic may attach a flutter valve or other device.
8. Initiate rapid transport.

**Notes**

1. This is the one important clinical trauma scenario when breathing is managed before airway/intubation. Pleural decompression should be completed prior to intubation or BVM ventilation if possible/recognized.
Auxiliary Medical Directives
Auxiliary Supraglottic Airway Protocol

When the following indications and conditions exist, a Paramedic may use an approved supraglottic airway according to the following protocol. There is a maximum of 2 attempts.

Indications

- Patient who is in cardiac arrest (Vital Signs Absent – VSA) or
- GCS = 3 and tolerates a nasopharyngeal or oropharyngeal airway without a gag reflex (ACP only)

Contraindications

- Active vomiting
- Inability to clear airway
- Airway edema
- Stridor
- Caustic ingestion

Procedures

1. Attempt basic manoeuvres as needed: positioning, suctioning, pharyngeal airway insertion, and BVM IPPV in addition to application of 100% O₂. Initiate cardiac monitoring, and pulse oximetry (if available).

2. Pre-oxygenate the patient for 30-60 seconds with 100% O₂ (and IPPV, if required).

3. Choose the appropriate size supraglottic airway and check the cuff.

4. Insert the supraglottic airway and inflate the cuff. Confirm placement and secure.

5. If supraglottic airway placement is unsuccessful after 30 seconds, stop and re-oxygenate. The paramedic may repeat attempt beginning at step 2 (to a maximum of 2 attempts) and/or initiate immediate transport.

6. Ventilate the patient with BVM.

7. **PCP**: If a second attempt fails, revert to BVM/pharyngeal airway management. **ACP**: If a second attempt fails, revert to BVM/pharyngeal airway management or follow endotracheal intubation protocol or other advanced airway protocol.

8. If the patient regurgitates or vomits deflate the cuff, remove the supraglottic airway, suction to clear the airway and either reinsert or manage the airway by alternate means according to paramedic skill level.
Auxiliary Supraglottic Airway Protocol (Continued)

Confirmation Methods:

Primary methods:
- Absence of breath sounds over the epigastrium.
- Rise and fall of the chest with ventilation.
- Presence of equal breath sounds over all lung fields.

Secondary methods (if available):
- Colormetric end-tidal CO2 monitoring
- Detection of exhaled carbon dioxide with an associated waveform

Notes

1. Supraglottic airway placement is to be documented as “SA Successful” or “SA Not Successful”
Auxiliary 12-Lead Acquisition Protocol (PCP & ACP)

When the following indications and conditions exist a paramedic may attach a cardiac monitor capable of acquiring a 12-lead ECG tracing (if available) and acquire the ECG according to the following protocol after following the Suspected Cardiac Ischemia Chest Pain Protocol (if applicable).

Indications

1. An alert patient experiencing chest pain or other symptoms consistent with that caused by cardiac ischemia OR experiencing his or her typical angina/MI pain.
2. A patient whose 3 or 5 lead ECG shows a rhythm which is difficult to interpret, in which a 12-lead ECG may assist in that interpretation.

Conditions

Patient is ≥40 kg.

Contraindications

Acquisition of a 12-lead ECG tracing will not be performed where/when:
1. The patient’s privacy and dignity cannot be protected (e.g. public place).
2. Acquiring the 12-lead will increase scene or transport time more than two (2) minutes.

Procedure

1. Administer 100% O₂ and document vital signs.
2. Initiate continuous cardiac monitoring and pulse oximetry (if available).
3. Initiate treatment as per the Suspected Cardiac Ischemia Chest Pain Protocol or other protocols, as applicable.
4. Place the patient in a supine or semi-sitting position.
5. Bare the patient’s chest enough to acquire a 12-lead ECG. Take all steps necessary and possible to protect the patient’s dignity and privacy.
6. Prep skin with alcohol or other wipe. Remove excess chest hair where needed for good contact.
7. Attach the four limb leads to the patient.
8. Attach the chest leads in the following correct anatomical position:
   V1    - fourth intercostal space to the right of the sternum
   V2    - fourth intercostal space to the left of the sternum
   V3    - directly between leads V2 and V4
   V4    - fifth intercostal space at left midclavicular line
   V5    - level with lead V4 at left anterior axillary line
   V6    - level with lead V5 at left midaxillary line
Axiary 12-Lead Acquisition Protocol (PCP & ACP) Continued

9. Reduce causes of artifact. Stop patient movement. If enroute to hospital wait for traffic light or other stop. Acquire ECG. Print 2nd copy of ECG, if possible.

10. Pre-alert receiving facility of patient with possible AMI if ST elevation is present in two anatomically contiguous leads.

11. The ECG may be repeated enroute if the patient’s condition deteriorates and it does not delay any other treatment. A modified 12-lead ECG may be done if indicated and it does not delay any treatment or transport. The modified 12-lead ECG involves moving V4-V6 to the positions of V4R, V8 and V9 respectively.

V4 becomes V4R - fifth intercostal space at right midclavicular line
(same as V4 but on right side of chest)

V5 becomes V8 - level with V6 at left midscapular line

V6 becomes V9 - level with V6 at left paravertebral

12. Provide the receiving facility with a copy of the 12-lead ECG. Attach a copy to the Base Hospital copy of the ACR, and document interpretation on the ACR.

Notes

1. The procedure should be performed concurrent with other assessment and care, as per the Suspected Cardiac Ischemia Chest Pain Protocol, or acquired while enroute to hospital.

2. A modified ECG is indicated when there is ST elevation in the inferior leads (II, III, aVF) and/or ST depression in the septal leads (V1/V2). It should only be done as indicated in procedure #11 above.

3. Aid to AMI anatomical location can be found in the Reference section of this document.
**Auxiliary Nausea and Vomiting Protocol (PCP & ACP)**

When the following conditions exist, a paramedic may administer dimenhydrinate (Gravol) IV or IM, according to the following protocol.

**Indications**

Patient is experiencing extreme nausea OR vomiting OR motion sickness as a result of an underlying disease or prehospital administration of narcotics or other medications.

**Contraindications**

**Absolute Contraindications**

1. Decreased level of consciousness (GCS <13).
2. Allergy to dimenhydrinate (Gravol) or antihistamines.
3. Overdose of antihistamines or any other anticholinergic medications or tricyclic antidepressants (TCA).

