Clinical Practice Guidelines
for Paramedics and Intensive Care Paramedics

February 2012
Revised August 2012
Ambulance Tasmania

Copyright © Ambulance Tasmania 2012.

Ambulance Tasmania
Lower Level, 12 Brisbane Street
Hobart, Tasmania 7000
GPO Box 125
Hobart, Tasmania 7001

Disclaimer
All rights reserved. Without limiting the reservation of copyright, no person shall reproduce, store in a retrieval system or transmit in any form, or by any means, part or the whole of the Ambulance Tasmania (AT) Clinical Practice Guidelines (CPG’s) without the prior written permission of AT.

AT accepts no responsibility for any modification, redistribution or use of the CPG’s or any part thereof.

The CPG’s are expressly intended for use by AT paramedics when performing duties and delivering ambulance services for, and on behalf of, AT.

Under no circumstances will AT, its employees or agents, be liable for any loss, injury, claim, liability or damages of any kind resulting from the unauthorised use of, or reliance upon the CPG’s or the contents therein.


While effort has been made to contact all copyright owners this has not always been possible. We would be pleased to hear from any copyright holder who has been omitted or incorrectly acknowledged.
Foreword

The Ambulance Tasmania Clinical Practice Guidelines (CPG) for Paramedics and Intensive Care Paramedics have undergone a major revision to ensure contemporary, evidence-based practice in an easy to read format. This revised format incorporates a flow chart style, colour coding for individual management steps, and distinct separation of Paramedic and Intensive Care Paramedic interventions. It was developed by the Ambulance Victoria (AV) CPG Working Group with specialist advice from the AV Corporate Communications Department, and provided to Ambulance Tasmania (AT) for conceptualisation to AT practice. The design provides greater clarity within each guideline to assist clinical practice. The reformat highlights key details and decision pathways within each Guideline and is intended to reduce risk in Paramedic practice through an improved clarity of the CPGs.

There is a new “language” associated with these Guidelines that is illustrated in the Abbreviations / Colour Chart. It is based on contemporary designs in industry that highlight key information with colour-cognitive triggering, the intention being to remind the user of important details within the Guideline. For example, a red colour is to highlight an aspect of the Guideline that may place the patient at risk or requires an immediate intervention prior to proceeding.

These Guidelines have been recommended by the Tasmanian Ambulance Clinical Council (TACC) and approved by the Chief Executive Officer for use by Paramedics and Intensive Care Paramedics when working for AT. The Guidelines represent a multi disciplinary consensus based on the best available evidence on the management of common emergency medical problems encountered by Paramedics and Intensive Care Paramedics which they are expected to follow under normal circumstances. It is recognised that alternative methods of treatment exist, and that from time-to-time circumstances may arise where the management of a particular patient in a life-threatening situation may require the guidelines to be varied in some aspect. Such variations should only be made after appropriate medical consultation and will be subject to clinical review as part of Ambulance Tasmania’s Clinical Governance processes.
Each CPG clearly outlines the respective practice levels for AT Paramedic and Intensive Care Paramedics. It is important to note that not all Paramedics and Intensive Care Paramedics are credentialed to practise independently at the levels defined within these Guidelines. Staff are responsible for ensuring they only operate within their individually approved scope of practice and should contact the Clinical Services Division for clarification regarding practice approvals if required.

AT would like to acknowledge the support from Ambulance Victoria in developing these guidelines. In addition, it is important to note the exceptional work done by AT staff to conceptualise the document and guidelines to Tasmanian needs. Every effort has been made to ensure the accuracy of these CPGs. They are under constant review in light of changes to evidence based practice. Feedback is welcome as these Guidelines are an evolving product and can be forwarded to cpgfeedback@dhhs.tas.gov.au Proposals for change to the CPGs can be accessed via the New Interventions Policy and will be forwarded to the relevant committee.
### Acknowledgements

