### Clinical Approach

<table>
<thead>
<tr>
<th>Stop</th>
<th>Primary Survey / Life Threat Status</th>
</tr>
</thead>
</table>
|      | **Standard Precautions:** Gloves, goggles, PPE, mask, vest  
Dangers  
Response  
**Airway** – Cervical spine immobilization if required  
**Breathing** Assist ventilations if $V_t$ inadequate  
**Circulation** Commence CPR if required  
**Haemorrhage** Control life threatening haemorrhage | **Immediate Mx + Sitrep required (Utilise ETHANE mnemonic)** |

| Action | 
|--------|--------------------------------|
|        | **Rapport, Rest and Reassurance**  
Posture / Position of comfort  
Oxygen as required (e.g. hypoxia, respiratory distress)  
Establish if Refusal of Treatment documented | **In order of clinical need**  
If clinically applicable, assess Hx prior to physical contact with Pt  
e.g. VSS, applying monitor, exposing chest |

<table>
<thead>
<tr>
<th>Assess</th>
<th>History</th>
</tr>
</thead>
</table>
|        | **Brief clinical Hx**  
**Event prior to Ambulance call**  
**Past medical Hx**  
**Pain – Verbal analogue score**  
**Medications**  
**Allergies** | **Accurate Hx + assessment essential for problem recognition** |
Clinical Approach

<table>
<thead>
<tr>
<th>Assess</th>
<th>Vital Sign Survey</th>
<th>Determined time criticality to Mx accordingly</th>
<th>Accurate body system assessment in all Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GCS</td>
<td>Determine time criticality to Mx accordingly</td>
<td>Accurate body system assessment in all Pts</td>
</tr>
<tr>
<td></td>
<td>PSA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RSA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pattern / mechanism of injury / medical condition</td>
<td>Determine time criticality to Mx accordingly</td>
<td>Accurate body system assessment in all Pts</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessment Tools / Secondary Survey</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Survey</td>
<td></td>
</tr>
<tr>
<td>SpO₂</td>
<td></td>
</tr>
<tr>
<td>Monitor/ECG (12 lead if available)</td>
<td></td>
</tr>
<tr>
<td>Temp</td>
<td></td>
</tr>
<tr>
<td>EtCO₂</td>
<td></td>
</tr>
<tr>
<td>More detailed Hx</td>
<td></td>
</tr>
<tr>
<td>BGL - Blood Glucose Level</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thorough physical examination</td>
</tr>
<tr>
<td></td>
<td>- Head to toe</td>
</tr>
<tr>
<td></td>
<td>- Inspection, palpation, auscultation</td>
</tr>
</tbody>
</table>

Determine Main Presenting Problem

The combination of subjective (PHx, Hx, Med's) and objective (physical) data allows identification of clinical problems
Multiple problems may be identified and prioritised to provide treatment order
Some overlap in treatment may address multiple problems

Confirm clinical reasoning with assessment data
### Clinical Approach

<table>
<thead>
<tr>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Further Sitrep / Resource requirements as required</td>
</tr>
<tr>
<td>Consider time to hospital vs time to R/V with MICA Paramedic</td>
</tr>
<tr>
<td>IV access if required</td>
</tr>
<tr>
<td>Specific treatment - appropriate CPG applied to Mx clinical problems</td>
</tr>
<tr>
<td>Transport to appropriate facility</td>
</tr>
<tr>
<td>Reassess frequently and adapt Mx as appropriate</td>
</tr>
<tr>
<td>Final assessment at destination/handover</td>
</tr>
</tbody>
</table>

This Clinical Approach is to be applied to all Pts as a basic level of care. There is an assumption in each CPG that this is the minimum level of care that the Pt will receive prior to the application of the Guideline. The exception to this rule is the Pt in immediate life threat that requires intervention during the Primary Survey.
Perfusion and Respiratory Assessment

Special Notes

These observations and criteria need to be taken in context with:
- The Pt’s presenting problem
- The Pt’s prescribed medication
- Repeated observations and the trends shown
- Response to management.

• Perfusion Definition
  The ability of the cardiovascular system to provide tissues with an adequate blood supply to meet their functional demands at that time and to effectively remove the associated metabolic waste products.

• Perfusion Assessment
  Other factors may affect the interpretation of the observations made, e.g., the environment, both cold and warm ambient temp. may affect skin signs; anxiety may affect pulse rate; and the many causes of altered conscious state or unconsciousness. Other conditions may affect conscious state observations such as poor cerebral perfusion, respiratory hypoxia, head injuries, hypoglycaemia and drug overdoses.

The Perfusion Status Assessment table represents a graded progression from adequate to no perfusion.

Special Notes

• Respiratory Assessment
  The Respiratory Status Assessment table represents a graded progression from normal to severe respiratory status.
# Perfusion Status Assessment

<table>
<thead>
<tr>
<th>Skin</th>
<th>Pulse</th>
<th>BP</th>
<th>Conscious Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adequate Perfusion</strong></td>
<td>Warm, pink, dry</td>
<td>60 – 100/min</td>
<td>&gt; 100mmHg systolic</td>
</tr>
<tr>
<td><strong>Borderline Perfusion</strong></td>
<td>Cool, pale, clammy</td>
<td>50 – 100/min</td>
<td>80 – 100mmHg systolic</td>
</tr>
<tr>
<td><strong>Inadequate Perfusion</strong></td>
<td>Cool, pale, clammy</td>
<td>&lt; 50/min, or &gt; 100/min</td>
<td>60 – 80mmHg systolic</td>
</tr>
<tr>
<td><strong>Extremely Poor Perfusion</strong></td>
<td>Cool, pale, clammy</td>
<td>&lt; 50/min, or &gt; 110/min</td>
<td>&lt; 60mmHg systolic or unrecordable</td>
</tr>
<tr>
<td><strong>No Perfusion</strong></td>
<td>Cool, pale, clammy</td>
<td>Absence of palpable pulse</td>
<td>Unrecordable</td>
</tr>
</tbody>
</table>
## Respiratory Status Assessment

<table>
<thead>
<tr>
<th></th>
<th>Normal</th>
<th>Mild Distress</th>
<th>Moderate Distress</th>
<th>Severe Distress (Life Threat)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Appearance</strong></td>
<td>Calm, quiet</td>
<td>Calm or mildly anxious</td>
<td>Distressed or anxious</td>
<td>Distressed, anxious, fighting to breathe, exhausted, catatonic</td>
</tr>
<tr>
<td><strong>Speech</strong></td>
<td>Clear and steady sentences</td>
<td>Full sentences</td>
<td>Short phrases only</td>
<td>Words only or unable to speak</td>
</tr>
<tr>
<td><strong>Breath Sounds and Chest Auscultation</strong></td>
<td>Usually quiet no wheeze</td>
<td>Able to cough</td>
<td>Able to cough</td>
<td>Unable to cough</td>
</tr>
<tr>
<td></td>
<td>Asthma: mild expiratory wheeze</td>
<td></td>
<td>Asthma: expiratory wheeze, +/- inspiratory wheeze</td>
<td>Asthma: expiratory wheeze +/- inspiratory wheeze, maybe no breath sounds (late).</td>
</tr>
<tr>
<td></td>
<td>LVF: may be some fine crackles at bases</td>
<td></td>
<td>LVF: crackles at bases - to mid-zone</td>
<td>LVF: fine crackles – full field, with possible wheeze</td>
</tr>
<tr>
<td><strong>Respiratory Rate</strong></td>
<td>12 – 16</td>
<td>16 – 20</td>
<td>&gt; 20</td>
<td>&gt; 20 Bradypnoea (&lt; 6 – 8)</td>
</tr>
<tr>
<td><strong>Respiratory Rhythm</strong></td>
<td>Regular even cycles</td>
<td>Asthma: may be slightly prolonged expiratory phase</td>
<td>Asthma: prolonged expiratory phase</td>
<td>Asthma: prolonged expiratory phase</td>
</tr>
<tr>
<td><strong>Breathing Effort</strong></td>
<td>Normal chest movement</td>
<td>Slight increase in normal chest movement</td>
<td>Marked chest movement +/- use of accessory muscles.</td>
<td>Marked chest movement with accessory muscles, intercostal retraction +/- tracheal tugging</td>
</tr>
<tr>
<td><strong>Pulse Rate</strong></td>
<td>60 – 100</td>
<td>60 – 100</td>
<td>100 – 120</td>
<td>&gt; 120, bradycardia late sign</td>
</tr>
<tr>
<td><strong>Skin</strong></td>
<td>Normal</td>
<td>Normal</td>
<td>Pale and sweaty</td>
<td>Pale and sweaty, +/- cyanosis</td>
</tr>
<tr>
<td><strong>Conscious State</strong></td>
<td>Alert</td>
<td>Alert</td>
<td>May be altered</td>
<td>Altered or unconscious</td>
</tr>
</tbody>
</table>
## Glasgow Coma Score

### A. Eye Opening

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>3</td>
<td>To Voice</td>
</tr>
<tr>
<td>2</td>
<td>To Pain</td>
</tr>
<tr>
<td>1</td>
<td>None</td>
</tr>
</tbody>
</table>

**A:**

### B. Verbal Response

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Orientated</td>
</tr>
<tr>
<td>4</td>
<td>Confused</td>
</tr>
<tr>
<td>3</td>
<td>Inappropriate words</td>
</tr>
<tr>
<td>2</td>
<td>Incomprehensible sounds</td>
</tr>
<tr>
<td>1</td>
<td>None</td>
</tr>
</tbody>
</table>

**B:**

### C. Motor Response

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Obey Command</td>
</tr>
<tr>
<td>5</td>
<td>Localises to pain</td>
</tr>
<tr>
<td>4</td>
<td>Withdraws (pain)</td>
</tr>
<tr>
<td>3</td>
<td>Flexion (pain)</td>
</tr>
<tr>
<td>2</td>
<td>Extension (pain)</td>
</tr>
<tr>
<td>1</td>
<td>None</td>
</tr>
</tbody>
</table>

**C:**

**Total GCS (Max. Score = 15)**

\[(A + B + C) = \]
**Introduction**

The concept of the “Time Critical” Pt allows the recognition of the severity of a Pt’s condition or the likelihood of deterioration. This identification directs appropriate clinical management and the appropriate destination to improve outcome. Covered within the Time Critical Guidelines are:

- Triage decisions for a Pt with Major Trauma
- Triage decisions for a Pt with significant Medical Conditions
- Requests for additional resources including MICA Paramedic and Aeromedical services
- Judicious scene time management (e.g. should not exceed 20min. for non-trapped major trauma Pt)
- Appropriate receiving hospital and early notification

It is important to note that the presence of time criticality does not infer a directive for speed of transport, but rather the concept implies there be a “Time Consciousness” in the management of all aspects of Pt care and transport.

**Time Critical Definitions**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>At the time the vital signs survey is taken, the Pt is in actual physiological distress.</td>
</tr>
<tr>
<td>Emergent</td>
<td>At the time the vital signs survey is taken, the Pt is not physiologically distressed but does have a “Pattern of injury or Significant Medical Condition” which is known to have a high probability of deteriorating to actual physiological distress.</td>
</tr>
<tr>
<td>Potential</td>
<td>At the time the vital signs survey is taken, the Pt is not physiologically distressed and there is no significant “Pattern of actual Injury/Illness”, but does have a “Mechanism of Injury/Illness” known to have the potential to deteriorate to actual physiological distress.</td>
</tr>
</tbody>
</table>
**Time Critical Guidelines**

**Trauma Triage**

Pts meeting the criteria for Major Trauma should be triaged to the **highest level of Trauma care available** within 30min. transport time of the incident in accordance with Victorian State Trauma System requirements and AV policies and procedures.

The receiving hospital must also be notified to ensure an appropriate reception team and facilities are available.

**Mechanism of Injury (MOI)**

A Pt under the Trauma Triage Guidelines meets the criteria for Major Trauma if they have a combination of MOI and other Co-morbidities constituting:

- Systemic illness limiting normal activity / Systemic illness constant threat to life. Examples include:
  - Poorly controlled hypertension
  - Morbid obesity
  - Controlled or uncontrolled Congestive Cardiac Failure
  - Symptomatic COPD
  - Ischaemic heart disease
  - Chronic renal failure or liver disease
- Pregnancy
- Age < 15 or > 55

**Medical Triage**

Pts meeting the time critical criteria for Medical conditions are regarded as having, or potentially having, a clinical problem of major significance. These Pts are time critical to the nearest **appropriate** hospital.
Trauma Time Critical Guidelines

Status
• Possible major trauma

Actual Time Critical
• Vital Signs normal
• May have Pattern of Injury

Significant Pattern of Injury
• Vital Signs normal
• Any of the following:
  - Oxygen saturation > 90%
  - GCS > 13
  - Pulse > 60 or < 100
  - BP > 100
  - Respiratory Rate > 8 or < 20
  - Any of the following:
    - Head / Neck / Chest / Abdomen / Axilla / Groin
    - Specific Injuries
      - Limb amputations / limb threatening injuries
      - Suspected spinal injury
      - Fractured pelvis

Emergency Time Critical
• Vital Signs not normal

Significant Pattern of Injury
• Assess Vital Signs
  - Any of the following:
    - Respiratory Rate < 8 or > 20
    - BP < 100
    - Pulse < 50 or > 100
    - GCS < 13
    - Oxygen saturation < 90%

MICA / Aeromedical Support
• Triage to highest level of trauma service within 30min.

Action
Assess Mechanism of Injury (MOI)
- Any of the following:
  - Ejection from vehicle
  - Motor/cyclist impact > 30km/h
  - Fall from height > 3m
  - Struck on head by falling object > 3m
  - Explosion
  - High speed MCA > 60km/h
  - Vehicle rollover
  - Fatality in same vehicle
  - Pedestrian impact
  - Prolonged extrication > 30min.

Assess Co-morbidities
- Any of the following:
  - Age > 55
  - Pregnancy
  - Significant underlying medical condition

Positive MOI and Co-morbidities
- Vital Signs are normal
- No Pattern of Injury

Positive MOI and NO Co-morbidities
- Vital Signs are normal
- No Pattern of Injury
- May have Mechanism of Injury

No MOI
- Vital Signs are normal
- No Pattern of Injury

Potentially Time Critical
- Action: Triage to highest level of trauma service within 30min.

Not Time Critical
- Action: Triage to nearest appropriate facility if required

Trauma Time Critical Guidelines CPG A0105
Trauma Time Critical Guidelines (Paediatric)

**Status**
- Possible major trauma?
  - Assess Vital Signs

**Assess Vital Signs**
- Vital Signs not normal?
  - Significant Pattern of Injury
- Vital Signs normal?
  - May have Pattern of Injury

**Assess Pattern of Injury**
- any of the following:
  - Penetrating Injuries
  - Blunt Injuries
  - Specific Injuries
  - Burns
  - Major compound fracture or open dislocation
  - Limb threatening injuries

**Actual Time Critical**
- Triage to highest level of trauma service
- Consider MICA / Aeromedical support
- Triage to highest level of trauma service within 30min.