**Relative Contraindications**

1. Closed head injury.
2. History of Epilepsy or seizure disorder.

**Procedure**

1. Administer 100% O₂ and document vital signs.
2. Initiate continuous cardiac monitoring and pulse oximetry (if available).
3. Initiate IV NS TKO (if possible and certified).
4. Dilute dimenhydrinate (Gravol) 1:9 with Normal Saline or sterile water prior to IV administration. If given IM do not dilute.
5. Advise the patient that the medication might sting.
6. Administer dimenhydrinate (Gravol):
   - For patients <40 kg, do not administer by protocol, contact BHP.
   - For patients ≥40 kg, administer 0.5 -1 mg/kg slow IV push or IM (if IV access not possible) to a maximum of 50 mg.
7. Monitor and document vital signs enroute to hospital.
Auxiliary Emergency Cricothyrotomy Protocol (ACP Only)

If a patient cannot be ventilated due to life-threatening suspected upper airway obstruction, an Advanced Care Paramedic may attempt a cricothyrotomy according to the following protocol.

**Indications**

- A patient that requires intubation AND
- Unable to intubate AND
- Unable to adequately ventilate

**Conditions**

Patient ≥40 kg and ≥12 years old

**Contraindications**

- Suspected fractured larynx
- Inability to localize the cricothyroid membrane

**Procedure**

1. Administer 100% O₂.
2. Contact the BHP for on-line medical direction to proceed with this protocol.
3. If every attempt to contact a BHP has failed, the ACP may continue with this protocol in a **life-threatening** situation if all other indications and conditions are met. The ACP should contact the BHP (and the Base Hospital) as soon as possible after the procedure and document the patch failure and decision to proceed.
4. Place patient on his or her back, and then extend the head and neck (provided there are no C-spine injuries).
5. Grasp the larynx with your thumb and middle finger. Locate the cricoid cartilage and the cricothyroid membrane with the index finger. Prep the area and your gloved fingers quickly.
6. Follow the appropriate procedures below for the specific equipment used. The Seldinger Cricothyrotomy should be the primary method used but if the equipment is not available, the Needle Cricothyrotomy procedures should be followed.
Auxiliary Emergency Cricothyrotomy Protocol (ACP Only) Continued

Seldinger (Melker) Cricothyrotomy Kit:

7. Attach the supplied over-the-needle catheter to the appropriate syringe. Insert the needle through the skin and cricothyroid membrane at a 45º caudal angle. Aspirate for free air in the syringe.
8. If it is difficult to aspirate with the syringe, or if you obtain blood, re-evaluate needle placement.
9. Gently advance the catheter downward into position and then withdraw the stylet.
10. Advance the soft flexible end of the wire guide through the catheter and into the airway so that approximately half the length of the guidewire is in the airway.
11. Remove the catheter leaving the wire guide in place. Always maintain contact with the guidewire, never let go!
12. While stabilizing the thyroid cartilage, make a vertical incision alongside the guidewire through the skin and cricothyroid membrane with a scalpel.
13. Feed the dilator (with airway catheter in place) over the wire. Ensure that the stiff end of the wire protrudes out of the back of the dilator.
14. Advance the dilator into the airway until the flange of the airway adapter is resting against the patient’s neck.
15. Remove the dilator and wire guide.
16. Attach a BVM via the tube extender and attempt to ventilate the patient. Automatic transport ventilators must not be used.
17. Secure the flange of the airway adapter to the patient and continue ventilation.
18. Initiate rapid transport to the closest appropriate hospital.
19. Patch to the Base Hospital if complications arise or further orders are required.

OR Needle Cricothyrotomy:

7. Attach the supplied over-the-needle catheter to a syringe. Insert the needle through the skin and cricothyroid membrane at a 45º caudal angle. Aspirate for free air in the syringe.
8. If it is difficult to aspirate with the syringe, or if you obtain blood, re-evaluate needle placement.
9. Gently advance the catheter downward into position and then withdraw the stylet.
10. Attach an adapter to the hub of the catheter and begin ventilating with 100% O₂ with a BVM. Automatic transport ventilators must not be used.
11. Secure the catheter and continue ventilation, allowing time for passive expiration. Exhalation may be difficult through such a small diameter catheter and the paramedic should lengthen the time between breaths to allow for exhalation.
12. Initiate rapid transport to the closest appropriate hospital.
13. Patch to the Base Hospital if complications arise or further orders are required. The BHP may consider giving orders for a second catheter horizontally next to the first to allow for better exhalation and this should be discussed during the patch.
Auxiliary Adult Intraosseous Access Protocol (ACP Only)

When the following conditions exist, an Advanced Care Paramedic may establish intraosseous (IO) access when vascular access is indicated (see Intravenous Access & Fluid Administration Protocol for criteria), according to the following protocol.

**Indications***

Any critically ill adult patient who is in a pre-arrest state (unconscious with rapidly deteriorating vital signs) **AND** in whom IV access is unobtainable (see Procedure for details).

*Use in cardiac arrest is a local Base Hospital decision

**Conditions**

Patient must be $\geq$12 years of age

**Contraindications**

Placement of an IO in a bone with a suspected fracture or in a limb distal to a fractured bone.

**Procedure**

1. If presented with an unconscious patient with rapidly deteriorating vital signs, and peripheral veins can be seen or palpated, attempt at least one peripheral IV. If IV access fails following two attempts or after 90 seconds, proceed to an intraosseous line.
2. Landmark the site appropriate to the specific device being used (sternum or proximal tibia).
3. Place IV solutions in a pressure bag inflated to a maximum of 300 mmHg or “push” the fluid bolus with a large bore syringe for more-rapid infusion. Infuse fluid volumes as per the Intravenous Access & Fluid Administration Protocol.
4. Intraosseous access will be limited to a maximum of two (2) attempts only.
5. Monitor the site near the point of skin penetration to ensure fluid is not infiltrating the tissues.
6. Update the receiving facility enroute.
Auxiliary Patient Sedation Protocol (ACP Only)

When the following conditions exist, an Advanced Care Paramedic may administer a sedative to a patient according to the following protocol.

**Indications**

Patient requiring sedation:

a) Combative patients  
b) Intubated, restless patients  
c) Patients requiring procedural sedation (e.g. cardioversion)

**Conditions**

- Patient is \geq12 \text{ years of age AND } \geq40 \text{ kg}
- BP \geq100 \text{ mmHg}

**Contraindications**

- Known hypersensitivity to the sedative.  
- Acute narrow-angle glaucoma.  
- Spontaneous respiratory rate <8 in non-intubated patients.