#### Members of the AV CPG Working Group

<table>
<thead>
<tr>
<th>Name</th>
<th>Name</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auston Balon-Rotheram</td>
<td>Ben Meadley</td>
<td>Bill Barger</td>
</tr>
<tr>
<td>Kerry Power</td>
<td>Colin Jones</td>
<td>Di Inglis</td>
</tr>
<tr>
<td>Michael Stephenson</td>
<td>Assoc Prof Stephen Bernard</td>
<td>Tony Ginis</td>
</tr>
<tr>
<td>Andrew Burns</td>
<td>Dr. Andrew Bacon</td>
<td>Justin North Coombes</td>
</tr>
<tr>
<td>Assoc Prof Mark Fitzgerald</td>
<td>Dave Garner</td>
<td>Gavin Smith</td>
</tr>
<tr>
<td>Jenny Geer</td>
<td>Cam Asker</td>
<td>Paul Burke</td>
</tr>
<tr>
<td>Ian Jarvie</td>
<td>Andrea Wyatt</td>
<td>Nick Goodwin</td>
</tr>
<tr>
<td>Paul Jennings</td>
<td>George Wilson</td>
<td>Ziad Nehme</td>
</tr>
<tr>
<td>Dr. John Moloney</td>
<td>Elia Petzierides</td>
<td>Yvonne Singer</td>
</tr>
<tr>
<td>Elia Petzierides</td>
<td>Skye Demmler</td>
<td>Grant Hocking</td>
</tr>
<tr>
<td>Lauren Tanzen</td>
<td>Kevin Broadribb</td>
<td>Janet Bray</td>
</tr>
<tr>
<td>Grant Slaney</td>
<td>Daniel Cudini</td>
<td>Chas Spanti</td>
</tr>
</tbody>
</table>

#### Members of Ambulance Tasmania

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>T Ivanov</td>
<td>Director of Clinical Services</td>
</tr>
<tr>
<td>N Dalwood</td>
<td>Manager Education and Professional Development</td>
</tr>
<tr>
<td>Dr. R Franks</td>
<td>Ambulance Service Medical Officer</td>
</tr>
<tr>
<td>Dr. A Hughes</td>
<td>Clinical Director Aero-medical and Medical Retrieval</td>
</tr>
<tr>
<td>Dr. S Sherlock</td>
<td>Anaesthetist</td>
</tr>
<tr>
<td>B Gibson</td>
<td>Regional Education Coordinator</td>
</tr>
<tr>
<td>J Richardson</td>
<td>Clinical Support Officer</td>
</tr>
<tr>
<td>D Curtis</td>
<td>Clinical Support Officer</td>
</tr>
<tr>
<td>G Edsall</td>
<td>Clinical Support Officer</td>
</tr>
<tr>
<td>N Chapman</td>
<td>Clinical Support Officer</td>
</tr>
<tr>
<td>D Pendrey</td>
<td>Clinical Support Officer</td>
</tr>
<tr>
<td>N Smith</td>
<td>Clinical Support Officer</td>
</tr>
<tr>
<td>M Gibson</td>
<td>Clinical Support Officer</td>
</tr>
<tr>
<td>S Trewin</td>
<td>Clinical Support Officer</td>
</tr>
<tr>
<td>M Heavey</td>
<td>Clinical Support Officer</td>
</tr>
<tr>
<td>M Elliott</td>
<td>Clinical Support Officer</td>
</tr>
<tr>
<td>B Connor</td>
<td>Intensive Care Paramedic</td>
</tr>
<tr>
<td>S White</td>
<td>Coordinator Research &amp; Clinical Practice</td>
</tr>
<tr>
<td>M McDermott</td>
<td>Coordinator Research &amp; Clinical Practice</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Foreword</td>
<td>iv</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>vi</td>
</tr>
<tr>
<td>Index</td>
<td>vii</td>
</tr>
<tr>
<td>Guide to Abbreviations</td>
<td>xiv</td>
</tr>
<tr>
<td>Graphic Guide</td>
<td>xvi</td>
</tr>
<tr>
<td>Section One</td>
<td>Adult Patient Guidelines</td>
</tr>
<tr>
<td>Section Two</td>
<td>Paediatric Patient Guidelines</td>
</tr>
<tr>
<td>Section Three</td>
<td>Pharmacology</td>
</tr>
<tr>
<td>Section Four</td>
<td>Reference Notes</td>
</tr>
<tr>
<td>Section Five</td>
<td>Criteria &amp; Assessment Led (CAL) Referral Protocols</td>
</tr>
</tbody>
</table>
# Section One Adult Patient Guidelines