**Triage Action**
- Consider MICA / Aeromedical support
- Triage to highest level of trauma service within 30min.

**Vital Signs**
- Respiratory Rate
- BP
- Pulse
- Conscious State
- O2 saturation
- Skin

**Newborn** (< 2 weeks)
- Respiratory Rate: < 20 or > 50
- BP: < 60 or > 170
- Pulse: < 90 or > 170
- Conscious State: GCS < 15
- O2 saturation: < 90%
- Skin: cold/pale/clammy

**Infant** (< 1 year)
- Respiratory Rate: < 20 or > 50
- BP: < 60 or > 170
- Pulse: < 90 or > 170
- Conscious State: GCS < 15
- O2 saturation: < 90%
- Skin: cold/pale/clammy

**Child** (1 - 8 years)
- Respiratory Rate: < 30 or > 60
- BP: < 70 mm Hg
- Pulse: < 100 or > 170
- Conscious State: GCS < 15
- O2 saturation: < 90%
- Skin: cold/pale/clammy

**Large Child** (9 - 15 years)
- Respiratory Rate: < 20 or > 25
- BP: < 75 or > 100
- Pulse: < 80 or > 110
- Conscious State: GCS < 15
- O2 saturation: < 90%
- Skin: cold/pale/clammy

**Vital Signs are normal**
- No further action needed

**Actual Time Critical**
- Triage to highest level of trauma service
- Consider MICA / Aeromedical support
- Triage to highest level of trauma service within 30min.

© Ambulance Victoria
Assess Mechanism of Injury (MOI)

- Ejection from vehicle
- Motor/cyclist impact > 30km/h
- Fall from height > 3m
- Struck on head by falling object > 3m
- Explosion
- High speed MVA > 60km/h
- Vehicle rollover
- Fatality in same vehicle
- Pedestrian impact
- Prolonged extrication > 30min.

Positive MOI

- Vital Signs are normal
- No Pattern of Injury

No MOI

- Vital Signs are normal
- No Pattern of Injury

Action

- Triage to highest level of trauma service within 30min.
- Triage to nearest appropriate facility if required

Trauma Time Critical Guidelines (Paediatric) CPG A0105
Medical Time Critical Guidelines

**Status**

- Possible Medical time critical?

**Assess Vital Signs**
- Any of the following:
  - Moderate or Severe Respiratory Distress
  - Oxygen saturation < 90% Room Air / 93% supplemental O2
  - < Adequate Perfusion
  - GCS < 13 (unless normal for Pt)

**Assess Medical Condition**
- Any of the following:
  - Medical Symptoms / Syndromes
    - Acute Coronary Syndrome
    - Acute stroke
    - Severe sepsis, including suspected meningococcal disease
    - Acute decompression illness or cyanide poisoning
    - Possible Abdominal Aortic Aneurysm
    - Undiagnosed severe pain
    - Medical Symptoms / Syndromes
    - Any of the following:

- Hypothermia or Hyperthermia
  - Need for possible hyperbaric treatment e.g. acute decompression illness or cyanide poisoning

- Actual Time Critical

**Action**
- Triage to nearest appropriate facility with notification
- Consider MICA / Aeromedical support

- Vital Signs not normal?
  - Vital Signs normal
  -\?

- \?

-\?

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-\?

-\?

-\?
Mental Status Assessment

A mental status assessment is a systematic method used to evaluate a Pt’s mental function. In undertaking a mental status assessment, the main emphasis is on the person’s behaviour. This assessment is designed to provide Paramedics with a guide to the Pt’s behaviour, not to label or diagnose a Pt with a specific condition.

1. Appearance
   - Neatness, cleanliness
   - Pupils – size
   - Extraocular movements

2. Behaviour
   - Bizarre or inappropriate
   - Threatening or violent
   - Unusual motor activity, such as grimacing or tremors
   - Impaired gait
   - Psychomotor retardation or agitation

3. Speech
   - Rate, volume, quantity, content

4. Mood
   - Depressed, agitated, excited or irritable

5. Response
   - Flat – unresponsive facial expression
   - Appropriate/inappropriate

6. Perceptions
   - Hallucinations

7. Thought content
   - Delusions (i.e., false beliefs)
   - Suicidal thoughts
   - Overly concerned with body functions (eg. Bowels)

8. Thought flow
   - Jumping irrationally from one thought to another

9. Concentration
   - Poor ability to organise thoughts
   - Short attention span
   - Impaired judgement
   - Poor memory
   - Lack of insight
# Stroke Assessment

## Stroke signs and symptoms

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facial Droop</strong></td>
<td>Pt shows teeth or smiles</td>
</tr>
<tr>
<td></td>
<td>Normal - both sides of face move equally</td>
</tr>
<tr>
<td></td>
<td>Abnormal - one side of face does not move as well as the other</td>
</tr>
<tr>
<td><strong>Speech</strong></td>
<td>The Pt repeats “You can’t teach an old dog new tricks”</td>
</tr>
<tr>
<td></td>
<td>Normal - the Pt says the correct words, no slurring</td>
</tr>
<tr>
<td></td>
<td>Abnormal - the Pt slurs words, says the wrong words, or is unable to speak or understand</td>
</tr>
<tr>
<td><strong>Hand grip</strong></td>
<td>Test as for GCS</td>
</tr>
<tr>
<td></td>
<td>Normal - equal grip</td>
</tr>
<tr>
<td></td>
<td>Abnormal - unilateral weakness</td>
</tr>
<tr>
<td><strong>Blood glucose</strong></td>
<td>Test for BGL</td>
</tr>
<tr>
<td></td>
<td>Abnormal - if hypoglycemia manage as per CPG A0702</td>
</tr>
<tr>
<td></td>
<td>Normal BGL</td>
</tr>
</tbody>
</table>

## Assess/Consider
- Intoxication drug/alcohol
- Hypo/hyperglycemia
- Seizures
- Brain tumour primary/secondary
- Syncope
- Middle ear disorder
- Migraine
- Subdural haematoma
- Sepsis
- Electrolyte disturbances

## Possible Co-morbidities
- Dementia
- Significant pre-existing physical disability

## Assessing onset timeframe
- If Pt wakes with a deficit or inability to communicate, the time is taken from when the Pt was last seen deficit free. Accurate timeframe for onset of symptoms is critical for Rx:
  - < 3hr. for IV thrombolytic
  - < 6hr. for other therapies

## Findings
- Stroke signs and symptoms
  - Consider and exclude stroke mimics
  - Determine and document exact time of onset of stroke symptoms
  - Notify receiving hospital if no co-morbidities and onset of symptoms < than 6hr.
  - Continue management and transport to a hospital offering an acute stroke service if appropriate
# Cardiac Arrest

### Principles of CPR

**CPR**
- Assumption that CPR is commenced immediately and continued throughout cardiac arrest as required
- Generic for all adult cardiac arrest conditions
- Must not be interrupted for more than 10 sec. during rhythm / pulse checks. If unsure of pulse, recommence CPR immediately
- Change operators every 2min. to improve CPR performance and reduce fatigue
- Depth 50% chest volume
- **Rhythm/Pulse check every 2min.**
  - CPR commenced immediately after defibrillation and pulse check after 2min.

**Ratios of compressions to ventilations**

**Not intubated**
- 30 : 2
- Rate: Approximately 100 compressions per min.
  - Pause for ventilations

**Intubated / LMA inserted**
- 15 : 1
- Rate: Approximately 100 compressions per min.
  - < 8 ventilations/min.
  - No pause for ventilations

### Adjustment for temperature

**> 32°C**
- Standard Cardiac Arrest Guidelines

**30 - 32°C**
- Double dosage intervals in relevant cardiac arrest Guideline
- Do not rewarm beyond 33°C if ROSC

**< 30°C**
- Continue CPR and rewarming until temp. > 30°C
- One defibrillation shock only
- One dose of Adrenaline
- One dose of Atropine
- One dose of Amiodarone
- **Withhold NaHCO₃ 8.4% IV**
Cardiac Arrest

**Action**
- Immediately commence CPR 30 : 2

**Unconscious/Pulseless VF/VT**
- Unwitnessed arrest
  - Defibrillate 200J Biphasic (360J Monophasic)
    - Repeat @ 2/60 intervals if VF/VT persists
  - Paramedic witnessed arrest
    - 3 x 200J Biphasic (360J Monophasic)
      - Rhythm check between shocks
      - Continue with single shocks @ 2/60 intervals if VF/VT persists

**Pulseless Electrical Activity (PEA)**
- Identify and Rx causes
  - Hypoxia
  - Anaphylaxis
  - Asthma
  - Exsanguination
  - Upper airway obstruction
  - Tension pneumothorax

**Asystole**
- **Action**
  - IV access/Normal Saline TKVO
  - Adrenaline 1mg IV
    - Repeat @ 3/60 if no output
  - Consider I/O if delay in IV access
    - Adrenaline 1mg I/O

**VF/VT persists**
- **Action**
  - IV access/Normal Saline TKVO
  - Adrenaline 1mg IV
    - Repeat @ 3/60 if no output
  - Consider I/O if delay in IV access
    - Adrenaline 1mg I/O

**PEA persists**
- **Action**
  - IV access/Normal Saline TKVO
  - Adrenaline 1mg IV
    - Repeat @ 3/60 if no output
  - Consider I/O if delay in IV access
    - Adrenaline 1mg I/O

**Asystole**
- **Action**
  - IV access/Normal Saline TKVO
  - Adrenaline 1mg IV
    - Repeat @ 3/60 if no output
  - Consider I/O if delay in IV access
    - Adrenaline 1mg I/O
### VF/VT persists
- **Action**
  - Insert LMA
  - Change CPR ratio to 15:1
  - Intubate
  - If unable to obtain IV or I/O - Adrenaline 2mg via ETT
  - Change CPR ratio to 15:1

### PEA persists
- **Action**
  - Insert LMA
  - Change CPR ratio to 15:1
  - Intubate
  - If unable to obtain IV or I/O - Adrenaline 2mg via ETT
  - Change CPR ratio to 15:1

### Asystole persists
- **Action**
  - Insert LMA
  - Change CPR ratio to 15:1
  - Intubate
  - If unable to obtain IV or I/O - Adrenaline 2mg via ETT
  - Change CPR ratio to 15:1

### VF/VT persists
- **Action**
  - Amiodarone 300mg IV

### PEA persists
- **Action**
  - Normal Saline 20ml/kg IV

### Asystole persists
- **Action**
  - Atropine 3mg IV

### VF/VT persists
- **Action**
  - Repeat Amiodarone 150mg IV (max. combined dose 450mg)

### PEA persists - HR < 60
- **Action**
  - Atropine 3mg IV

### Asystole persists - HR < 60
- **Action**
  - After 15/60 Paramedic CPR
  - Sodium Bicarbonate 8.4% 50ml IV

### VF/VT persists - After 15/60 Paramedic CPR
- **Action**
  - Sodium Bicarbonate 8.4% 50ml IV

### PEA persists - After 15/60 Paramedic CPR
- **Action**
  - Sodium Bicarbonate 8.4% 50ml IV

### Asystole persists - After 15/60 Paramedic CPR
- **Action**
  - Sodium Bicarbonate 8.4% 50ml IV

### ROSC
- **Action**
  - Treat as per ROSC Mx
Cardiac Arrest (ROSC Management)

General Care

- **Therapeutic Hypothermia**
  
  Ensure fluid is < 8 degrees prior to administration.

- **Sodium Bicarbonate** may be administered earlier in algorithm if hyperkalaemia suspected or in cardiac arrest secondary to TCA overdose.

Special Notes

- CPG A0407 Inadequate Perfusion (Cardiogenic Causes)
- CPG A0302 Endotracheal Intubation
- CPG A0406 Pulmonary Oedema
## Cardiac Arrest (ROSC Management)

### Status
- Post cardiac arrest
  - Return of spontaneous circulation (ROSC)

### Unintubated
- **Action**
  - GCS < 10 post ROSC
  - Collapse to ROSC > 10/60
    - RSI as per CPG A0302
    - Therapeutic cooling
  - Collapse to ROSC < 10/60
    - No therapeutic cooling
    - RSI as per CPG A0302 if coma persists despite initial oxygenation and perfusion Mx

### Perfusion management
- **Action**
  - Maintain BP > 120 or Pt's usual BP (if known)
  - Normal Saline and Adrenaline to be used as required per CPG A0407
  - Accurately assess pulse during movement/loading to ensure output maintained throughout
  - Rx as per appropriate Guideline if condition changes
  - Do not administer Amiodarone unless breakthrough VF/VT occurs

### Therapeutic cooling
- **Action**
  - Pt intubated
  - Collapse to ROSC > 10/60
  - Normal functional status (independent with ADLs)
  - Temp. > 34.5
  - No pulmonary oedema evident
  - Cardiac arrest not due to bleeding

### Transport
- **Action**
  - Appropriate receiving hospital
  - Notify early
  - 12 lead ECG if available

### Perfusion management Unintubated
- **Action**
  - Collapse to ROSC > 10/60
    - RSI as per CPG A0302
    - Therapeutic cooling
  - Collapse to ROSC < 10/60
    - No therapeutic cooling
    - RSI as per CPG A0302 if coma persists despite initial oxygenation and perfusion Mx

### Therapeutic cooling
- **Action**
  - Assess Pt temp.
  - Sedation/paralysis
    - Midazolam 1-5mg IV
    - Pancuronium 8mg IV
  - Rapid infusion cold Normal Saline 2000ml IV if available
  - Cease if APO occurs and Rx as per CPG A0406
Withholding and/or Ceasing Pre-hospital resuscitation

Special Notes

• A Refusal of Treatment Certificate may be completed by:
  - a person aged 18 years or older;
  - an agent, where a person aged 18 years or older has completed an Enduring Power of Attorney (Medical Treatment)
  - a guardian appointed by the Victorian Civil and Administrative Tribunal (VCAT).

• A Refusal of Treatment Certificate may be sighted by the attending Ambulance crew, or they may accept in good faith the advice of those present at the scene. If there is any doubt about the application of a certificate the default position of resuscitation should be adopted.

• A Refusal of Treatment Certificate may only be completed in relation to a current condition. When ceasing or withholding resuscitative efforts in these circumstances the attending Ambulance or MICA Paramedic needs to be satisfied that the Pt’s cardiac arrest is most likely due to this current condition.

Special Notes

• Ambulance crews must clearly record full details of the information given to them and the basis for their decision regarding resuscitation on the PCR. This is particularly important in circumstances where a copy of the Refusal of Treatment Certificate has not been sighted as it will serve if necessary as evidence of their good faith.