**Relative Contraindications**

- Identified reversible cause for patient’s combative ness (e.g. hypoxia, hypotension, hypovolemia, hypoglycemia)

**Procedure**

1. Administer 100% O\text{2} and document vital signs (if possible).
2. Initiate continuous cardiac monitoring and pulse oximetry (if possible).
3. Initiate IV NS TKO (if possible, at the discretion of the paramedic).
4. Ensure no reversible cause for patient’s combative ness (e.g. hypoxia, hypotension, hypovolemia, hypoglycemia).
5. Administer sedation according to the following dosing:
   a) **Combative patients**
      
      Administer midazolam at an initial dose of 2-4 mg IV/IM/IN. A subsequent dose of 2 mg IV/IM/IN may be given after 5 minutes if adequate sedation is not achieved and provided systolic BP \geq100 \text{ mmHg}. The patient’s respiratory rate and effort should be monitored for respiratory depression. Maximum of 2 doses.

   OR
   
   Administer diazepam at an initial dose of 5-10 mg IV/IM. A subsequent dose of 5-10 mg IV/IM may be given after 5 minutes if adequate sedation is not achieved and provided systolic BP \geq100 \text{ mmHg}. The patient’s respiratory rate and effort should be monitored for respiratory depression. Maximum of 2 doses.

   Contact BHP if further doses are required.
Auxiliary Patient Sedation Protocol (ACP Only) Continued

b) Intubated patients

The intravenous route is preferred for intubated patients.

Administer midazolam at an initial dose of 2-4 mg IV/IM/IN. Subsequent doses of 2 mg IV/IM/IN may be given after 5 minutes if adequate sedation is not achieved and provided systolic BP ≥100 mmHg. The patient’s respiratory rate and effort should be monitored to avoid respiratory depression. Maximum of 2 doses.

OR

Administer diazepam at an initial dose of 5-10 mg IV/IM. Subsequent doses of 5-10 mg IV/IM may be given after 5 minutes if adequate sedation is not achieved and provided systolic BP ≥100 mmHg. The patient’s respiratory rate and effort should be monitored to avoid respiratory depression. Maximum of 2 doses total.

c) Procedural sedation patients

The intravenous route is preferred for patients requiring procedural sedation.

Administer midazolam at an initial dose of 2-4 mg IV. Subsequent doses of 2 mg IV may be given after 5 minutes if adequate sedation is not achieved and provided systolic BP ≥100 mmHg. The patient’s respiratory rate and effort should be monitored to avoid respiratory depression. Maximum of 2 doses.

OR

Administer diazepam at an initial dose of 5-10 mg IV. Subsequent doses of 5-10 mg IV may be given after 5 minutes if adequate sedation is not achieved and provided systolic BP ≥100 mmHg. The patient’s respiratory rate and effort should be monitored to avoid respiratory depression. Maximum of 2 doses.

6. Patch to the Base Hospital if analgesia or further management is required.

Notes

1. The goal of treatment is to appropriately sedate the patient affording protection for the patient and prehospital care providers during treatment and/or transport.

2. Paramedics are advised to use sedation with extreme caution and if patient is too combative to proceed with the following procedure, the police should be contacted.

3. Paramedics must assess and manage the airway and ventilatory pattern of the patient at all times. Patients must not be placed in the prone position.
Reference Information for PCPs and ACPs
Intubation Confirmation Reference

The preferred method of determining end-tidal CO₂ values is with capnography, which gives both a qualitative (diagnostic) and quantitative value. The disposable capnometer device can only confirm presence of carbon dioxide (quantitative verification) and can be used as secondary device if capnography is not available. Interpretation is done according to the appropriate following guidelines for the specific unit used (if available).

Capnography Device (preferred)

1. “Zero” the capnography sensor at the beginning of each shift. Plug cable and sensor into monitor, and allow 30 seconds for warm up. Attach the sensor between the BVM and the ETT.
2. Verify presence of waveform and document numeric display on monitor.
3. If unable to obtain CO₂ tracing (including the four-phase waveform) re-confirm ETT by visualization or extubate (unless VSA patient with ETT confirmed by other means).

OR Capnometer Device (disposable/secondary)

4. Remove the detector from the package only when ready to use. The colour indicator of the product dome should initially be purple and match or be darker than the “CHECK” strip on the device. If the indicator does not match the “CHECK” strip, then do not use. Attach the device between the BVM and the ETT. Use a device appropriate for pediatric patients if patient <15 kg.
5. Administer 6 breaths for purposes of interpretation.
6. The colour will fluctuate during inspiration and expiration. Compare colour at full end-expiration. Document colour results. (Device reliable for at least 30 minutes after exposed to the atmosphere.)

Capnometer Colour Ranges:
(colours are specific to device manufacturer)

“A”  end-tidal CO₂ level <4 mmHg (0.03 - 0.5% ETCO₂)
“B”  end-tidal CO₂ level 4 to 15 mmHg (0.5 - 2% ETCO₂)
“C”  end-tidal CO₂ level 15 to 38 mmHg (2 - 5% ETCO₂)

1. If colour range “A”:
   • ETT in esophagus OR compromised perfusion/ventilation OR VSA
   • Re-confirm ETT placement by visualization of cords or
   • Remove ETT and re-intubate as per Intubation Protocol (unless VSA patient with ETT confirmed by other means)
Intubation Confirmation Reference Continued

2. If colour range “B”:
   - Possible retained CO₂ in esophagus OR possible low pulmonary perfusion or hypocarbia
   - Deliver 6 additional breaths
   - If colour shifts to “A” then remove ETT and re-intubate (unless VSA patient with ETT confirmed by other means)
   - If colour shifts to “C” then ETT in trachea (confirm with additional methods)
   - If colour stays as “B” then indeterminate; confirm ETT placement by other means or remove ETT and re-intubate if unable to confirm.

3. If colour range “C”:
   - ETT in trachea
   - Confirm tube placement by other criteria outlined in the Intubation Protocol
   - Continue with appropriate patient management protocols

Notes

1. The ETCO₂ detecting devices are not to be used for the detection of hypercarbia or the detection of right main stem bronchial intubation.

2. Paramedics should primarily utilize ETCO₂ values as an adjunct to assist with ETT confirmation. Continuous ETCO₂ may be helpful to assist with determining the appropriate ventilatory rates and volumes, however, monitoring clinical signs and airway resistance with the BVM should be primarily used for determining good oxygenation and ventilation.