• Under the Medical Treatment Act 1988 a person acting under the direction of a Registered Medical Practitioner who, in good faith and in reliance on a Refusal of Treatment Certificate, refuses to perform or continue medical treatment is not guilty of professional misconduct or guilty of an offence or liable in any civil proceedings because of the failure to perform or continue that treatment.
Withholding and/or Ceasing Pre-hospital resuscitation

**Circumstances where resuscitation efforts may be withheld**

- Likely risk to Paramedic health and safety
- Clear evidence of prolonged cardiac arrest (e.g. rigor mortis, decomposition, postmortem lividity)
- Injuries incompatible with life (e.g. decapitation)
- Inadequate resources to deal with all Pts (e.g. multi-casualty incidents)
- Death declared by Medical Officer who is, or has been, at the scene
- An adult (18 years or older), where a Refusal of Treatment Certificate has been completed for a current condition which most likely caused the cardiac arrest
- A child (< 18 years), where a Court Order is provided to the attending Ambulance crew indicating that Cardiopulmonary Resuscitation is not to be commenced
- An adult (18 years or older) whose initial cardiac rhythm is asystole (over a minimum 30 sec. period), provided the time interval between the onset of cardiac arrest, i.e. collapse, and arrival of the crew at the Pt has exceeded 10min. and there are no compelling reasons to continue, such as suspected hypothermia, suspected drug overdose, a child (< 18 years) or family/bystander requests continued efforts

**Circumstances where resuscitation efforts may be ceased**

- An adult (18 years or older) who, after 30min. of Advanced Life Support resuscitation (including advanced airway management, defibrillation and/or Adrenaline) has no return of spontaneous circulation, is not in VF or VT, has no other signs of life present such as gasps or pupil reaction and hypothermia or drug overdose are not suspected.
## Laryngeal Mask Airway (LMA)

### Special Notes
- The LMA provides improved airway and ventilation Mx compared with a facemask and OPA. The LMA does not protect against aspiration, although studies have shown it to be as low as 3.5% with an LMA compared to 12.4% with a Bag Valve Mask (BVM). **The LMA should therefore not be regarded as the equivalent of endotracheal intubation.**
- The LMA forms a low pressure seal around the posterior perimeter of the larynx and when correctly inserted is seated superior to the oesophageal sphincter thus enabling positive pressure ventilation via BVM or closed circuit resuscitator. Unconscious Pts who accept an OPA are generally suitable for insertion of an LMA.
- Pt with morbid obesity have a naturally increased work of breathing and during assisted or intermittent positive pressure ventilation require higher pressures to inflate the lungs. They also have a higher incidence of hiatus hernia resulting in an increased likelihood of passive regurgitation of stomach contents.

### General Care
- If insertion fails and ventilation is difficult or inadequate, check position of LMA cuff using a laryngoscope. If minor adjustment fails to correct the problem, remove the LMA inflated. Immediately insert an OPA/NPA and ventilate the Pt using a BVM.
- Only one attempt may be made to reinsert LMA. If insertion fails on the 2nd attempt, do not delay returning to BVM using an OPA/NPA.
- Do not over-inflate cuff.
- The LMA may be used for the unconscious APO Pt. However, gentle assisted ventilation should be provided using a closed circuit resuscitator.
- The LMA may be inserted in left or right lateral positions or if entrapped, in a sitting position. Pts may be managed in the lateral position when the LMA has been correctly inserted and taped in situ, using Transpore or Sleek, however, in general, it is recommended that Pts be Mx supine and carefully observed for aspiration.
- If the conscious state of the Pt improves and there is an attempt to reject the LMA, remove the LMA with the cuff inflated.
**Laryngeal Mask Airway (LMA)**

### Status
- Unconscious Pt without gag reflex
- Ineffective ventilation with BVM/oxysaver and airway Mx (OPA/NPA)
- >10/60 assisted ventilation required
- Unable to intubate/difficult intubation

### Stop
- **Contraindications**
  - Intact gag reflex or resistance to insertion
  - Strong jaw tone + trismus
  - Suspected epiglottitis or upper airway obstruction

### Consider
- **Precautions**
  - Inability to prepare the Pt in the “sniffing position”
  - Pts who require high airway pressures, e.g. advanced pregnancy, morbid obesity, decreased pulmonary compliance (stiff lungs due to pulmonary fibrosis) or increased airway resistance (severe asthma)
  - Pts < 14 years of age due to enlarged tonsils
  - Significant volume of vomit in airway

- **Side Effects**
  - Correct placement of the LMA does not prevent passive regurgitation or gastric distension

### LMA Size Chart

<table>
<thead>
<tr>
<th>Portex</th>
<th>Wt</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size 3</td>
<td>30-50kg</td>
<td>25 ml</td>
</tr>
<tr>
<td>Size 4</td>
<td>50-70kg</td>
<td>35 ml</td>
</tr>
<tr>
<td>Size 5</td>
<td>70kg-140kg</td>
<td>55 ml</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unique</th>
<th>Wt</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size 3</td>
<td>30-50kg</td>
<td>20 ml</td>
</tr>
<tr>
<td>Size 4</td>
<td>50-70kg</td>
<td>30 ml</td>
</tr>
<tr>
<td>Size 5</td>
<td>70kg-140kg</td>
<td>40 ml</td>
</tr>
</tbody>
</table>
Special Notes

- The Medical Standards Committee has authorised endotracheal intubation by MICA Paramedics in selected Pts.
- There are three intubation techniques available:
  - Intubation without drugs (Unassisted Endotracheal Intubation)
  - Intubation Facilitated by Sedation (IFS)
  - Rapid Sequence Intubation (RSI)

The appropriate technique will vary according to the clinical setting and a Paramedic’s authorised scope of practice.
- A MICA Paramedic operating alone may elect not to use IFS or RSI until a second MICA Paramedic is present.
- All intubations facilitated or maintained with drug therapy will be reviewed as part of AV Clinical governance processes.
- The use of cricothyroidotomy is restricted to AV MICA Paramedics specifically accredited in this skill by the Medical Standards Committee.
Endotracheal Intubation Guide

**Primary indications**
- Respiratory arrest
- Cardiac arrest
- GCS < 10 due to:
  - Respiratory failure
  - Neurological injury
  - Overdose
  - Status epilepticus
  - DKA

**Preparation**

**Insertion of ETT**

**Drugs to facilitate intubation**
- Intubation Facilitated by Sedation (IFS)
- Rapid Sequence Intubation (RSI)

**Failed intubation**
- See CPG A0303

**Care and maintenance**
- Sedation
- Sedation and paralysis
Special Notes

• Primary Neurological Injury
  - RSI should be provided unless Pt is in cardiac arrest. This includes Pts with absent airway reflexes.
  - **Midazolam** should not be used to control combativeness prior to RSI in head injury. Judicious pain relief with narcotic should be used. If combativeness is preventing preoxygenation (this is rare), then once all preparations have been made for RSI the **Fentanyl** should be given. This should settle the Pt sufficiently to enable preoxygenation for 2-3min., then the **Midazolam** and **Suxamethonium** should be given and the Pt intubated.

• Status epilepticus
  - A continuous or recurrent seizure of 10min. duration or no return of consciousness between episodes may require intubation where there is airway/ventilation compromise which is unable to be effectively managed using BVM and OPA/NPA.

• Suspected tricyclic antidepressant O/D
  - Requiring hyperventilation for cardiac arrhythmia prevention or management.

• Overdose
  - The intent of the OD (difficult extrication) indication for RSI is for the Pt to be intubated at the scene to enable safer extrication.

• Uncontrolled bleeding
  - In Pts with uncontrolled bleeding (e.g. ruptured AAA, ruptured ectopic pregnancy, penetrating truncal trauma, intra-abdominal trauma, limb avulsion), ongoing bleeding may lead to poor cerebral perfusion and coma.
  - RSI in these Pts is potentially harmful. The sedation may drop blood pressure further and the added scene time increases total blood loss. The appropriate treatment for these Pts is urgent transport and immediate surgery.
  - RSI should **NOT** be undertaken in Pts who become unconscious when the coma is likely to be secondary to blood loss, unless RSI is judged to be absolutely essential (unmanageably combative and / or impractical to transport unintubated). This applies to Pts being transported both by road and air Ambulance.
  - Airway management with BVM is to be maintained in conjunction with prompt transport. Intubation (without drugs) should be considered if airway reflexes are lost, bearing in mind the risks of delay to definitive surgical care.

• Severe hyperthermia
  - May result from drug OD or heat exposure. If after 10/60 of active cooling Pt temp. remains > 39.5°C and GCS < 10, then Pt should be intubated with RSI.
Endotracheal Intubation Indications, Precautions, C/Is

Unassisted Endotracheal Intubation

- **Indication**
  - Respiratory arrest
  - Cardiac arrest
  - Absent airway reflexes

- **General Precautions**
  - Time to intubation at hospital versus time to intubate at scene
  - Poor baseline neurological function and major co-morbidities
  - Advanced Care Plan / Refusal of Medical Treatment document specifies “Not for Intubation”

IFS

- **Indication GCS < 10**
  - Respiratory failure
    - Unresponsive to non-invasive ventilation and drug therapy
  - DKA
    - Diabetic Ketoacidosis with BGL reading “High”

- **Precautions for IFS**
  - As per General Precautions
  - Anticipation of difficulty with BVM ventilation
  - Anticipation of a difficult intubation, e.g. morbid obesity, short neck or facial trauma
  - In general if transport time < 10/60 then no IFS

- **Contraindication (CIs)**
  - Clinical situations where failed intubation drill would not be feasible
  - No functional electronic capnograph
  - Pts indicated for RSI

RSI

- **Indication GCS < 10**
  - Primary Neurological Injury
    - Traumatic brain injury (TBI)
    - Non-traumatic brain injury
    - Stroke/Subarachnoid haemorrhage
  - Hypoxic brain injury
    - Post-hanging, near drowning
    - ROSC as per CPG A0202 Cardiac Arrest
  - Overdose with any of:
    - Suspected tricyclic antidepressant O/D
    - Difficult extrication
    - Prolonged transport time (>30/60)
    - O₂ sat. unable to be maintained > 90%
  - Severe hyperthermia
    - > 39.5°C despite 10/60 of management
  - Status epilepticus

- **Precautions for RSI**
  - As per General Precautions IFS
  - In general if transport time < 10/60 then no RSI

- **Contraindication (CIs)**
  - As per first two Contraindications IFS
  - Any contraindications to Suxamethonium
  - Coma due to uncontrolled bleeding
Unassisted Endotracheal Intubation

**General preparation for intubation**

- Position Pt. If a cervical collar is fitted it should be opened while maintaining manual cervical support
- Pre-oxygenate with 100% O₂ and electronic capnograph attached
- Ensure pulse oximeter and cardiac monitor are functional
- Prepare equipment and assistance
  - Suction
  - ETT (plus one size smaller than predicted immediately available) with introducer
  - Oesophageal Detector Device (ODD)
  - Ensure equipment for a difficult / failed intubation is immediately available, including bougie, LMA, cricothyroidotomy kit
  - Mark cricothyroid membrane as necessary
  - Brief assistant to provide cricoid pressure, where appropriate
  - If suspected spinal injury, where possible a second assistant should be available to stabilise the head and neck
- Ensure functional and secure IV access

**Preparation for IFS**

- As per General preparation for intubation
- Pre-hydrate with Normal Saline fluid bolus 10 ml/kg IV unless APO
- If Pt hypotensive and/or tachycardic, follow relevant CPG in conjunction with the intubation process
- Draw up and label drugs as appropriate

**Preparation for RSI**

- As per General preparation for intubation
- Pre-hydrate with Normal Saline fluid bolus 10 ml/kg IV
- If Pt hypotensive and/or tachycardic, follow relevant CPG in conjunction with the intubation process
- Adrenaline not to be given in Hypovolaemic shock
- Draw up and label drugs as appropriate
Special Notes

- Sedation doses for RSI are based on initial observations. This is especially important in multi-trauma with TBI. Initial fluid challenges may resolve tachycardia and/or hypotension, however the Pt is still at risk of cardiovascular compromise and the blood pressure must be strenuously supported. Half doses (or less) of sedation are required in this situation.

- In Pts with extremely poor perfusion, treat with fluid therapy +/- Adrenaline infusion concurrently with IFS or RSI. Consider quarter doses of sedation.

- Frail, elderly or hypotensive Pts have prolonged circulation times. Allow for this when giving a second dose of sedation during IFS.

### Dosage RSI

<table>
<thead>
<tr>
<th>Age &lt; 60</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP &lt; 80</td>
<td>1/4 or 1/2 Fentanyl Midazolam 1mg</td>
</tr>
<tr>
<td>BP 80 - 100</td>
<td>Half</td>
</tr>
<tr>
<td>BP &gt; 100, HR &gt; 100 (TBI only)</td>
<td>Half</td>
</tr>
<tr>
<td>BP &gt; 100 , HR &gt; 100 (all other)</td>
<td>Full</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age &gt; 60</th>
<th>Dose</th>
</tr>
</thead>
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<tr>
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<td>Half</td>
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</tbody>
</table>

### Dosage IFS

<table>
<thead>
<tr>
<th>Age &lt; 60</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP &lt; 100</td>
<td>Half</td>
</tr>
<tr>
<td>BP &gt; 100</td>
<td>Full</td>
</tr>
</tbody>
</table>

| Age > 60 | Half dose for all |

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Endotracheal Intubation  
Drugs
### Endotracheal Intubation Drugs

#### Unassisted Endotracheal Intubation

- **Action**
  - Proceed with intubation - no drugs required

#### IFS

<table>
<thead>
<tr>
<th>Adjusted sedation dose required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Half dose sedation required</td>
</tr>
<tr>
<td>• BP &lt; 100 and / or age &gt; 60</td>
</tr>
<tr>
<td>• Fentanyl 50mcg IV</td>
</tr>
<tr>
<td>• Midazolam 0.05mg/kg IV (max. 5mg)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Full dose sedation required</th>
</tr>
</thead>
<tbody>
<tr>
<td>• BP &gt; 100 and age &lt; 60</td>
</tr>
<tr>
<td>• Fentanyl 100mcg IV</td>
</tr>
<tr>
<td>• Midazolam 0.1mg/kg IV (max. 10mg)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>If unable to intubate due to excessive tone</th>
</tr>
</thead>
<tbody>
<tr>
<td>• If GR 1 or 2 view but respiratory effort or airway reflexes are preventing intubation - Repeat same dose of sedation and reattempt intubation once only</td>
</tr>
<tr>
<td>• If GR 3 or 4 view - Proceed to Failed Intubation Drill</td>
</tr>
</tbody>
</table>

#### RSI

<table>
<thead>
<tr>
<th>Adjusted sedation dose required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced dose sedation required if either:</td>
</tr>
<tr>
<td>• BP &lt; 80</td>
</tr>
<tr>
<td>• BP 80 - 100</td>
</tr>
<tr>
<td>• HR &gt; 100 (TBI only)</td>
</tr>
<tr>
<td>• Age &gt; 60</td>
</tr>
<tr>
<td>• Fentanyl 50mcg IV</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Paralysing agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>• If Pt bradycardic at any stage - Atropine 600mcg IV</td>
</tr>
<tr>
<td>• Suxamethonium 1.5mg/kg IV round up to nearest 25mg (max. 150mg)</td>
</tr>
</tbody>
</table>
Endotracheal Intubation Insertion of ETT

Insertion of Endotracheal Tube

- Observe passage of ETT through cords noting AS standard markings and grade of view.
- Check ETT position using Oesophageal Detector Device (ODD).
- Inflate cuff.
- Confirm tracheal placement via capnography (note: Pt in cardiac arrest may not have CO₂ initially detectable).
- Exclude right main bronchus intubation by performing the cuff palpation (“tracheal squash”) test and by comparing air entry at the axillae.
- Note length of ETT at lips/teeth.
- Auscultate chest / epigastrium.
- Note supplemental cues of correct placement (e.g. tube “misting”, bag movement in the spontaneously ventilating Pt, improved oxygen saturation and colour).
- Secure the ETT and insert a bite block if required.
- If there is ANY doubt about tracheal placement, the ETT must be removed.
- If unable to intubate after ensuring correct technique and problem solving then proceed to Failed Intubation Drill.