3. A patient who is VSA or has very poor perfusion may have a very low or non-detectable ETCO₂ value. Although ETCO₂ should still be determined in a VSA patient, other methods of confirmation should be used if a waveform is not detected or colour B or C is detected. In fact, VSA patients with no detectable ETCO₂ have a worse prognosis and this may be used as a key determinant of whether the resuscitation should be continued when talking to the BHP.

4. Re-confirmation should be performed by at least one method any time the patient is moved, or if ETT dislodgment is suspected. When available, capnography should be used. If only a capnometry device is used, it can be re-used reliably for the same patient for at least 30 minutes. Reliability is confirmed by colour change with each respiratory cycle.

5. Try to minimize secretion accumulation at sensor/device site.
12-Lead ECG Review Reference

Lead Placement:
- V1 - fourth intercostal space to the right of the sternum
- V2 - fourth intercostal space to the left of the sternum
- V3 - directly between leads V2 and V4
- V4 - fifth intercostal space at left midclavicular line
- V5 - level with lead V4 at left anterior axillary line
- V6 - level with lead V5 at left midaxillary line

Modified 12-Lead Placement:
- V4 becomes V4R - fifth intercostal space at right midclavicular line
  (same as V4 but on right side of chest)
- V5 becomes V8 - level with V6 at left midscapular line
- V6 becomes V9 - level with V6 at left paravertebral line

Acute Myocardial Infarction (AMI) Anatomical Location:
- II, III, aVF: Inferior
- V1, V2: Septal
- V2, V3, V4: Anterior
- V5, V6: (low) Lateral
- I, aVL: (high) Lateral
- V4R: Right Ventricular (with any two of II, III, and aVF)
- V8, V9: Posterior
CPR Guidelines Reference

<table>
<thead>
<tr>
<th>Age</th>
<th>Indication for CPR</th>
<th>Pulse Check</th>
<th>Compression Depth; Location</th>
<th>CPR Technique</th>
<th>Ratio</th>
<th>Total Compressions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonate</td>
<td>HR &lt;60 after O₂/BVM for 30 sec</td>
<td>Umbilical stump/apical</td>
<td>½ depth of chest; lower ½ of sternum</td>
<td>Thumbs with chest encircled</td>
<td>3:1</td>
<td>120/min</td>
</tr>
<tr>
<td>Infant</td>
<td>HR &lt;60 &amp; poor perfusion OR no pulse</td>
<td>Brachial or Femoral</td>
<td>½-½ depth of chest; just below nipple line</td>
<td>Index and middle finger OR as above</td>
<td>15:2</td>
<td>100/min</td>
</tr>
<tr>
<td>Child</td>
<td>HR &lt;60 &amp; poor perfusion OR no pulse</td>
<td>Carotid (or Femoral)</td>
<td>½-½ depth of chest; at nipple line</td>
<td>One hand/heel of hand</td>
<td>15:2</td>
<td>100/min</td>
</tr>
<tr>
<td>Adult</td>
<td>No pulse</td>
<td>Carotid (or Femoral)</td>
<td>3-5 cm; at nipple line</td>
<td>Two hands</td>
<td>30:2</td>
<td>100/min</td>
</tr>
</tbody>
</table>

Pediatric CPR Guidelines:

Compressions should be started in an infant or child with a palpable pulse less than 60/min and signs of poor perfusion.

Compressions should be started in a neonate with a palpable pulse less than 60/min despite supplemental oxygen and ventilation for 30 seconds.

CPR Notes:

1. Push hard, push fast! (rate of 100 compressions/min for pediatrics & adult). Switch person doing compressions every 2 minutes and focus on high quality CPR. Allow complete chest recoil.
2. Minimize interruptions to chest compressions to less than 10 seconds for pulse check after 2 minutes of CPR (or if signs of life).
3. Ventilations: give ventilations over 1 second just to point of seeing chest rise.

**Adults:**

- Non-intubated: ratio 30:2 as above.
- Intubated: 8-10 ventilations per minute without interrupting chest compressions.

**Pediatrics (30 days to age 12):**

- Non-intubated: ratio 15:2 as above.
- Intubated: 8-10 ventilations per minute without interrupting chest compressions.

**Ventilations for respiratory arrest only, non-intubated:** 12-20/min.

**Neonate:**

- Both non-intubated and intubated: ratio 3:1 as above.
Normal Pediatric Vital Signs Reference

<table>
<thead>
<tr>
<th></th>
<th>Neonate</th>
<th>Infant</th>
<th>Preschool</th>
<th>&gt;5 yrs</th>
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<tbody>
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<td>&lt;60</td>
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<td>SBP</td>
<td></td>
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<tr>
<td>lower limit (&gt;1 year):</td>
<td>70 + (2 x age)</td>
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<td>normal SBP (&gt;1 year):</td>
<td>90 + (2 x age)</td>
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<tr>
<td>Weight (kg)</td>
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<td></td>
<td>(2 x age) + 10</td>
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</table>

Apgar Score Reference

<table>
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<th>Parameter</th>
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<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate (bpm)</td>
<td>0 (Absent)</td>
<td>Slow (&lt;100)</td>
<td>≥100</td>
</tr>
<tr>
<td>Respiratory effort</td>
<td>Absent</td>
<td>Slow, irregular</td>
<td>Good, crying</td>
</tr>
<tr>
<td>Muscle tone</td>
<td>None, limp</td>
<td>Some flexion</td>
<td>Active motion</td>
</tr>
<tr>
<td>Reflex irritability (suction of nares, tactile stimulation)</td>
<td>None</td>
<td>Some grimace</td>
<td>Good grimace, cough, cry</td>
</tr>
<tr>
<td>Colour</td>
<td>Blue or pale</td>
<td>Pink body with blue extremities</td>
<td>Completely pink</td>
</tr>
</tbody>
</table>

- Apgar performed at 1 minute & 5 minutes after delivery; total 10 (5 items x max score of 2)
- Don’t wait for Apgar to make decision on resuscitation
IV Calculations Reference

**TKVO rates:**
- Adult TKVO rate (≥ 40 Kg): 30 – 60 ml/hr
- Pediatric TKVO rate (< 40 Kg): 15 ml/hr

**Drip Factors:**
- Adult 10 – 10 Drops (gtt) per ml
  - 20 – 20 Drops (gtt) per ml
- Peds. 60 – 60 Drops (gtt) per ml

**Drip Rate:**
- \((\text{gtt/min}) = \text{Flow Rate (ml/hr)} \times \text{Drip Factor (gtt/ml)}\)
- 60 min/hr

**Fluid Bolus** = weight in Kg × 20 ml/kg or 10 ml/kg

**Average weight calculation for reference:**
- Pediatric weight calculation in Kg: \((2 \times \text{age}) + 8\)

**Average blood pressure calculations for reference:**
- Pediatric Normal SBP: \((2 \times \text{age}) + 90\)
- Pediatric Hypotensive SBP (Fluid Bolus limit): < \((2 \times \text{age}) + 70\)

**Weight conversion** lbs. to Kg: \(\frac{\text{weight in lb}}{2.2 \text{ lb/Kg}}\)

**D50W concentration:**
- 50 grams/100 ml
- 25 grams/50 ml

**D50W dose calculation:** 0.5 grams/Kg (1 ml/Kg)
Pediatric ETT Size Reference

<table>
<thead>
<tr>
<th>Pediatric Endotracheal Tube Size &amp; Depth Estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size for children ≥1 year of age: Age in years + 4</td>
</tr>
<tr>
<td>Size for infant &lt;1 year of age:</td>
</tr>
<tr>
<td>Gestational age</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>&lt;28 weeks</td>
</tr>
<tr>
<td>28-34 weeks</td>
</tr>
<tr>
<td>34-38 weeks</td>
</tr>
<tr>
<td>Term infant</td>
</tr>
<tr>
<td>1-12 months</td>
</tr>
</tbody>
</table>

Depth for children >2 years of age: Age in years + 12 2
or depth = tube size (internal diameter) x 3

Pediatric Trauma Score Reference

<table>
<thead>
<tr>
<th>Severity</th>
<th>+2</th>
<th>+1</th>
<th>-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>&gt;20 kg (&gt;44 lbs)</td>
<td>10-20 kg (22-44 lbs)</td>
<td>&lt;10 kg (&lt;22 lbs)</td>
</tr>
<tr>
<td>Airway</td>
<td>Normal</td>
<td>Maintained (oral or nasal airway)</td>
<td>Non-maintained (intubation or cricothyrotomy)</td>
</tr>
<tr>
<td>Blood pressure and/or pulses</td>
<td>&gt;90 mmHg or radial pulse only</td>
<td>50-90 mmHg or femoral pulse only</td>
<td>&lt;50 mmHg or absent pulse</td>
</tr>
<tr>
<td>Level of consciousness</td>
<td>Awake, alert</td>
<td>Obtunded, any loss of consciousness</td>
<td>Comatose, Unresponsive</td>
</tr>
<tr>
<td>Open wounds</td>
<td>None</td>
<td>Minor</td>
<td>Major or penetrating</td>
</tr>
<tr>
<td>Fractures</td>
<td>None</td>
<td>Single, closed</td>
<td>Open, multiple</td>
</tr>
</tbody>
</table>

Pediatric Trauma Score (PTS): highest possible score is 12, lowest possible score is -6

<table>
<thead>
<tr>
<th>PTS</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;8</td>
<td>&lt;1% mortality predicted</td>
</tr>
<tr>
<td>&lt;8</td>
<td>Suggests need for trauma center</td>
</tr>
<tr>
<td>4</td>
<td>Predicts 50% mortality</td>
</tr>
<tr>
<td>&lt;1</td>
<td>Predicts &gt;98% mortality</td>
</tr>
</tbody>
</table>
Canadian Triage & Acuity Scale – CTAS Reference

Triage Level 1 – Resuscitation
Definition: Conditions that are threats to life or limb (or imminent risk of deterioration) requiring immediate aggressive interventions.
Summary: Abnormal vital signs with signs of hypoperfusion (VSA, major trauma, severe respiratory distress, unconscious, seizures, third trimester vaginal bleeding)

Triage Level 2 – Emergent
Definition: Conditions that are a potential threat to life, limb or function, requiring rapid medical intervention or delegated acts.
Summary: Abnormal vital signs without hypoperfusion (altered mental state (GCS ≤13), severe trauma, ischemic chest pain, head injury with LOC >5 minutes or amnesia >15 minutes, dyspnea (not severe), anaphylaxis, neonates, severe eye pain, overdose (conscious), severe abdominal pain, GI bleed, CVA with major deficit, Diabetes with hypo/hyperglycemia, labour pains q 2 minutes, fever in less than 3 months, acute psychosis/extreme agitation, signs of abuse/neglect, neonate ≤7 days old)

Triage Level 3 – Urgent
Definition: Conditions that could potentially progress to a serious problem requiring emergency intervention. May be associated with significant discomfort or affecting ability to function at work or activities of daily living.
Summary: Potential to deteriorate, severe extremity pain (head injury, alert but with high-risk mechanism of injury, moderate trauma, chronic mild SOB, atypical chest pain (not severe), GI bleed not actively bleeding, moderate abdominal pain, severe extremity or chronic pain)

Triage Level 4 – Less Urgent
Definition: Conditions that related to patient age, distress, or potential for deterioration or complications would benefit from intervention or reassurance within 1-2 hours.
Summary: Needs attention but can wait 1-2 hours (minor head injury, moderate chronic abdominal pain, moderate ear ache, corneal foreign body, URI symptoms, vomiting and diarrhea >2 years old, moderate muscle-skeletal pain, laceration requiring sutures)

Triage Level 5 – Non Urgent
Definition: Conditions that may be acute but non-urgent as well as conditions which may be part of a chronic problem with or without evidence of deterioration.
Summary: Minor pain, can wait several hours (minor trauma not requiring closure, minor URI symptoms, vomiting alone, diarrhea alone without signs of dehydration and greater than 2 years old)

References: Canadian Triage and Acuity Scale (CTAS) Participant Package, Summer 2001, MOHLTC-EHSB Implementation Guidelines for the Canadian ED Triage & Acuity Scale
## Dopamine Infusion Reference

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>Dosage (mcg/kg/minute)</th>
<th>2</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
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</thead>
<tbody>
<tr>
<td>40</td>
<td></td>
<td>3</td>
<td>7.5</td>
<td>15</td>
<td>22.5</td>
<td>30</td>
</tr>
<tr>
<td>50</td>
<td></td>
<td>3.75</td>
<td>9.5</td>
<td>19</td>
<td>28</td>
<td>37.5</td>
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<tr>
<td>60</td>
<td></td>
<td>4.5</td>
<td>11.5</td>
<td>22.5</td>
<td>34</td>
<td>45</td>
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<td>70</td>
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<tr>
<td>80</td>
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<td>19</td>
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<tr>
<td>110</td>
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<td>8.25</td>
<td>20.5</td>
<td>41.5</td>
<td>62</td>
<td>82.5</td>
</tr>
</tbody>
</table>

**Note:**

For solutions of 800 mcg/mL (‘single strength’) the infusion rate from the chart should be multiplied by 2 (e.g. use twice the above infusion rate).
HHS Base Hospital Resource Information
Pediatric patients (less than 18 years) with the following presentations should be taken to the facility listed regardless of Consideration except where indicated.