General Care of the Intubated Pt

- Reconfirm tracheal placement using EtCO₂ after every Pt movement. Disconnect and hold ETT during all transfers.
- If electronic capnography fails after intubation, use colourimetric capnometry.
- Suction ETT and oropharynx in all Pts.
- If time permits, insert orogastric or nasogastric tube, aspirate and connect to drainage bag. The orogastric route must be used in head or facial trauma.
- Ventilate using 100% oxygen and tidal volume of 10 ml/kg. Aim to maintain SpO₂ > 95% and EtCO₂ at 30 - 35mmHg (except asthma / COPD where a higher EtCO₂ may be permitted, tricyclic OD where the target is 20 - 25mmHg, and DKA where the EtCO₂ should be maintained at the level detected immediately post-intubation, with a max. of 25mmHg).
- Document all checks and observations made to confirm correct ETT placement.
Endotracheal Intubation Insertion of ETT

**Status**
- Insertion / General care of ETT
  - Unassisted Endotracheal Intubation
  - IFS
  - RSI

**Insertion and checks of ETT**

**Action**
- ODD
- Capnography - EtCO₂
- Length lips/teeth
- Cuff Palpation
- Auscutate chest/epigastrium
  - Chest rise and fall, bag movement, SpO₂, colour, tube misting
- Specific insertion instructions as per Insertion of Endotracheal Tube

If there is ANY doubt about tracheal placement, the ETT must be removed

**General care / ventilation**

**Action**
- ETT checks with each Pt movement
- Provide circulatory support if hypotension present
- Use colourimetric capnometry if capnography fails
- Suction ETT and oropharynx
- Insert OG/NG tube
- Ventilate V₆, 10ml / per kg, EtCO₂ 30 - 35mmHg if appropriate to Pt condition
- Disconnect and hold ETT during transfers
- Specific instructions as per General Care of the Intubated Pt
Special Notes

- For Pts who become hypotensive after intubation, consider reducing the dose of sedation, in association with additional fluid +/- Adrenaline infusion according to the clinical setting.
- Not all Pts receiving RSI will require paralysis post intubation, e.g. continuous convulsions, OD other than tricyclic.
- Some Pts receiving IFS may require paralysis post intubation to control ventilation e.g. asthmatic Pt.
- Primary Neurological Pts require paralysis post intubation to prevent gagging and elevation in ICP. Ideally this should be given before the Suxamethonium wears off, provided tracheal placement is confirmed and the tube is secured.
- Paralysis is C/I in status epilepticus, where clinical monitoring of seizure activity is required. Use additional doses of Midazolam as required.

General Care

- Infusion
  - Morphine 30mg + Midazolam 30mg/30ml D5W or Normal Saline
    - 1ml = 1mg each drug
    - 1ml/hr = 1mg/hr
- Handover
  - The EtCO₂ and respiratory wave form immediately prior to Pt handover must be demonstrated to the receiving physician and documented on the PCR.
Endotracheal Intubation Care and Mx. of Intubated Pt

**Indications**
- Intubated Pt

**Action**
- Morphine/Midazolam infusion 1 - 10mg/hr IV
  - 0.5mg - 5mg IV boluses as required
- Until Morphine/Midazolam infusion established:
  - Midazolam 0.5mg - 5mg IV as required or
  - Midazolam/Morphine 0.5mg - 5mg IV each drug

**Consider**
- Does Pt require sedation or sedation / paralysis to maintain intubation and ventilation

**Post Intubation Paralysis**
- Prevention of shivering for Pts receiving therapeutic cooling
- Primary Neurological Pts
- Where sedation alone is ineffective at maintaining intubation or allowing adequate ventilation / oxygenation
- As prescribed for interhospital transfer

**Stop**
- All Pts receiving paralysis MUST receive ongoing sedation
- The ETT must be secured and tracheal placement reconfirmed with electronic capnography
- C/I for Pt in Status epilepticus

**Sedation and Paralysis**
- Sedate as per Post Intubation Sedation
- Pancuronium 8mg IV
  - Repeat if evidence of returning muscular activity (movement, chewing, cough, gag, curare cleft)
Failed Intubation Drill

**Radical Intubation Sedation**
- Unable to see vocal cords during initial laryngoscopy

**Action**
- Insert OP Airway and ventilate with 100% O₂

**Action**
- Reattempt intubation using bougie with blind placement of ETT over bougie

**Consider**
- Objective confirmation of tracheal placement using EtCO₂

- **Yes**
  - **Action**
    - Continue Management in accordance with relevant CPG

- **No**
  - **Action**
    - Immediately remove ETT, insert OPA/NPA and ventilate with 100% O₂

**Consider**
- Able to ventilate and oxygenate

- **Yes**
  - **Action**
    - Insert OP Airway and ventilate with 100% O₂

- **No**
  - **Action**
    - Insert LMA

**Consider**
- Able to ventilate and oxygenate

- **Yes**
  - **Action**
    - If sedation/relaxant drugs administered allow these to wear off and Pt to resume normal respiration

- **No**
  - **Action**
    - Cricothyroidotomy
Cricothyroidotomy

**Status**
- Unconscious Pt unable to be oxygenated and ventilated using Bag and Mask, OP / NP airway, LMA or ETT where:
  - RSI has been attempted but intubation has not been achieved
  - RSI is not authorised
  - Massive facial trauma is present and RSI is considered unsafe due to the inability to undertake the failed intubation drill
  - RSI is not possible due to lack of intravenous access
  - Upper airway obstruction is present due to a pharyngeal or an impacted foreign body which is unable to be removed using manual techniques and Magill forceps
  - Partial airway obstruction is present and transport by Air Ambulance is required and expertise for alternative techniques are not available.

**Stop**
- **Contraindications**
  - Nil in circumstances where oxygenation and ventilation are not possible using alternative techniques.

**Action**
- Perform Cricothyroidotomy using approved kit.
Acute Coronary Syndrome

Special Notes

- Acute Coronary Syndrome (ACS) is a spectrum of illnesses including:
  - Unstable Angina
  - Non-ST Elevation Myocardial Infarction (NSTEMI)
  - ST-Elevation Myocardial Infarction (STEMI)
- Not all Pts with ACS will present with pain, e.g. diabetic Pts, atypical presentations, elderly Pts.
- The absence of ischaemic signs on the ECG does not exclude AMI. AMI is diagnosed by presenting history, serial ECGs and serial blood enzyme tests.
- Suspected ACS related pain that has spontaneously resolved warrants investigation in hospital.
- The goal of management in ACS is to resolve pain completely if safe to do so. This reduces cardiac workload.
- The IM route of administration is relatively contraindicated in ACS if Pt is eligible for thrombolysis.
- Current evidence suggests transport to a PCI-enabled facility improves Pt outcomes in STEMI transport time < 90mins.
Acute Coronary Syndrome

**Status**
- Acute Coronary Syndrome (ACS)
  - UA
  - NSTEMI
  - STEMI

**Consider**
- Consider the spectrum of illnesses within ACS

**ACS Mx**
- **Action**
  - General Principles of ACS Mx

**Nausea/Vomiting**
- **Action**
  - See CPG A0701

**LVF**
- **Action**
  - See CPG A0406

**Inadequate Perfusion**
- **Action**
  - See CPG A0407

**Arrhythmia Mx**
- **Action**
  - See CPG A0201 VF / Pulseless VT
  - CPG A0402 Bradycardia
  - CPG A0403 Supraventricular Tachyarrhythmias
  - CPG A0404 Ventricular Tachycardia
  - CPG A0405 Accelerated Idioventricular Rhythm
Special Notes

- **GTN** is a potent venodilator that can decrease venous return therefore decreasing right ventricular (RV) filling and fibre stretch with a reduction in cardiac output. The use of **GTN** is contraindicated in Inferior and RV infarcts.

- Up to 50% of Inferior AMIs have RV involvement and cannot compensate to a drop in venous return due to myocardial insufficiency.

- Signs of an Inferior AMI include ST elevation in leads II and III. Bradycardia is not unusual in an Inferior AMI due to the involvement of the right coronary artery and the SA / AV nodes.

- Nitrates are C/I in bradycardia (HR < 50) due to the Pt's inability to compensate to a decrease in venous return by increasing HR to improve cardiac output.
  - C.O. = HR x SV
Acute Coronary Syndrome General Management Principles

**Status**
- ACS

**Assess requirement for:**
- Pain relief/nitrates
- Control of hypertension
- Antiplatelet Rx

**Nitrates**
- **Action**
  - BP > 110
    - GTN 300mcg S/L/Buccal (no prev. admin.) or
    - GTN 600mcg S/L/Buccal
  - If symptoms continue and BP remains > 110
    - Repeat 300 - 600mcg S/L/ Buccal @ 5/60
  - BP > 90
    - GTN Patch 50mg (0.4mg/hr) upper torso / arms
      - If BP falls < 90, remove patch

**Antiplatelet Rx**
- **Action**
  - Aspirin 300mg oral

**Pain Relief**
- **Action**
  - Pain relief as per CPG A0501 Pain Relief
  - Rx until pain free vs < 2/10 pain for non-cardiac Pt

**Hypertension +/- symptoms**
- Systolic BP > 160 or
- Diastolic BP > 100
- Control pain as per CPG A0501 Pain Relief
- GTN 300mcg S/L/Buccal
  - Repeat 300mcg @ 5/60 if hypertension persists
Bradycardia

Special Notes

- **Atropine** is unlikely to be effective in complete heart block.
- If side effects occur during Adrenaline infusion, cease infusion and recommence once side effects resolve titrating to Pt response.
- If no increase in HR, pacing is likely to be required.
- Notify appropriate hospital capable of managing a Pt likely to require pacing.

General Care

- **Adrenaline Infusion**
  - 3mg Adrenaline added to make **50ml** with D5W or Normal Saline.
  - 1ml/hr = 1mcg/min
- If no response from Adrenaline infusion @ 20mcg/min, increasing infusion rate is unlikely to have additional chronotropic effects.
Bradycardia

Status
• Evidence of Bradycardia

Assess
• Perfusion status

Adequate Perfusion
☑ Action
• BLS
• Rx as per < Adequate perfusion if Pt deteriorates

Less than Adequate Perfusion
☑ Action
• Atropine 600mcg IV
  - If no response after 3 - 5/60
  - Repeat 600mcg IV

Adequate Perfusion achieved
☑ Action
• Continue current management
• Transport

Inadequate or Extremely Poor Perfusion persists
☑ Action
• Adrenaline Infusion (3mg/50ml D5W/Normal Saline) commencing @ 5mcg/min. (5ml/hr)
  - Increase by 5mcg/min. @ 2/60 until adequate perfusion/side effects (max. 20mcg/min.)
  - If syringe pump unavailable/malfunction
    - Adrenaline 10mcg IV
      - repeat 10mcg IV @ 2/60 until adequate perfusion/side effects
  • If poor perfusion persists treat as per CPG A0407 Inadequate Perfusion Cardiogenic Causes
<table>
<thead>
<tr>
<th>Special Notes</th>
<th>General Care</th>
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Tachyarrhythmias - Adult

Question: Status
- Tachyarrhythmias

Question: QRS < 0.12 sec
- Rate > 100
- Absent or abnormal p waves
  - SVT (AV nodal rhythms or AVRT)
  - Atrial fibrillation / flutter
  - Sinus tachycardia
  - Atrial tachycardia

Question: QRS > 0.12 sec
- VT > 30 sec
- Rate > 100
- Wide and bizarre
- Generally regular
- AV dissociation / absence of p waves

Question: Adequate Perfusion
- ✔ Action
  - See CPG A0403 SVT

Question: < Adequate Perfusion / Unstable
- ✔ Action
  - See CPG A0403 SVT

Question: Ventricular Tachycardia
- ✔ Action
  - See CPG A0404 VT
## Supraventricular Tachyarrhythmias (SVT)

### General Care

**Valsalva instruction**
- Evidence suggests a greater reversion rate with an abdominal valsalva manoeuvre with the following 3 elements.
  1. **Position**
     - Supine
  2. **Pressure**
     - At least 40mmHg for max. vagal tone. Best achieved with Pt blowing into a 10ml syringe hard enough to move the plunger to create this pressure.
  3. **Duration**
     - At least 15sec. if tolerated by Pt

Ref. G Smith, A Morgans, and M Boyle


### Special Notes

**Symptomatic signs and symptoms**
- Rate related severe or persistent chest pain
- Shortness of breath with crackles

Ref. Ambulance Victoria © Ambulance Victoria © Ambulance Victoria © Ambulance Victoria ©
Supraventricular Tachyarrhythmias (SVT) CPG A0403

**Status**
- SVT

**Adequate perfusion**
- BP > 100

---

**Asymptomatic**

- **Action**
  - Abdominal valsalva manoeuvre

- **Action**
  - BLS

- **Action**
  - If Pt deteriorates, Rx as per Symptomatic or < Adequate Perfusion

---

**Symptomatic**

- **Action**
  - Abdominal valsalva manoeuvre

---

**Reversion**

- **Action**
  - BLS

---

**No Reversion**

- **Action**
  - If > 30/60 transport time and SOB with crackles or chest pain

- **Action**
  - Verapamil 5mg IV given over 1/60
    - Repeat 1mg IV @ 1/60 until either:
      - Arrhythmia reversion
      - BP < 100
      - max. 10mg IV

**Verapamil** is C/I for Pt on Beta blockers

---

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### Special Notes

- A Pt eye opening to pain but not to voice commands would also be likely to be making incomprehensible sounds and making purposeful movements in response to pain. i.e. a GCS of 9, (E2, V2, M5). Sedation should be used cautiously in these Pts.
- The effectiveness of the Pt’s respirations should be continuously monitored.

### General Care

- If wide complex QRS or unsure of diagnosis treat as for CPG A0404 Ventricular Tachycardia.
- Treat Pt symptomatically in accordance with appropriate Guideline and transport for further assessment and treatment.
- If Pt is unconscious or becomes unconscious at any time during treatment, perform immediate synchronised cardioversion.
### Supraventricular Tachyarrhythmias (SVT)

**Status**
- SVT (AV nodal rhythms or AVRT) or Unstable / rapidly deteriorating, SVT, AF, Atrial Flutter

**< Adequate perfusion**
- SVT (AV nodal rhythms or AVRT)
- BP < 100

**Symptomatic**
- **Action**
  - Abdominal valsalva manoeuvre

**> Adequate perfusion**
- **Action**
  - Metaraminol 0.5mg IV given over 1/60
    - Repeat 0.5mg IV @ 2/60 until either:
      - Arrhythmia reversion
      - BP > 100
      - max. 5mg IV delivered
    - If BP increases to > 100
      - Consider Verapamil as per Adequate Perfusion

**Unstable**
- Rapidly deteriorating, altered conscious state (includes SVT, AF, Atrial Flutter)

**Unstable / rapidly deteriorating**
- **Action**
  - Synchronised cardioversion
    - Sedate: Fentanyl 25 mcg IV single dose only + Midazolam 2.5mg IV
      - Repeat Midazolam 2.5mg IV @ 2/60 until Pt does not respond to verbal stimuli but does respond to pain
    - Cardioversion: Biphasic 75J (Monophasic 100J)
      - If unsuccessful repeat using Biphasic 150J (Monophasic 200J then 360J) if required

**Loss of output**
- **Action**
  - As per appropriate CPG

**Reversion**
- **Action**
  - BLS

**No reversion**
- If > 30/60 transport time and SOB with crackles or chest pain

**Reversion**
- **Action**
  - BLS

**Action**
**Ventricular Tachycardia (VT)**

### Special Notes
- A Pt eye opening to pain but not to voice commands would also be likely to be making incomprehensible sounds and making purposeful movements in response to pain, i.e. a GCS of 9, (E2, V2, M5). Sedation should be used cautiously in these Pts.
- The effectiveness of the Pt’s respirations should be continuously monitored.