**Decision Priorities**

1. Airway compromise or pre-arrest
   - Closest facility

2. All other CTAS 1 Patients
   - MUMC

---

**CTAS 2, 3, 4 and 5 Patients**

3. Patient meets Provincial Field Trauma Triage Guidelines** (Age < 16 years)
   - MUMC
   - (HGH for trauma patients ≥ 16 years)

4. Major Burn > 25% Total Body Surface or airway Problems
   - HGH

5. Inhalation injury with altered LOC
   - MUMC

6. Radiation Emergency

7. All other CTAS 2 Patients
   - MUMC

---

**CTAS 3, 4 and 5 Patients**
CTAS 3, 4 and 5 Patients

- **8** Attending physician has made arrangements at MUMC or St. Joseph’s and “accepting” physician identified
- **9** If physician, patient, parent or guardian requests a hospital, relay this information to CACC*
- **10** All other patients

**Any “Arranged” ED**

- Any “Arranged” Direct to the ward (MUMC or St. Joseph’s)
- As directed by CACC considering all factors (MUMC or St. Joseph’s)

MUMC

**Note that Provincial Field Trauma Triage Guidelines indicate that patients 16 years or older should be transported to the Adult Trauma center**

* DP #9 “all factors” includes: consideration status, geography, distribution, and ambulance offload circumstance

Changes subject to approval of Hamilton Emergency Services Network.
Adult Destination Determination Guidelines Reference

Adult patients (18 years and older) with the following presentations should be taken to the facility listed regardless of Consideration except where indicated.

**Decision Priorities**

1. **Airway compromise or pre-arrest**
   - Provincial Field Trauma Triage Guidelines **
     (including pregnant patient, meeting Field Trauma Triage Guidelines)
   - Major Burn > 25% Total Body Surface or airway problems
   - Inhalation injury with altered LOC
   - Diving Incidents re: Hyperbaric Chamber
   - Closest facility

2. **Provincial Field Trauma Triage Guidelines **
   - Closest facility

3. **Pregnant, expected prehospital delivery and expected complication for fetus or mother**
   - Closest appropriate Obstetrical Emerg site: St. Joseph or MUMC
   - Where arrangements made, if possible

4. **Radiation emergency**
   - MUMC

5. **All other CTAS 1 Patients**
   - Closest facility

CTAS 2, 3, 4 and 5 patients
Adult Destination Determination Guidelines Reference (Continued)

CTAS 2, 3, 4 and 5 patients

6 Dialysis patient ➞ St. Joseph’s

7 Psychiatric emergency ➞ St. Joseph’s

8 Acute Stroke patients (Meeting Provincial Protocol criteria) ➞ HGH (or Closest Stoke Centre, as directed by CACC)

9 Possible GI Bleed (as per identification tool) ➞ MUMC or St. Joseph’s as per CACC considering all factors*

10 Possible Hip fracture (as per identification tool) ➞ Henderson, MUMC, St. Joseph’s as per CACC considering all factors*

11 Patients with an extensive and/or relevant history with a particular hospital ➞ Facility with most relevant history

12 All other CTAS 2 patients ➞ Closest facility

CTAS 3, 4, and 5 Patients

13 Attending physician has made arrangements at a particular hospital and “accepting” physician identified ➞ Any “Arranged” ED Any “Arranged” direct to the ward

14 All Other Patients (If physician or patient requests a hospital, relay this information to CACC) ➞ As directed by CACC, considering all factors*

** Note that Provincial Field Trauma Triage Guidelines indicate that patients 16 years or older should be transported to the Adult Trauma center **

* DP #9, 10, 14: “all factors” includes consideration status, geography, distribution, and ambulance offload circumstance.


Changes subject to approval of Hamilton Emergency Services Network.
Field Trauma Triage Guidelines Reference (Hamilton area)

When a Paramedic determines that a patient meets the anatomic, physiological or incident characteristics of the following protocol, that patient should be transported directly to the closest Lead Trauma Hospital.

**Anatomic Characteristics**: (Any one of these)

- Spinal cord injury with paraplegia or quadriplegia
- Penetrating injury to the head, neck, trunk or groin
- Amputation above the wrist or ankle

**Physiological Characteristics**:

**Adult** (16 years or older)
- Glasgow Coma Scale (GCS) less than or equal to 10 or;
- If GCS is greater than 10, any **two** of the following:
  - Any alteration in level of consciousness
  - Pulse rate less than 50 or greater than 120
  - Blood pressure less than 80 systolic (or absent radial pulse)
  - Respiratory rate less than 10 or greater than 24

**Pediatric** (less than 16 years old)
- Pediatric Trauma Score of less than or equal to 8

**Incident Characteristics**:  
- Paramedic’s judgment based on mechanism of injury, that a patient has sustained a level of injury requiring lead trauma centre care.

**Notes**
1. If the closest Lead Trauma Hospital is greater than 30-minutes from patient assessment, then the patient should be transported to the closest hospital emergency department (unless directed otherwise by the BHP) and the local CACC should be notified to allow dispatch of the Air Ambulance. The patient’s transport should not be delayed waiting for the Air Ambulance.
2. There are only a few reasons to divert the patient to the closest hospital and they could include the following: **complete airway obstruction in any trauma patient, or the absence of spontaneous respirations or palpable carotid pulse in a blunt trauma patient**.
3. If the patient meets the above Trauma Triage Guidelines and is being transported directly to the closest Lead Trauma Hospital, the paramedic will update the facility on the patient’s condition. The receiving facility may then issue a Trauma Team Pre-Alert.
4. For trauma patients going to Hamilton, the Hamilton General Hospital is the Lead Trauma Hospital for adult trauma (> 16 years) and all pregnant trauma patients, and the McMaster University Medical Centre is the Lead Trauma Hospital for pediatric trauma patients (< or =16 years).
Paramedic Prompt Card For Acute Stroke Triage Reference

Indications for Patient Transport to a Designated Stroke Centre

Transport to a Stroke Centre must be considered for patients who:

- Present with a new onset of at least one of the following symptoms suggestive of the onset of an acute stroke.
  - Unilateral arm/leg weakness or drift
  - Slurred or inappropriate words or mute
  - Facial droop
- AND
- Can be transported to arrive within two (2) hours of a clearly determined time of symptom onset or the time the patient was “last seen in a usual state of health”.

Contraindications for Patient Transport Under Stroke Protocol

Any of the following conditions exclude a patient from being transported under Stroke Protocol:

- CTAS Level 1 and/or uncorrected Airway, Breathing or significant Circulatory problem
- Symptoms of the stroke have resolved
- Blood Sugar ≤ 4 mmo1/1
- Seizure at onset of symptoms or observed by paramedic
- Glasgow Coma Scale <10
- Terminally Ill or Palliative Care Patient

CACC will authorize the transport once notified of the patient’s need for transport under the Stroke Protocol.

Where should stroke patients be taken for care?

- For Central South Ontario, the closest Acute Stroke Thrombolysis Centres providing treatment as of January 2007 are:
  - Hamilton General Hospital (Hamilton)
  - Greater Niagara General Hospital (Niagara Falls)
  - Grand River Hospital (Kitchener)
  - London Health Sciences Centre (London)
  - Brantford General Hospital
- Stroke patients who are not stable or do not meet the criteria detailed on the Paramedic Prompt Card should be transported to the closest hospital.
Possible GI Bleed Recognition Tool Reference (Hamilton area)

For the purposes of the City of Hamilton Ambulance Destination Determination Guidelines:

Patients with possible “GI bleeds” (gastrointestinal bleeding) recognized by the guidelines below should be transported to the Emergency Department as directed by CACC (McMaster University Medical Centre or St. Joseph’s Hospital).

Inclusion:

The patient must be ≥ 18 years of age and meet the following:

History or signs of one or more of the following:
1. Vomiting blood (hematemesis) – bright red blood, dark red blood, dark brown/black blood (“coffee grounds”) or blood clots.
2. Passing red blood rectally (hematochezia) – bright red blood, dark red blood or blood clots (with or without stools)
3. Passing black stools (melena) – sticky, black, “tarry”, stools with a typical foul smell – may be mixed with red or maroon blood.

Exclusion:
1. Patients < 18 years should be transported as per the Pediatric Destination Determination Guidelines and not according to this Tool.

--------------

Education notes:

1. Relevant history:
   If a patient with a possible “GI bleed” has an extensive history with one site (eg: oncology, dialysis, multiple admissions), it would be preferable for the patient to be transported to that site (excluding the Hamilton General Hospital and Henderson Hospital).
Possible Isolated Hip Fracture Recognition Tool Reference
(Hamilton area)

For the purposes of the City of Hamilton Ambulance Destination Determination Guidelines:

Patients with possible “isolated” hip fracture recognized by the guidelines below should be transported to the Emergency Department as directed by CACC (not the Hamilton General Hospital).

**Inclusion:**

The patient must be ≥ 65 years of age and meet the following:

**Mechanism:** Fall from sitting (chair), bed, or standing (not height or MVC); may have other minor injuries (eg: contusions); **AND**

**History of:** Pain in hip or groin at rest or with patient initiated movement (paramedic should not intentionally move joint); **AND**

**Examination:** May have externally rotated and/or shortened leg.

**Exclusions:**

1. Patient meets the Trauma Triage Guidelines
2. Patient with hip joint replacement on same side (should be transported to site of joint replacement surgery or Henderson).

-------------

**Education notes:**

1. “Isolated” hip fracture: refers to no other recognized significant injuries.

2. Mechanism:
   The intention of the above listed mechanism is to select those patients that are unlikely to have additional injuries (significant trauma mechanism). Although the tool states fall from sitting, lying, standing, this may also include a single step or curb but is meant to exclude more significant falls.

3. Relevant history:
   If a patient with a possible hip fracture has an extensive history with one site (eg: oncology, dialysis, multiple admissions), it would be preferable for the patient to be transported to that site (excluding the Hamilton General Hospital).
Medical Assistance Information Card Reference

For physicians wishing to assist in out-of-hospital medical care of a patient:

Thank you for your offer of assistance.

This team of emergency responders is operating under specific medical directives established by the Provincial Medical Advisory Committee and adopted by the Hamilton Health Sciences Base Hospital Program in association with Hamilton Health Sciences. For patients who don’t fit standard directives, the paramedics may contact a Base Hospital Physician for advice or further orders. The Base Hospital Physician can be contacted at the McMaster Emergency Department via cell phone or radio.

The paramedics would usually take responsibility for the patient upon their arrival. If, as a physician, you wish to assist with the emergency after the providers have arrived you have three options:

1) Offer your assistance or suggestions that follow the paramedic directives. If your instructions are not in accordance with the Base Hospital protocols, the paramedics will contact the Base Hospital Physician for direction.
2) Take complete responsibility for the patient – in which case you will need to accompany the patient to hospital. The paramedics will assist you, but cannot perform skills that do not follow their directives. You may be asked to show identification.
3) Request to speak with the Base Hospital Physician to offer advice and consult on the best management of the patient(s).
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Hamilton Health Sciences Base Hospital Program

Contact Information Reference

Office: N1 Wing (50 Wing) Room 1137
Henderson Site
711 Concession St.,
Hamilton, Ontario
L8V 1C3

Phone: 905-527-4322 Ext: 42362
FAX: 905-389-0699

Name: Dr. M. Welsford
Position: Medical Director
Ext: 42362
Mobile: --
e-mail: hamiltonbasehospital@canada.com

Name: Debbie Buchanan
Position: Office Manager
Ext: 45425
Mobile: --
e-mail: buchande@hhsc.ca

Name: Audrey Collie
Position: Program Assistant
Ext: 42337
Mobile: --
e-mail: collie@hhsc.ca

Name: Tim Dodd
Position: Clinical Program Manager
Ext: 42330
Mobile: 905-317-5776
e-mail: doddt@hhsc.ca

Name: Neil Freckleton
Position: Clinical Coordinator
Ext: 42338
Mobile: 905-870-1579
e-mail: frecklen@hhsc.ca