### General Care
- ALS/QAP crews should consider MICA R/V vs transport to appropriate hospital as these Pts are dynamic and have a potential to deteriorate.
- Pt presenting symptomatic and poorly perfused is likely to require sync. cardioversion prior to **Amiodarone** administration.
- **Amiodarone infusion**
  - Amiodarone 300mg diluted with 30ml D5W or equivalent volume run over 10 - 20/60.
Ventricular Tachycardia (VT)

**Status**
- Confirm Ventricular Tachycardia
  - VT > 30sec.
  - QRS > 0.12sec.
  - Rate > 100
  - Mostly regular
  - A-V dissociation / absence of p waves

**Stable: Adequately perfused**
- **Action**
  - Amiodarone infusion 5mg/kg IV (max. 300mg) over 10 - 20/60 once only
  - Rx as per Unstable if Pt deteriorates
  - Only dilute Amiodarone with D5W

**Unstable / Rapidly Deteriorating**
- **Action**
  - Synchronised cardioversion
    - Sedate: Fentanyl 25 mcg IV single dose only + Midazolam 2.5mg IV
    - Repeat Midazolam 2.5mg IV @ 2/60 until Pt does not respond to verbal stimuli but does respond to pain
    - Cardioversion: Biphasic 150J (Monophasic 200J)
    - If unsuccessful repeat using Biphasic 150J (Monophasic 360J) if required

**Loss of output**
- **Action**
  - As per appropriate CPG

**Reversion**
- **Action**
  - Narrow complex
    - Amiodarone infusion as above (if not already running)
  - Other rhythms
    - Rx as per appropriate CPG
Accelerated Idioventricular Rhythm (AIVR)

Special Notes

- AIVR is usually a benign rhythm but may be associated with AMI, reperfusion or drug toxicity.
- Commonly seen in post cardiac arrest Pts.
- May be associated with Adrenaline administration.
Accelerated Idioventricular Rhythm (AIVR)

**Status**
- AIVR

**Assess**
- Perfusion status

**Adequate Perfusion**
- **Action**
  - BLS
  - Transport

**< Adequate Perfusion**

**No Perfusion**
- **Action**
  - Rx as per CPG A0201
  - Pulseless Electrical Activity

**Ventricular rate < 60**
- **Action**
  - Rx as per CPG A0402
  - Bradycardia

**Ventricular rate 60-100**
- **Action**
  - Normal Saline 250ml IV bolus
  - Repeat 250ml IV if perfusion status not improved

**Ventricular rate > 100**
- **Action**
  - Rx as per CPG A0404
  - Ventricular Tachycardia
Pulmonary Oedema

Special Notes

- This Guideline is primarily directed at cardiogenic pulmonary oedema, secondary to LVF or CCF. Other medical causes of pulmonary oedema should not be treated under this Guideline.

- Non-medical causes include: smoke inhalation/toxic gases, near drowning (aspiration) and anaphylaxis. Pulmonary oedema is likely a result of altered permeability. These causes should be treated with oxygen therapy and assisted ventilations and do not require nitrates.

General Care

- Manage chest pain as per CPG A0401 Acute Coronary Syndrome.
- Frusemide should be used cautiously in the hypotensive Pt.
- Pts with pulmonary oedema presenting with a wheeze should only be managed as per CPG A0601 Asthma if a history of bronchospasm can be confirmed.
- Avoid the use of Salbutamol in the setting of pulmonary oedema where possible.
- Remove GTN patch if BP decreases < 90.
Pulmonary Oedema

Assess
- Consider causes: LVF/CCF, nutritional deficiency, liver disease, renal disease, fluid overload
- Respiratory status

Not Short of Breath
- Action
  - BLS
  - If deteriorates, treat as for Short of Breath

Short of Breath
- Action
  - GTN
  - Frusemide 40mg IV or Pt’s daily dose IV as a single dose (max. 100mg)
  - If alert and anxious - Consider Morphine 1–2mg IV

Full Field Crackles
- Action
  - GTN as per Basal/Midzone Crackles
  - Frusemide 40mg IV or Pt’s daily dose IV as a single dose (max. 100mg)
  - If alert and anxious - Consider Morphine 1–2mg IV
  - Suction if required
  - Provide assisted ventilation with PEEP
  - CPAP if available
  - Intubate if necessary as per CPG A0302 Endotracheal Intubation

Basal/Midzone Crackles
- Action
  - BP > 110
    - GTN 300mcg S/L/Buccal (no prev. admin.) or
    - GTN 600mcg S/L/Buccal
      - If BP > 110 and symptoms continue repeat
        300 - 600mcg S/L/ Buccal @ 5/60
  - BP > 90
    - GTN Patch 50mg (0.4mg/hr) upper torso/arms
  - Frusemide 20 - 40mg IV

No improvement or deteriorates
- Treat as for Full Field Crackles
**Inadequate Perfusion**  
Cardiogenic causes

**Special Notes**
- Any intravenous infusions established under this Guideline must be clearly labelled with the name and dose of any additive drugs and their dilution.
- A Pt presenting with inadequate to extremely poor perfusion resulting from a cardiac event may not always have associated chest pain, e.g. silent myocardial infarction, cardiomyopathy.
- Pts presenting with suspected pulmonary embolus with inadequate to extremely poor perfusion should be managed with this Guideline. Pulmonary embolus is not specifically a cardiac problem but may lead to cardiogenic shock due to an obstruction to venous return and the Pt may require fluid and *Adrenaline* therapy.

**General Care**
- *Adrenaline infusion* > 50mcg/min. may be required to manage these Pts. Ensure delivery system is fully operational (e.g. tube not kinked, IV patent) prior to increasing dose.
- Unstable Pts may require bolus *Adrenaline* concurrently with the infusion.
- *Adrenaline infusion*
  - 3mg *Adrenaline* added to make 50ml with D5W or Normal Saline.
  - 1ml/hr = 1mcg/min
Inadequate Perfusion Cardiogenic causes

**Status**
- Inadequate perfusion: cardiogenic causes

**Stop**
- Manage other causes, e.g. arrhythmia, pain, hypovolaemia

**Assess**
- Signs of pulmonary oedema (crackles)

**Crackles**
- **Action**
  - Adrenaline infusion as per Inadequate or Extremely Poor Perfusion

**No Crackles**
- **Action**
  - Normal Saline 250ml IV
    - Repeat 250ml IV if chest clear and Inadequate or Extremely Poor Perfusion persists

**Inadequate or Extremely Poor Perfusion persists**
- **Action**
  - Adrenaline infusion (3mg/50ml D5W/Normal Saline) commencing @ 5mcg/min. (5ml/hr)
    - Increase by 5mcg/min. @ 2/60 until adequate perfusion/side effects
    - If poor perfusion persists, reassess Pt and delivery system prior to increasing rate beyond 50mcg/min
    - If syringe pump unavailable/malfunction:
      - Adrenaline 10mcg IV
        - Repeat 10mcg @ 2/60 until adequate perfusion/side effects
        - If poor response
          - Adrenaline 50 - 100mcg IV as required
          - NB. Doses > 100mcg may be required
    - If chest clear continue Normal Saline 250ml IV boluses up to 20ml/kg
Inadequate Perfusion Secondary to Erectile Dysfunction Agents and GTN Administration

Special Notes

- Erectile Dysfunction agents for the purposes of this Guideline are PDE5 inhibitors such as Viagra, Cialis and Levitra.
- The combination of these drugs with GTN can cause a dramatic drop in BP.
Inadequate Perfusion Secondary to Erectile Dysfunction Agents and GTN Administration

**Status**

- Concurrent use of erectile dysfunction agents and *Glyceryl Trinitrate*

**Assess / Consider**

- Perfusion status
- Exclude / Rx other causes, e.g. hypovolaemia, arrhythmia, pain

**Inadequate or Extremely Poor Perfusion persists?**

**Action**

- **Metaraminol Bitartrate 0.5mg IV** given over 1/60
  - Repeat 0.5mg IV @ 2/60 until either:
    - BP > 100
    - max. 5mg IV is given
  - If BP has not responded to max. dose, discuss Mx with receiving hospital
**Fentanyl IN preparation**

**Fentanyl IN 900mcg/3ml preparation**

All Adult doses must be prepared from 900mcg/3ml in a 1ml syringe

<table>
<thead>
<tr>
<th></th>
<th>Age &lt; 60 or Wt. &gt; 60kg</th>
<th>Age &gt; 60 or Wt. &lt; 60kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial dose</td>
<td>200mcg</td>
<td>100mcg</td>
</tr>
<tr>
<td>Volume</td>
<td>0.75ml</td>
<td>0.45ml</td>
</tr>
<tr>
<td>Subsequent dose</td>
<td>50mcg</td>
<td>50mcg</td>
</tr>
<tr>
<td>Volume</td>
<td>0.25ml</td>
<td>0.25ml</td>
</tr>
</tbody>
</table>

All doses include 0.1ml to account for atomiser dead space. Doses have been rounded to the nearest 0.05ml.

To administer **IN Fentanyl**, draw up desired volume according to dose table for the corresponding weight and age then atomise into Pt’s nostril.

The max. amount to be atomised into any nostril is 1ml. In some instances it may be appropriate to administer half of the volume into each nostril as optimal absorption occurs with volumes of 0.3 - 0.5ml. This is also dependent on Pt compliance.

---

**Special Notes**

- The max. dose of **Methoxyflurane** is 6ml per 24hr. period.
- If IV access is not available, or delayed, consider intranasal **Fentanyl** and/or **Methoxyflurane**.
- Exercise caution if using **Fentanyl** and **Morphine** in combination. Smaller doses will be required.
- If respiratory depression occurs due to narcotic administration should be managed as per CPG A0707 Management of Overdose.
- Pts with undiagnosed headache (i.e. new onset, sudden severe headache) cannot be given **Morphine** by Ambulance Paramedics without consultation with a Medical Officer at the receiving hospital. MICA Paramedics may administer **Morphine** or **Fentanyl** in this setting without consultation.

**Special Notes**

- ALS Paramedics must consult prior to exceeding the **20mg max.** dose of **Morphine** and administer according to Pt need or the onset of adverse side effects.
- The effect of **Morphine IM** on pain relief is slow and variable. This route must be used as a last resort and strictly within indicated Guidelines.
- Do not administer IM medications if Pt likely to receive thrombolysis.
- Narcotic pain relief should not be administered during late second stage of labour. In the event of precipitous delivery following narcotic analgesia, consult with the Royal Children’s Hospital regarding the appropriate use of **Naloxone** for the newborn.
Pain Relief

Status
- Complaint of pain

Assess
- Pain score > 2
- Determine requirement for non IV therapy vs IV

Non IV therapy
- Pain likely to be controlled by non IV therapy or
- Unable to obtain IV

✓ Action
- Consider Methoxyflurane and/or Fentanyl IN if appropriate or while establishing IV access
- Methoxyflurane 3ml
  - Repeat 3ml if required (max. 6ml)
- Fentanyl IN
  - If age < 60 and > 60kg: Fentanyl 200mcg IN
    - Repeat up to 50mcg IN @ 5/60 titrated to pain or side effects (max. dose 400mcg)
  - If age > 60 and/or < 60kg: Fentanyl 100mcg IN
    - Repeat up to 50mcg IN @ 5/60 titrated to pain or side effects (max. dose 200mcg)

  If pain not controlled by above Rx as per IV therapy

IV therapy
- Pain may require IV narcotic and ongoing therapy

✓ Action
- Morphine up to 5mg IV
  - Repeat up to 5mg IV @ 5/60 (max. 20mg) titrated to pain or side effects
- Unable to obtain IV access
  - > 60kg: Morphine 10mg IM
    - Repeat 5mg IM after 15/60 (once only) if required
  - < 60kg: Morphine 0.1mg/kg IM
    - Single dose only - consult for further dose

✓ Morphine as above - no max. dose

If allergic to Morphine
- Fentanyl 25 - 50mcg IV
  - Repeat 25 - 50mcg IV @ 5/60 titrated to pain or side effects

Nausea
✓ Action
- Rx as per CPG A0701 Nausea and Vomiting
**Asthma**

**Status**
- Respiratory distress

**Assess**
- Severity of Asthma / COPD presentation

**Mild/Moderate/Severe**
- ✔ Action
  - See CPG A0601

**Exacerbation of COPD**
- ✔ Action
  - See CPG A0601

**Unconscious**
- ✔ Action
  - See CPG A0601

**No cardiac output**
- ✔ Action
  - Loses cardiac output
    - See CPG A0601
  - PEA as per CPG A0201

**Stop**

**Consider**

**Action**

**MICA Action**
Asthma

**Special Notes**

- Asthmatic Pts are dynamic and can show initial improvement with treatment then deteriorate rapidly.
- Consider MICA support but do not delay transport waiting for backup.
- Despite hypoxaemia being a late sign of deterioration, pulse oximetry should be used throughout Pt contact (if available).
- An improvement in SpO₂ may not be a sign of improvement in clinical condition.
- Beware of Pt presenting wheeze associated with heart failure and no asthma / COPD Hx.
- pMDI = Pressurised Metered Dose Inhaler

**General Care**

- **Salbutamol infusion**
  - 1mg Salbutamol added to make 50ml with D5W or Normal Saline.
  - 15mcg/min. = 45ml/hr
**Asthma CPG A0601**

**Status**
- Respiratory distress

**Assess**
- Severity of distress
- If Pt’s asthma Mx plan has been activated

**Mild or Moderate**
**Action**
- Salbutamol pMDI and spacer
  - Deliver 4 puffs @ 4/60 until resolution of symptoms
- If pMDI spacer unavailable
  - Salbutamol 10mg (5ml) Nebulised
  - Repeat 5mg (2.5ml) Nebulised @ 5/60 if required

**Severe**
**Action**
- Salbutamol 10mg (5ml) and Ipratropium Bromide 500mcg (2ml) Nebulised
  - Repeat Salbutamol 5mg (2.5ml) Nebulised @ 5/60 if required
- Salbutamol 250mcg IV
  - Repeat 125mcg IV @ 5/60 if required (max. 500mcg)
- Dexamethasone 8mg IV
  If unimproved
- Salbutamol infusion IV @ 15mcg/min. (45ml/hr)

**Adequate Response**
**Action**
- Transport with continued reassessment

**No Significant Response after 10/60**
**Action**
- Rx as per Severe
**COPD** Chronic Obstructive Pulmonary Disease

**Status**
- Exacerbation of COPD

**All exacerbations of COPD**

- **Action**
  - **If Severe**
    - Treat as per appropriate section of **CPG A0601 Asthma**
  - Irrespective of severity
    - **Salbutamol 10mg + Ipratropium Bromide 500mcg Nebulised**
  - **Dexamethasone 8mg IV**

**Adequate response**
- **Action**
  - Titrate O₂ flow to target SpO₂ 90%
  - Consider low flow O₂, e.g., Nasal Prong O₂

**Inadequate response**
- **Action**
  - Continue Mx as per **CPG A0601 Asthma**
**Special Notes**

- High EtCO₂ levels should be anticipated in the intubated asthmatic Pt. EtCO₂ levels of 120mmHg in this setting is considered safe, and managing ventilation should be conscious of the effect of gas trapping when attempting to reduce EtCO₂.
- Extreme care must be taken with assisted ventilation as gas trapping and barotrauma occurs easily in asthmatic Pts with already high airway pressures.
Asthma

**Status**

- Unconscious / Becomes Unconscious
  - with poor or no ventilation but still with cardiac output

**Action**

- Rx as per Severe Respiratory Distress

**Adequate Response**

- Rx as per Severe Respiratory Distress

**Inadequate Response**

- If unable to gain IV or unaccredited in IV Salbutamol
  - Adrenaline 300mcg IM (1:1,000)
  - Repeat 300mcg IM @ 20/60 as required (max. 900mcg IM)
  - Rx as per Severe Respiratory Distress
  - Consider intubation per CPG A0302 Endotracheal Intubation

- If Pt loses output at any stage, see CPG A0601
Special Notes

- Consider potential for tension pneumothorax and Mx.
- Due to high intrathoracic pressure due to gas trapping, venous return is lost and Pt may lose cardiac output. Apnoea allows the gas trapping to decrease.
**Asthma**

**Status**
- Pt loses cardiac output
  - especially during assisted ventilation and bag becomes stiff

**Pt requires immediate intervention**
- **Action**
  - Apnoea 1 min
    - Exclude tension pneumothorax
    - Gentle lateral chest pressure
    - Prepare for potential resuscitation

**Cardiac output returns**
- **Action**
  - Treat as per CPG A0601

**Cartoid pulse, no BP**
- **Action**
  - Adrenaline 50mcg IV
    - Repeat 50 - 100mcg IV @1/60 as required
  - Normal Saline 20ml/kg IV

**No return of output**
- **Action**
  - Mx as per appropriate Guideline
Nausea and Vomiting

**Special Notes**
- **Prochlorperazine** must only be administered via the IM route. **Metoclopramide** and **Prochlorperazine** should not be administered in the same episode of Pt care without medical consultation with the receiving hospital.
- Antiemetics should never be administered if the Pt has been suspected of taking an oral drug overdose. This will increase the absorption of the ingested substance.

**General Care**
- If there are no contraindications and the IV route is unobtainable with a long transport time, then administer **Metoclopramide IM**.
- If nausea and vomiting tolerated, basic care and transport is the only required treatment.
- Take care with **Metoclopramide** Polyamp as it is similar to **Ipratropium Bromide** and **Atropine** Polyamps in appearance.
Nausea and Vomiting

**Prophylaxis for:**
- Potential for motion sickness
- Planned aeromedical evacuation

**Action**
- Prochlorperazine 12.5mg IM

**Prochlorperazine must never be given IV**

**Prophylaxis for:**
- Awake Pt (GCS 13 – 15) with suspected spinal injuries who are immobilized on the stretcher
- Eye trauma
  - e.g. penetrating eye injury, hyphema

**Action**
- Metoclopramide 10mg IV/IM
  - Repeat 10mg IV/IM after 10/60 if symptoms persist (max. 20mg)

**Prochlorperazine must never be given IV**

**Assess for:**
- Nausea and vomiting or
- Spinal cord injury / Eye trauma or
- Potential motion sickness

**Prophylaxis for:**
Nausea and vomiting associated with:
- Cardiac chest pain
- Iatrogenic secondary to narcotic analgesia
- Previous diagnosed migraine
- Secondary to cytotoxic drugs or radiotherapy
- Severe gastroenteritis

**Action**
- Metoclopramide 10mg IV/IM
  - Repeat 10mg IV/IM after 10/60 if symptoms persist (max. 20mg)
  - If known allergy or contraindication to Metoclopramide
    - Prochlorperazine 12.5mg IM

**Prochlorperazine must never be given IV**

If dehydrated

**Action**
- Manage as per CPG A0801 Hypovolaemia
Hypoglycaemia

Special Notes
- Pt may be aggressive during management.
- Ensure IV patent before administering Dextrose. Extravasation of Dextrose can cause tissue necrosis.
- Ensure sufficient advice on further management and follow-up if Pt refuses transport.

General Care
- If Pt’s next meal more than 20 min. away, encourage the Pt to eat a long acting carbohydrate (e.g. sandwich, piece of fruit, glass of milk) to sustain BGL to next meal.
- If adequate response, maintain initial Mx and transport.
- If the Pt refuses transport, repeat the advice for transport using friend/relative assistance. If Pt still refuses transport, document the refusal, and leave Pt with a responsible third person and advise the third person of actions to take if symptoms re-occur and of the need to make early contact with LMO for follow up.
- If inadequate response transport without undue delay.
- Maintain general care of unconscious Pt and ensure adequate airway and ventilation.
- Further dose of Dextrose 10% may be required in some Hypoglycaemic episodes. Consider consultation if BGL remains less than 4 mmol/L and unable to administer oral carbohydrates
- Continue initial Mx and transport.
Hypoglycaemia

Status
- Evidence of probable Hypoglycaemia
  - e.g. Hx diabetes, unconscious, pale, diaphoretic

Assess
- BGL

BGL > 4
✔ Action
  • BLS
  • Consider other causes of altered conscious state
    - e.g. stroke, seizure, hypovolaemia

BGL < 4 Responds to commands
✔ Action
  • Glucose 15g Oral

BGL < 4 Does not respond to commands
✔ Action
  • IV cannula in a large vein
  ✔ Confirm IV patency
  • Dextrose 10% 15g (150ml) IV
    - Normal Saline 10ml flush
  • If IV access not possible/unsuccessful – Glucagon 1mg (1 IU) IM

Adequate response
✔ Action
  • Consider transport

Poor response
✔ Action
  • Consider Dextrose IV or Glucagon IM

Inadequate response
✔ Action
  • Repeat Dextrose 10% 10g (100ml) IV titrating to Pt conscious state
  - Normal Saline 10ml flush

Adequate response
- GCS 15
  ✔ Action
  • Cease Dextrose if still being given

BGL > 4
✔ Action
  • BLS

BGL < 4 Responds to commands
✔ Action
  • Glucose 15g Oral

BGL < 4 Does not respond to commands
✔ Action
  • IV cannula in a large vein
  ✔ Confirm IV patency
  • Dextrose 10% 15g (150ml) IV
    - Normal Saline 10ml flush
  • If IV access not possible/unsuccessful – Glucagon 1mg (1 IU) IM

Adequate response
✔ Action
  • Consider transport

Poor response
✔ Action
  • Consider Dextrose IV or Glucagon IM

Inadequate response
✔ Action
  • Repeat Dextrose 10% 10g (100ml) IV titrating to Pt conscious state
  - Normal Saline 10ml flush
Continuous Tonic-Clonic Seizures

General Care

- Frequent errors in drug dosage administration occur within AV in this Guideline.
- Ensure accurate dose calculation and confirm with other Paramedics on scene.
- **Midazolam** can have pronounced effects on BP, conscious state and airway tone.
- Calculate the dose each time as stock strength may change with manufacturer and familiarity may lead to errors.

Special Notes

- For seizures other than generalised tonic-clonic seizures, **Midazolam** may only be administered following medical consultation.
- Seizures may not always present with tonic-clonic limb activity, e.g. unconsciousness with flicking eye movements (nystagmus) may indicate ongoing seizure activity.
- If a single seizure has spontaneously terminated continue with initial management and transport.
- If Pt has a past history of seizures and refuses transport, leave them in the care of a responsible third party. Advise the person of the actions to take for immediate continuing care if symptoms reoccur, and the importance of early contact with their primary care physician for follow-up.

Adult Dosage Calculation for Midazolam IM

<table>
<thead>
<tr>
<th>Strength required</th>
<th>×</th>
<th>Stock volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock strength</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.g. 80kg Pt @ 0.1mg/kg = 8mg</td>
<td>8mg</td>
<td>Stock strength 15mg/3ml</td>
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<tr>
<td>8mg/15mg x 3ml</td>
<td>=</td>
<td>8mg/10mg x 2ml</td>
</tr>
<tr>
<td>= 0.8 x 1ml</td>
<td>=</td>
<td>0.8 x 2ml</td>
</tr>
<tr>
<td>Dose required</td>
<td>=</td>
<td>1.6ml</td>
</tr>
<tr>
<td></td>
<td>=</td>
<td>1.6ml</td>
</tr>
</tbody>
</table>

CPG A0703

CPG A0302 Endotracheal Intubation
Continuous Tonic-Clonic Seizures

- **Assess / Manage**
  - Protect Pt
  - Continuously monitor airway and ventilation - assist as required
  - Consider other causes e.g. BGL
  - Consider Pt's own management plan and treatment already given

- **Action**
  - Age > 60 - Midazolam 0.05mg/kg IM
  - Age < 60 - Midazolam 0.1mg/kg IM (max. single dose 10mg)

- **Status**
  - Continuous recurrent seizures

- **Assess / Manage**
  - Consider other causes e.g. BGL
  - Consider Pt's own management plan and treatment already given

- **Action**
  - Midazolam 0.05mg/kg IM
  - Repeat 0.05mg/kg IV @ 2 - 5/60 as required
  - max. combined dose IM + IV 0.25mg/kg
  - Consult for further doses
  - Consider intubation as per CPG A0302

- **Pancuronium contraindicated**

- **Seizure activity ceases**
  - BLS
  - Monitor airway and BP

- **Seizure activity continues > 5/60**
  - IV access / accreditation

- **Action**
  - Midazolam 0.05mg/kg IV
  - Repeat 0.05mg/kg IV @ 2 - 5/60 as required
  - max. combined dose IM + IV 0.25mg/kg
  - Consult for further doses
  - Consider intubation as per CPG A0302

- **Seizure activity continues > 10/60**
  - No IV access / no accreditation

- **Action**
  - Repeat original Midazolam IM dose once only
  - Consult for further doses
  - Monitor airway and BP
Special Notes

- All Pts with suspected anaphylaxis must be transported to hospital regardless of the severity of their presentation or response to management.
- Angio-oedema (vascular oedema) leads to increased tissue fluid, presenting as swelling, upper airway obstruction (throat tightness), orbital oedema and other systemic signs of swelling.
- Identify history of exposure to substances known to cause anaphylactic reaction, e.g. recent insect bite, medications, exposure to food known to cause anaphylactic reaction and presenting with evidence of systemic involvement.
- Research indicates most deaths from anaphylaxis occurred with a delay in administration of Adrenaline in severe reactions.
**Anaphylaxis CPG A0704**

**Status**
- Evidence of anaphylaxis
- Exposure to foreign antigen

**Assess for Systemic Involvement**
- Angio-oedema or
- Urticaria or
- GIT disturbance

**Assess Physiological Distress**
- Respiratory distress / bronchospasm or
- Less than Adequate Perfusion or
- Altered Conscious State

---

**Mild**
- No Physiological Distress
- Local allergic reaction e.g. red rash / itchy

**Moderate**
- < Borderline to Inadequate Perfusion

**Action**
- Monitor Pt for cardiac arrhythmias
- Adrenaline 300mcg IM (1 : 1,000)
  - Repeat 300mcg IM @ 5/60 until satisfactory results or side effects occur
- Treat bronchospasm as per A0601 Asthma
- Consider fluid as per CPG A0801 Hypovolaemia
  - Dexamethasone 8mg IV

**Severe**
- Extremely Poor Perfusion

**Action**
- Treat as per Moderate
  - Adrenaline 50 mcg IV (1 : 10,000)
    - Repeat 50 - 100 mcg IV @ 1/60 until satisfactory results or side effects occur
  - IV fluid as per CPG A0801 Hypovolaemia
  - Dexamethasone 8mg IV
  - If no IV access Rx as per Moderate
  - If no IV access consider I/O
  - If intubated
    - Adrenaline 200mcg via ETT @ 5/60
Inadequate Perfusion Non-cardiogenic / Non-hypovolaemic

**Special Notes**
- Any infusions established under this Guideline must be clearly labelled with the name and dose of any additive drugs and their dilution.
- Sepsis criteria are relevant in the presence of an infection or severe clinical insult such as multi trauma leading to SIRS (Systemic Inflammatory Response Syndrome).
  - 2 or more of:
    - Temp > 38˚ or < 36˚
    - HR > 90
    - RR > 20
    - BP < 90

**General Care**
- Adrenaline infusion > 50mcg/min. may be required to manage these Pts. Ensure delivery system is fully operational (e.g., tube not kinked, IV patent) prior to increasing dose.
- Unstable Pts may require bolus Adrenaline concurrently with the infusion.
- Adrenaline infusion
  - 3mg Adrenaline added to make 50ml with D5W or Normal Saline.
  - 1ml/hr = 1mcg/min.
- If sepsis suspected and prolonged transport times exist, consider consultation for Ceftriaxone 1g IV, Dexamethasone (dose on consult)
Inadequate Perfusion Non-cardiogenic / Non-hypovolaemic

Status

- Suspected Sepsis
- Other causes of non-cardiogenic, non-hypovolaemic shock

Assess

- Perfusion status
- Sepsis criteria
- Other possible causes

Inadequate or Extremely poor perfusion

Action

- Normal Saline up to 20ml/kg IV

Adequately Perfusion

Action

- BLS

Inadequate or Extremely Poor Perfusion persists

Action

- Adrenaline infusion (3mg/50ml D5W/Normal Saline) commencing @ 5mcg/min. (5ml/hr)
  - Increase by 5mcg/min. @ 2/60 until adequate perfusion/side effects
  - If poor perfusion persists, reassess Pt and delivery system prior to increasing rate beyond 50mcg/min
  - If syringe pump unavailable/malfunction
    - Adrenaline 10mcg IV
      - repeat 10mcg @ 2/60 until adequate perfusion/side effects
      - If poor response
        - Adrenaline 50 - 100mcg IV as required
        - NB. Doses > 100mcg may be required
  - If chest clear, continue Normal Saline 20ml/kg IV boluses as per CPG A0801 Hypovolaemia
Meningococcal Septicaemia

Special Notes
- Meningococcal is transmitted by close personal exposure to airway secretions/droplets.
- Ensure face mask protection especially during intubation/suctioning.
- Ensure medical follow up for staff post exposure.