Name: Kurt Pederson
Position: Clinical Program Manager
Ext: 42338
Mobile: 905-317-5676
e-mail: pederson@hhsc.ca

Name: Angela Schotsman
Position: Clinical Coordinator
Ext: 42393
Mobile: --
e-mail: schotsma@hhsc.ca

October 2007
# Hamilton Health Sciences Base Hospital Program

## Additional Contact Information Reference

### BHP Patch Line (HHSBHP only):

- **McMaster University Medical Centre**: 1–888–256–6629

<table>
<thead>
<tr>
<th>Service</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>CACC - Hamilton</td>
<td>905-574-1414</td>
</tr>
<tr>
<td>Alternate CACC - Hamilton</td>
<td>800-263-5767</td>
</tr>
<tr>
<td>Brant County Ambulance</td>
<td>519-756-4570</td>
</tr>
<tr>
<td>County of Haldimand EMS</td>
<td>905-318-0159</td>
</tr>
<tr>
<td>Hamilton EMS</td>
<td>905-546-2424</td>
</tr>
<tr>
<td>Norfolk County Ambulance</td>
<td>519-426-4115</td>
</tr>
<tr>
<td>Six Nations Ambulance</td>
<td>519-445 4000</td>
</tr>
<tr>
<td>Brantford Police</td>
<td>519-756-7050</td>
</tr>
<tr>
<td>Hamilton Regional Police</td>
<td>905-546-4925</td>
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<tr>
<td>Cayuga (Haldimand) OPP</td>
<td>905-772-3322</td>
</tr>
<tr>
<td>Simcoe (Norfolk) OPP</td>
<td>519-426-3434</td>
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<td>Six Nations Police</td>
<td>519-445-2811</td>
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<tr>
<td>Hamilton Fire Department</td>
<td>905-546-3341</td>
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<tr>
<td>Brantford Fire Department</td>
<td>519-752-0540</td>
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<td>519-426-5999</td>
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<td>Haldimand Fire Department</td>
<td>905-318-5932</td>
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<td>Brant County Fire:</td>
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<tr>
<td>Burford</td>
<td>519-449-2731</td>
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<tr>
<td>St. George</td>
<td>519-448-1942</td>
</tr>
<tr>
<td>Scotland</td>
<td>519-446-3915</td>
</tr>
</tbody>
</table>

### Hospitals (untaped lines – not for contacting BHP)

- **Hamilton General Hospital**: 905-527-0271  ED ext. 46251
- **Henderson General Hospital**: 905-389-4411  ED ext. 42285
- **McMaster University Medical Centre**: 905-521-2100  ED ext. 75020
- **St. Joseph’s Hospital**: 905-522-4941  ED ext. 3997
- **Brantford General Hospital**: 905-752-7871  ED ext. 5507
- **Norfolk General Hospital**: 519-426-0750  ED ext. 1212
- **West Haldimand Hospital**: 905-768-3311  ED ext. 1130
- **Haldimand War Memorial Hospital**: 905-774-7431  ED ext. 246

---

October 2007
## Hamilton Health Sciences Base Hospital Physician Contact List Reference

<table>
<thead>
<tr>
<th>PHYSICIAN NAME</th>
<th>PHYSICIAN (BHP) NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. M. Ackerman</td>
<td>052</td>
</tr>
<tr>
<td>Dr. K. Barker</td>
<td>092</td>
</tr>
<tr>
<td>Dr. T.J. Bose</td>
<td>108</td>
</tr>
<tr>
<td>Dr. W. Bullock</td>
<td>046</td>
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<tr>
<td>Dr. S. Caron</td>
<td>111</td>
</tr>
<tr>
<td>Dr. A. Con</td>
<td>019</td>
</tr>
<tr>
<td>Dr. J. Crossley</td>
<td>076</td>
</tr>
<tr>
<td>Dr. C. Cunningham</td>
<td>119</td>
</tr>
<tr>
<td>Dr. B. Dew</td>
<td>126</td>
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<tr>
<td>Dr. K. English</td>
<td>102</td>
</tr>
<tr>
<td>Dr. J. Fan</td>
<td>124</td>
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<tr>
<td>Dr. C. Fortier</td>
<td>120</td>
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<tr>
<td>Dr. G. Francis</td>
<td>072</td>
</tr>
<tr>
<td>Dr. I. Ghosh</td>
<td>101</td>
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<tr>
<td>Dr. J. Ghuman</td>
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<tr>
<td>Dr. C. Grenier</td>
<td>112</td>
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<tr>
<td>Dr. R. Grewal</td>
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<tr>
<td>Dr. M. Ha</td>
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<tr>
<td>Dr. W. Hancock</td>
<td>010</td>
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<td>Dr. K. Hawley</td>
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<tr>
<td>Dr. A. Hersi</td>
<td>104</td>
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<tr>
<td>Dr. J. Jowett</td>
<td>093</td>
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Community Support Referral Contact Information Reference

The following contact information is provided for cases where:

- Patients are refusing transport to the hospital, and
- An assessment shows that the patient has the capacity to refuse, and
- The patient does not appear to be of immediate danger to themselves or others, and
- Paramedics have ongoing concerns regarding the living conditions in their home (CCAC), their need for victim’s support services (victim’s services) or the patient’s mental health (COAST, Hamilton only)
- OR the family of a patient needs support services (Victims Services).

These community service organizations are available to assist people with these concerns. Paramedics can give the information directly to the patient or assist them by making the referral on their behalf. Please note that if the Paramedic assists the patient by calling the organization he/she must get the patient’s consent to do so. If the Paramedic contacts the organization directly, the agency will require the patient’s name, address, phone number and nature of the concern. The Paramedic must then leave the information about the organization called with the patient.

**CCAC (Community Care Access Centre):** provides services for persons with living condition concerns (message can be left).

- Hamilton: 905-523-8600
- Brant: 519-759-7752
- Haldimand/Norfolk: 1-800-265-8068

**Victims Services:** provides short-term emotional support and community referral and assistance to victims of crime, tragic circumstance or disaster (24/7).

- Hamilton Victim Services: 905-546-4904
- Victim Services of Brant / Six Nations: 519-752-3140
- Victim Services of Haldimand-Norfolk: 905-768-2222

**COAST (Crisis Outreach And Support Team):** provides services for persons with mental health concerns in the Hamilton area only.

- Hamilton only (24/7): 905 972-8338
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