General Care

Ceftriaxone preparation
- Dilute Ceftriaxone 1g with 9.5ml of water for injection and administer 1g IV over approximately 2/60.
- If unable to obtain IV access, or not accredited in IV cannulation, dilute Ceftriaxone 1g with 3.5ml 1% Lignocaine HCL and administer 1g IM into the upper lateral thigh or other large muscle mass.
Meningococcal Septicaemia

- **Status**
  - Possible meningococcal septicaemia

- **PPE**

- **Confirm Meningococcal Septicaemia**
  - Typical purpuric rash
  - Evidence of septicaemia
    - Headache, fever, joint pain, altered conscious state, hypotension and/or tachycardia

- **IV Access**
  - **Action**
    - **Ceftriaxone 1g IV**
      - Dilute with water for injection to make 10ml
      - Administer slowly over \(\frac{2}{60}\) minutes
  - **No IV Access**
    - Unable to gain
    - Not IV accredited
    - **Action**
      - **Ceftriaxone 1g IM**
        - Dilute with 3.5ml 1% Lignocaine HCL to make 4ml
        - Administer into upper lateral thigh or other large muscle mass
### General Care

- **Provide Supportive Care (all cases)**
  - Provide appropriate airway management and ventilatory support
  - If Pt is in an altered conscious state, assess random blood glucose and if necessary manage as per CPG A0801 Hypoglycaemia
  - If Pt is bradycardic with poor perfusion manage as per CPG A0402 Bradycardia
  - If Pt is inadequately perfused, manage as per CPG A0801 Hypovolaemia
  - Assess Pt temp. and manage as per CPG A0901 Hypothermia / Cold Injury, or CPG A0902 Environmental Hyperthermia / Heat Stress

### General Care

- Confirm clinical evidence of substance use or exposure
  - Identify which substance/s are involved and collect if possible.
  - Identify by which route the substance/s had been taken (e.g. ingestion).
  - Establish the time the substance/s were taken.
  - Establish the amount of substance/s taken.
  - What were the substance/s mixed with when taken (e.g.: alcohol, water)?
  - What treatment has been initiated prior to Ambulance arrival (e.g. induced vomiting)?
Management of Overdose

Status
• Suspected overdose

Assess
• Substance involved

Narcotics
• Heroin
• Morphine
• Codeine
• Other narcotic preparations

TCA Antidepressants
• Amitriptyline
• Nortriptyline
• Dothiepin

Sedatives
• GHB
• Alcohol
• Benzodiazepines
• Volatile agents

Psychostimulants
• Cocaine
• Amphetamines
General Care

- If inadequate response after 10/60, Pt is likely to require transport without delay.
  - Maintain general care of the unconscious Pt and ensure adequate airway and ventilation.
  - Consider other causes e.g. head injury, hypoglycaemia polypharmacy overdose.
  - Beware of Pt becoming aggressive.

Special Notes

- Narcotics may be in the form of IV preparations such as Heroin or Morphine and oral preparations such as Codeine, Endone, MS Contin. Some of these drugs also come as suppositories.
- Not all narcotic overdoses are from IV administration of the drug.
Management of Overdose: Narcotics

- **Status**
  - Possible narcotic overdose

- **Stop**
  - Ensure personal / crew safety
  - Scene may have concealed syringes

- **Assess evidence of narcotic overdose**
  - Altered conscious state
  - Pin point pupils
  - Respiratory depression
  - Track marks
  - Substance involved
  - Exclude other causes (inc. no obvious head injury)

- **Narcotic overdose**
  - **Action**
    - Assist and maintain airway/ventilation
    - Naloxone 1.6mg – 2mg IM

- **Adequate response**
  - **Action**
    - BLS
    - Consider transport

- **Inadequate response after 10/60**
  - **Action**
    - Naloxone 0.8 mg IM
    - Consider airway Mx CPG A0301 Laryngeal Mask
    - Naloxone 0.8 mg IM or IV
    - Consider airway Mx CPG A0302 Endotracheal Intubation
Special Notes

Signs and Symptoms of TCA Toxicity

- Mild to moderate OD
  - Drowsiness, confusion
  - Tachycardia
  - Slurred speech
  - Hyperreflexia
  - Ataxia
  - Mild hypertension
  - Dry mucus membranes
  - Respiratory depression

- Severe toxicity (within 6hr. ingestion)
  - Coma
  - Respiratory depression/hypoventilation
  - Conduction delays
  - Premature Ventricular Contractions (PVCs)
  - SVT
  - VT
  - Hypotension
  - Seizures
  - ECG changes

This could lead to aspiration, hyperthermia, rhabdomyolysis and acute pulmonary oedema.

Special Notes

ECG changes

ECG changes include prolonged PR, QRS and QT intervals associated with an increased risk of seizures if QRS > 0.10 sec. and ventricular arrhythmias if QRS > 0.16 sec.

How to measure a QT interval is shown below.

\[ QT = \sqrt{RR} \]

P wave (0.08 - 0.10 s)  
QRS (0.06 - 0.10 s)  
P-R interval (0.12 - 0.20 s)  
Q-Tc interval (≤ 0.44 s)*

* \[ QT_c = \frac{QT}{\sqrt{RR}} \]
Management of Overdose: Tricyclic Antidepressants (TCA)

**Status**
- Possible TCA overdose

**Assess**
- Substance involved
- Perfusion status
- ECG criteria

**No toxicity**
- Action
  - BLS
  - Consider potential to develop signs of toxicity

**Signs of TCA toxicity**
- Any of the following
  - Less than adequate perfusion
  - QRS > 0.12 sec. (> 0.16 sec. indicates severe toxicity)
  - QT prolongation (> 1/2 R-R interval)

**Action**
- Sodium Bicarbonate 8.4% 100ml IV given over 3/60
  - Repeat 100ml IV after 10/60 if signs of toxicity persist
  - Severe cases may require continuing doses - Consult
- Consider Intubation as per CPG A0302 Endotracheal Intubation if signs of toxicity and GCS < 10 persist after initial Mx
  - Hyperventilate with 100% O₂ - rate 20 - 24bpm
  - EtCO₂ target 20-25mmHg if intubated
**Special Notes**

- If Pt still refuses transport after repeating the advice for transport using friend/relative assistance, advise the Pt and responsible third person of follow-up, counselling facilities and actions to take for continuing care if symptoms reoccur.

- For young persons, Paramedics should strongly encourage them to make contact with a responsible adult.

- Paramedics should call the Police if in their professional judgement there appears to be factors that place the Pt at increased risk, such as:
  - is subject to violence (e.g. from a parent, guardian or care giver)
  - is likely to be, or is in danger of sexual exploitation

  In particular for children where:
  - the supply of drugs appears to be from a parent/guardian/care giver.
  - there is other evidence of child abuse/maltreatment or evidence of serious untreated injuries.

- If Pt claims to have taken an overdose of a potentially life-threatening substance then they must be transported to hospital. Police assistance should be sought to facilitate this as required.

- Documentation of refusal and actions taken must be recorded on the PCR.

---

**Special Notes**

- If a young person makes it known they are involved with DHS Child Protection and they give permission, an attempt should be made on their behalf to contact the young person’s Child Protection practitioner, Region or Child Protection After Hours Service (24hr. on 131 278) to advise of the Ambulance attendance and treatment. The intent is to make arrangements for ongoing care for this Pt. Such contact is best made through the senior clinician in operations/communication centre.

- In such situations if the Police are contacted, they will notify Department of Human Services Child Protection if they believe the young person is in need of protection.

- **Hyperthermic psychostimulant OD**

  In hyperthermic psychostimulant OD the trigger point for intervention in the Mx of agitation/aggression is lowered. Sedation should be initiated early to assist with cooling and avoid further increases in temp. associated with agitation.
Management of Overdose: Sedative Agents/Psychostimulants

**Status**
- Sedative agents
- Psychostimulants

**Assess**
- Substance involved

**Sedative agents**
- Be aware for potential for agitation / aggression particularly in GHB / volatile substance abuse
- Pt may require airway management
- Manage agitation / aggression as per CPG A0708 The Agitated Patient

**Psychostimulants**
- Be aware of potential for violent behaviour, particularly with Methamphetamines
- Reduce stimulus by calming and controlling Pt environment
- Manage seizures as per CPG A0703 Continuous Tonic-Clonic Seizures
- Manage cardiac chest pain as per CPG A0401 Acute Coronary Syndrome
- Manage temp. as per CPG A0902 Hyperthermia/Heat Stress or A0901 Hypothermia / Cold exposure
- Manage agitation / aggression as per CPG A0708 The Agitated Patient
The Agitated Patient

**Special Notes**
- This Guideline does not apply to Pts who have been recommended for transport under the Mental Health Act. If sedation is required in these circumstances then the Act requires that this only be administered by a prescribed Medical Practitioner or Registered Nurse.
- The indications for the use of sedation and/or restraint must be clearly documented on the PCR.
- Mechanical restraint may also be utilised without the use of sedation in circumstances where the Pt will not sustain further harm by fighting against the restraints.
- Mechanical restraints must be removed if there is any indication that the restraint is compromising the provision of supportive care.
- The type of restraint used and its time of application and/or removal must be clearly documented on the PCR.

**Hyperthermia**
- Sedation should be initiated early in hyperthermic Pts who have been using psychostimulants to assist with cooling and avoid further increases in temp. secondary to agitation.

**General Care**
- Paramedic safety is to be considered paramount at all times. Do not attempt any element of this Guideline unless all necessary assistance is available.
- Provide supportive care in all cases where sedation administered.
- Provide airway management appropriate to the clinical condition, administer oxygen to all Pts and assist ventilation as required.
- If less than adequate perfusion manage as per CPG A0705 Inadequate Perfusion (Non-cardiogenic / Non-hypovolaemic).
- Continue to assess Pt temp. and manage as per CPG A0902 Environmental Hyperthermia / Heat Stress, or CPG A0901 Hypothermia / Cold Injury.
- If not already completed, ensure that all possible clinical causes of agitation are assessed and managed by the appropriate Guideline.

**Head Injury**
- In Pts with mild to moderate head injury (GCS 10 - 14), sedation cannot be given without medical consultation with a Major or Regional Trauma Service.
**The Agitated Patient**

**Status**
- Agitated Pt

**Stop**
- Observe for and manage as appropriate
  - Hazards - Body fluids
  - Violence - Sharps
  - Clear egress - Reduce stimuli
  - Paramedic safety is paramount

**Assess/Consider**
- Assess and manage clinical causes (as far as possible)
  - Hypoglycaemia
  - Hypoxia
  - Post-ictal
  - Drug intoxication
    (initiate sedation early in hyperthermic psychostimulant Pt)

- Drug withdrawal
- Intracerebral pathology
- Mild to moderate head injury
  (consult with MTS for sedation)
- Acute psychiatric condition

**Action**
- Communicate with Pt
  - Avoid confrontational behaviour
  - Gain Pt co-operation for assessment
  - Utilise verbal de-escalation strategies
### Able to Mx without restraint/sedation

**Action**
- **Mx** cause as appropriate
- **Continue** to treat cause of agitation
- Beware Pt condition may change and agitation increase requiring restraint/sedation

### Requires restraint/sedation

**Stop**
- Ensure Pt is not recommended under the Mental Health Act
- Sedation by Paramedics is contraindicated for these Pts
- Ensure sufficient physical assistance
- Reduced sedation dose for age / BP
- Mild to moderate head injury GCS 10 - 14 (consult for sedation)

**Action**
- **Age > 60 and/or BP < 100**
  - Midazolam 0.05mg/kg IM (max. 5mg per dose)
  - Repeat initial dose @ 10/60 IM (max. 4 doses) as required
- **Age < 60 and BP > 100**
  - Midazolam 0.05 - 0.1mg/kg IM (max. 10mg per dose)
  - Repeat initial dose @ 10/60 IM (max. 4 doses) as required
- **Apply** mechanical restraint devices if required
- Above doses may be given IV and repeated @ 5/60 as required
- IM injections may be indicated until IV access has been established

---

The Agitated Patient CPG A0708  105
Organophosphate Poisoning

**Special Notes**
- Notification to receiving hospital essential to allow for Pt isolation.
- The key word to look for on the label is anticholinesterase. There are a vast number of organophosphates which are used not only commercially but also domestically.
- If a potential contamination by a possible organophosphate has occurred, the container identifying trade and generic names should be identified and the Poisons Information Centre contacted for confirmation and advice.

**General Care**
- Where possible, remove contaminated clothing and wash skin thoroughly with soap and water.
- If possible minimise the number of staff exposed.
- Attempt to minimise transfers between vehicles.
Organophosphate Poisoning

**Status**
- Possible organophosphate exposure

**Stop**
- Avoid self contamination - wear PPE
- Pt decontamination if possible

**Confirm evidence of suspected poisoning**
- Cholinergic effects: salivation, bronchospasm, sweating, nausea or bradycardia
- The key word to look for on the label is anticholinesterase

**Evidence of excessive cholinergic effects**
- Salivation compromising the airway or bronchospasm and/or
- Bradycardia with Inadequate or Extremely Poor Perfusion

**No excessive cholinergic effects**

**Action**
- Transport to nearest appropriate hospital
- Monitor for excessive cholinergic effects

**Excessive cholinergic effects**

**Action**
- Atropine Sulphate 1200mcg IV
  - Repeat 1200mcg IV @ 5/10 until excessive cholinergic effects resolve
- Consult with receiving hospital for further management if required

- The use of Suxamethonium Hydrochloride is contraindicated in Pts with suspected Organophosphate Poisoning
**Special Notes**

- Transport the Pt even if the symptoms are relieved as this presentation meets the criteria of Autonomic Dysreflexia, a medical emergency that requires identification of probable cause and treatment in hospital to prevent cerebrovascular catastrophe.
**Autonomic Dysreflexia**

**Status**
- Possible autonomic dysreflexia

**Confirm Autonomic Dysreflexia**
- Previous spinal cord injury at T6 or above
  - Severe headache
  - Systolic BP > 160

**Identify & treat possible causes - remove the stimulus**
- If distended bladder (common), ensure indwelling catheter is not kinked
- Manage pain, e.g. fractures, burns, labour

**If systolic BP remains > 160**

**Action**
- GTN 300mcg S/L/Buccal (nil prev. admin.) or GTN 600mcg S/L/Buccal

**Adequate response**

**Action**
- Transport to nearest appropriate hospital

**Inadequate response - BP remains > 160**

**Action**
- Repeat initial dose of GTN @ 10/60 until either:
  - Symptoms resolve
  - Onset of side effects
  - BP < 160
  - Transport to nearest appropriate hospital
Inadequate Perfusion Associated with Hypovolaemia

General Care

- Titrate fluid administration to Pt response.
- Aim for HR < 100, BP > 100.
- Consider establishing IV en route. Do not delay transport for IV therapy.
- Always consider tension pneumothorax, particularly in the Pt with a chest injury not responding to fluid therapy and persistently hypotensive.
- Excessive fluid should not be given if spinal cord injury is an isolated injury.

Modifying factors

- Complete spinal cord transection Rx as per CPG A0804 Management of Potential Spinal Cord Injury
  - Pt with isolated neurogenic shock can be given up to 500ml Normal Saline bolus to correct hypotension. No further fluid should be given if SCI is the sole injury.

- Chest injury - Consider tension pneumothorax Rx as per CPG A0802 Chest Injury S (Rural)

- Penetrating Trunk Injury, aortic aneurysm or uncontrolled haemorrhage.
  - Accept palpable carotid pulse and transport immediately
Inadequate Perfusion Associated with Hypovolaemia

**CPG A0801**

**Status**
- Evidence of Hypovolaemia

**Stop**
- Identify and manage Haemorrhage, fractures, pain, tension pneumothorax, hypoxia

**Consider Modifying factors/Assess HR/BP**
- SCI, chest injury, penetrating trunk injury, AAA, uncontrolled haemorrhage

**HR<100 BP>100**
- **Action**
  - Fluid not required

**Isolated Tachycardia**
- **Action**
  - HR > 100 BP > 100
  - Normal Saline 20ml/kg IV

**HR>100 and/or BP<100**
- **Action**
  - BP<100 HR>100
  - Action
  - Normal Saline 20ml/kg IV

**BP<100 and/or HR>100**
- **Action**
  - Insert second IV
  - Repeat Normal Saline 20ml/kg IV

**BP remains < 100**
- **Action**
  - After 40ml/kg
  - Consult with MTS
  - If unavailable repeat Normal Saline 20ml/kg IV

**BP remains < 100**
- **Action**
  - After 40ml/kg
  - Consult with MTS
  - If unavailable repeat Normal Saline 20ml/kg IV
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Chest Injuries

Status
- Chest injury
  - Traumatic
  - Spontaneous
  - Iatrogenic

Assess
- Respiratory status
- Type of chest injury

Action
- Supplemental oxygen
- Pain relief as per CPG A0501 Pain Relief
- Position Pt upright if possible unless perfusion is < adequate, altered consciousness, associated barotrauma or potential spinal injury

Flail segment/Rib fractures
- May require ventilatory support if decreased $V_T$

Open chest wound
- 3 sided sterile occlusive dressing

Pneumothorax
- Signs of pneumothorax
- See CPG A0802
**Chest Injuries**

**Special Notes**
- In IPPV setting, equal air entry is **NOT** an exclusion criteria for TPT.
- Chest injury Pts receiving IPPV have a high risk of developing a TPT. Solution for poor perfusion in this setting includes bilateral chest decompression.
- Cardiac arrest Pts are at risk of developing chest injury during CPR.
- Troubleshooting
  - Pt may re-tension as lung inflates if catheter kinks off.
  - Catheter may also clot off. Flush with sterile Normal Saline.
- If a 14G Cannula is used initially, it should be replaced with an intercostal catheter (if available) as soon as practicable.
- **Insertion site for cannula/intercostal catheter**
  - Second intercostal space
  - Mid clavicular line (avoiding medial placement)
  - Above rib below (avoiding neurovascular bundle)
  - Right angles to chest (towards body of vertebrae)

**General Care**
- **Tension Pneumothorax (TPT)**
  - If some clinical signs of TPT are present and the Pt is deteriorating with decreasing conscious state **and/or** poor perfusion, immediately decompress chest by inserting a long 14G cannula or Intercostal Catheter.
  - If air escapes, or air and blood bubble through the cannula/intercostal catheter, or no air/blood detected, leave insitu and secure.
  - If no air escapes but copious blood flows through the cannula/intercostal Catheter then a major haemothorax is present. Remove, then cover the insertion site.
- **Needle Test**
  - If TPT suspected, but the assessment is not obvious, test for a TPT with a needle at least 45mm length (long 14/16G) attached to Normal Saline filled syringe.
  - If needle test is suggestive of TPT, withdraw needle and immediately decompress chest.
  - If needle test is not suggestive of TPT, withdraw needle, cover insertion site with a clear adhesive dressing and circle the insertion site with a pen.
  - Be aware that a needle test for TPT can be prone to false readings and does not exclude TPT in all cases.
Chest Injuries

Status
- Pneumothorax
  - Simple
  - Tension

Assess
- Criteria for Simple vs Tension Pneumothorax

Simple pneumothorax
- Any of the following:
  - Unequal breath sounds in spontaneously ventilating Pt
  - Low SpO$_2$ on room air
  - Subcutaneous emphysema

Action
- Continue BLS and supplemental O$_2$
- Monitor closely for possible development of TPT

Tension pneumothorax (TPT)
- Any of the following +/- signs of Simple Pneumothorax:
  - ↑ Peak inspiratory pressure (ventilator) / stiff bag
  - ↓ EtCO$_2$
  - Poor Perfusion or ↑ HR +/- ↓ BP
  - ↑ Jugular Venous Pressure (JVP)
  - ↓ Conscious state in the awake Pt
  - Tracheal shift
  - Low SpO$_2$ on supplemental O$_2$ (late)

Action
- Chest decompression as per General Care S-Rural
Severe Traumatic Head Injury

General Care

- Dress open skull fractures/wounds with sterile combine soaked in sterile Normal Saline 0.9%.
- Maintain manual in-line neck stabilisation and apply cervical collar when convenient. If intubation is required, apply cervical collar after intubation. Attempt to minimise jugular vein compression.
- Attempt to maintain normal temp.
Severe Traumatic Head Injury CPG A0803

**Status**

- Severe traumatic head injury

**Airway**

- **Action**
  - If airway patent and \( V_T \) adequate (with trismus), do not insert NPA
  - If airway not patent and gag is present, insert NPA and ventilate
  - If GCS < 10, regardless of airway reflexes, intubate as per CPG A0302 Endotracheal Intubation - RSI
  - If intubation is not possible/authorised and gag is absent insert LMA

**Ventilation**

- **Action**
  - Ensure adequate ventilation and \( V_T \) of 10ml/kg
  - Maintain \( \text{SpO}_2 > 95\%\) and treat causes of hypoxia
  - Maintain \( \text{EtCO}_2 \) at 30 - 35mmHg
  - Avoid hypo/hypercapnia

**Perfusion**

- **Action**
  - Manage with Normal Saline as per CPG A0801 Hypovolaemia (unless in the setting of penetrating truncal trauma or uncontrolled overt bleeding)
  - Aim for systolic BP > 120
  - After 40ml/kg reassess. If systolic BP < 100, discuss ongoing resuscitation with the receiving Regional or Major Trauma Service while continuing to transport
  - If consult is unavailable administer a further Normal Saline 20ml/kg IV and reassess

**General Care**

- **Action**
  - Treat sustained seizure activity with Midazolam as per CPG A0703 Continuous Tonic – Clonic Seizures
  - Measure BGL and rectify hypoglycaemia as per CPG A0702 Hypoglycaemia
  - Triage to highest level of care as per Trauma Time Critical Guidelines
Spinal Cord Injury (SCI) Management

Special Notes

• A cervical collar alone does not immobilise the cervical spine. If the neck needs immobilising then the whole spine needs immobilising. This may include the use of “head rolls” or other approved proprietary devices and the whole body immobilised on a spineboard or Ambulance stretcher in a manner that is appropriate for the presenting problem. A spineboard must be restrained to the Ambulance stretcher during transport.
• The head should not be independently restrained.
• In Pts with a diseased vertebral column, a lesser mechanism of injury may result in SCI and should be managed accordingly.
• Spinal immobilisation with neutral alignment may not be possible in a Pt with a diseased vertebral column with associated anatomical deformity and should be modified accordingly e.g. position of comfort.
• Spinal immobilisation is not without risk. Complications may include head and neck pain, detrimental effects on pulmonary function and subsequent neurological deficit (particularly in the elderly).

Special Notes

• If a cervical collar is applied then it must be properly fitted and applied directly to the skin, not over clothing and not placing any pressure on the neck veins.
• Where there is no immediate risk to life and extrication is required then an extrication device (e.g. KED) should be considered.
• Pts with a SCI may develop pressure areas within as little as 30min. following placement on a spine board and the duration on a spine board must therefore be noted on the PCR.
• For transport times in excess of 30min. consideration should be given to removing the Pt from a spineboard and appropriately securing them to the Ambulance stretcher.
• Pts with isolated neurogenic shock should be given a small fluid bolus (up to 500ml Normal Saline IV) to correct hypotension. No further fluid should be given if SCI is the sole injury.
• The Pt with multi trauma and SCI may not mount a sympathetic response to hypovolaemia. Fluid should be given based on estimated blood loss.
Spinal Cord Injury (SCI) Management

**Status**
- Potential SCI

**Assess**
- Major Trauma Criteria

**If Pt Meets Major Trauma Criteria**

**Action**
- Manage airway as appropriate
- Provide spinal immobilisation
- Administer pain relief as required
- Immobilise and support fractures
- Manage hypovolaemia as per CPG A0801 Hypovolaemia
- Transport without delay to an appropriate receiving hospital in accordance with Trauma Triage Guidelines

**Does Not Meet Major Trauma Criteria**

**Action**
- If any of the following present then provide spinal immobilisation
  - Age > 55 years
  - History of bone disease (e.g. osteoporosis, osteoarthritis or rheumatoid arthritis)
  - Unconscious or altered conscious state (GCS < 15) or period of loss of consciousness
  - Drug or alcohol affected
  - Significant distracting injury e.g. extremity fracture or dislocation
  - Spinal column pain / bony tenderness
  - Neurological deficit
- If none of the above present then spinal immobilisation / cervical collar not necessary

- If any doubt exists as to history or the above assessment, or if there is inability to adequately assess the Pt, then spinal immobilisation must be provided

- This Guideline is not to be used for Paediatric Pts

Spinal Cord Injury (SCI) Management CPG A0804
General Care

- Cool burn area
  - Running water if possible
  - Normal Saline or wet combine as substitute
  - Avoid/eliminate shivering
  - Avoid ice or ice water
- Cover cooled area with appropriate dressing
  - Ensure cling wrap is applied longitudinally to allow for swelling.
- Assess Pt temp. and manage as required.
- Cause should be given when considering fluid replacement for Pt with airway burns. Fluid therapy can lead to extensive systemic oedema and airway compromise. Consider early intubation.
- Volume replacement is for burn injury only. Manage other injuries accordingly including requirement for additional fluid.
- Consider additional fluid for major electrical burn.
Adult Burns

**Status**
- Evidence of burn injury

**Assess mechanism of burn and burn injury**
- Assess burn injury
  - Airway injury
  - Degree of burn injury - Refer to Wallace Rule of Nines
  - Burn classification e.g. full/partial thickness

**Initial burn management**
- **Action**
  - Cool burn area
  - Cover cooled area with appropriate dressing
  - Analgesia as per [CPG A0501 Pain Relief](#)
  - Assess Pt temp. and manage as required

**All other burn presentations**
- **Action**
  - BLS/first aid
  - Transport to an appropriate facility

**Partial or full thickness burns > 15%**
- **Action**
  - Normal Saline IV fluid replacement
    - % of burn area x wt (kg) = volume given in ml over 2hr. from time of burn
  - Transport to an appropriate facility
Principles of Fracture Management

- **General principles for Fracture Management**
  - Control external haemorrhage
  - Support the injured area
  - Immobilise the joint above and below the fracture site
  - Evaluate and record neurovascular condition distal to the fracture site
- Provide appropriate pain relief and correct hypovolaemia.
- Appropriate splinting can assist in pain reduction and arrest of haemorrhage.

- **Before and after splinting**
  - Realign long bone fractures in as close to normal position as possible.
  - Open fractures with exposed bone should be irrigated with a sterile isotonic solution prior to realignment and splinting.
  - If joints are involved there is an increased possibility of neurovascular impairment and reduction is not recommended.
  - Femoral shaft fractures and fractures of the upper 2/3 of the tibia and fibula should be managed with a traction splint unless there are distal dislocations or fractures.
- In suspected fractures of the pelvis the legs should be anatomically splinted together (to internally rotate the feet) and the pelvis splinted with a sheet wrap or other appropriate device.
- Pts who meet major trauma criteria are time critical but appropriate splinting should be considered part of essential Ambulance management and should not be compromised in order to decrease time at scene.
Hypothermia/Cold Exposure

Special Notes
- Hypothermia is insidious and rarely occurs in isolation. Where the Pt is in a group environment other members of the group should be carefully assessed for signs of hypothermia.
- Arrhythmia in hypothermia is associated with temp. below 33˚C.
- Atrial arrhythmias, bradycardia, or atrioventricular block do not generally require treatment with anti-arrhythmic agents unless decompensated, and resolve on rewarming.
- Defibrillation and cardioactive drugs may not be effective at temp. below 30˚C. VF may resolve spontaneously upon rewarming.
- The onset and duration of drugs is prolonged in hypothermia and the interval between doses is therefore doubled, for example doses of Adrenaline become 6 minutely.

General Care
- Shelter from wind in heated environment.
- Remove all damp or wet clothing.
- Gently dry Pt with towels / blankets.
- Wrap in warm sheet / blanket - cocoon.
- Cover head with towel / blanket - hood.
- Use thermal / space / plastic blanket if available.
- Only warm frostbite if no chance of refreezing prior to arrival at hospital.
- Assess BGL if altered conscious state.

Warmed fluid
- Normal Saline warmed between 37 - 42˚C should be given to correct moderate / severe hypothermia and maintain perfusion if available. Fluid < 37˚C could be detrimental to Pt.
Hypothermia/Cold Exposure

**Status**
- Hypothermia

**Assess**
- Mild Hypothermia 32 - 35°C
- Moderate Hypothermia 28 - 32°C
- Severe Hypothermia < 28°C
- If alteration to Cardiac Arrest Mx required

**Non cardiac arrest**
- Moderate/Severe Hypothermia < 28 - 32°C
  - Warmed Normal Saline 10ml/kg IV
    - Repeat 10ml/kg IV (max. 40ml/kg) to maintain perfusion
  - Avoid drug Mx of cardiac arrhythmia unless decompensated and until rewarming has commenced

**Cardiac Arrest**
- > 32°C
  - Action
    - Standard Cardiac Arrest Guidelines
- 30 - 32°C
  - Action
    - Double dosage intervals in relevant cardiac arrest Guideline
      - Do not rewarm beyond 33°C if ROSC
- < 30°C
  - Action
    - Continue CPR and rewarming until temp. > 30°C
    - One defibrillation shock only
    - One dose of Adrenaline
      - One dose of Atropine
      - One dose of Amiodarone
      - Withhold NaHCO₃ 8.4% IV
Environmental Hyperthermia  Heat Stress

Special Notes

General Care

- During cooling, Pt should be monitored for the onset of shivering. Shivering may increase heat production and cooling measures should be adjusted to avoid its onset.
- Gentle handling of Pt is essential. Position flat or lateral and avoid head up position to avoid causing arrhythmias.
Environmental Hyperthermia

Heat Stress

CPG A0902

Status

- Hyperthermia / Heat stress

Assess

- Accurately assess temperature
- BGL if altered conscious state
- Perfusion status

Requires active cooling

Action

- Cooling techniques - initiated and maintained until temp. is < 38°C
  - Shelter / remove from heat source
  - Ensure airflow over Pt
  - Remove all clothing except underwear
  - Apply tepid water using spray bottle or wet towels
- Treat inadequate perfusion per CPG A0702 Hypovolaemia
  - Cooled fluid preferable if available
- Treat low BGL as per CPG A0801 Hypoglycaemia
- Airway and ventilation support with 100% O₂ as required

Adequate response

Action

- BLS
- Transport

Poor response after 10/60

Action

- Consider intubation as per CPG A0302 Endotracheal Intubation
  - If intubated, sedation and paralysis essential to prevent shivering and reduce heat production

Requires active cooling

Action

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  - Shelter / remove from heat source
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