## Assessment
- Clinical Approach
- Perfusion Assessment
- Respiratory Status Assessment
- Conscious State Assessment (GCS)
- Time Critical Guidelines (Adult and Paediatric)
- Mental Status Assessment
- Stroke Assessment
- Oxygen Administration

## Cardiac Arrest
- Principles of Care
- Ventricular Fibrillation / Pulseless Ventricular Tachycardia
- Asystole
- Pulseless Electrical Activity
- Not Applicable
- Withholding and/or Ceasing Pre-Hospital Resuscitation

## Airway Management
- Supraglottic Airway
- Endotracheal Intubation Guide
- Failed Intubation Drill
- Cricothyroidotomy
- Foreign Body Choking

## Cardiac
- Acute Coronary Syndrome
- Bradycardia
- Tachyarrhythmias - inc. SVT & VT
- Not Applicable
- Accelerated Idioventricular Rhythm
- Pulmonary Oedema
- Inadequate Perfusion (Cardiogenic Causes)
<table>
<thead>
<tr>
<th>Section</th>
<th>Subsection</th>
<th>Page</th>
<th>CPG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain Relief</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pain Management</td>
<td>2.5</td>
<td>A0501</td>
</tr>
<tr>
<td>Respiratory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acute Bronchoconstriction (Asthma, COPD)</td>
<td>2.5</td>
<td>A0601</td>
</tr>
<tr>
<td>Medical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nausea and Vomiting</td>
<td>2.4</td>
<td>A0701</td>
</tr>
<tr>
<td></td>
<td>Glycaemic Emergency</td>
<td></td>
<td>A0702</td>
</tr>
<tr>
<td></td>
<td>Continuous or Recurrent Seizures</td>
<td>2.4</td>
<td>A0703</td>
</tr>
<tr>
<td></td>
<td>Anaphylaxis</td>
<td>2.5</td>
<td>A0704</td>
</tr>
<tr>
<td></td>
<td>Inadequate Perfusion (Non Cardiogenic / Non Hypovolaemic)</td>
<td>2.4</td>
<td>A0705</td>
</tr>
<tr>
<td></td>
<td>Meningococcal Septicaemia</td>
<td>2.4</td>
<td>A0706</td>
</tr>
<tr>
<td></td>
<td>Management of Overdose</td>
<td>2.4</td>
<td>A0707</td>
</tr>
<tr>
<td></td>
<td>Agitated Patient</td>
<td>2.4</td>
<td>A0708</td>
</tr>
<tr>
<td></td>
<td>Mental Health</td>
<td>2.4</td>
<td>A0708(b)</td>
</tr>
<tr>
<td></td>
<td>Organophosphate Poisoning</td>
<td></td>
<td>A0709</td>
</tr>
<tr>
<td></td>
<td>Autonomic Dysreflexia</td>
<td>2.1</td>
<td>A0710</td>
</tr>
<tr>
<td>Trauma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inadequate Perfusion associated with Hypovolaemia</td>
<td>2.5</td>
<td>A0801</td>
</tr>
<tr>
<td></td>
<td>Chest Injuries</td>
<td></td>
<td>A0802</td>
</tr>
<tr>
<td></td>
<td>Severe Traumatic Head Injury</td>
<td>2.4</td>
<td>A0803</td>
</tr>
<tr>
<td></td>
<td>Spinal Cord Injury</td>
<td></td>
<td>A0804</td>
</tr>
<tr>
<td></td>
<td>Adult Burns</td>
<td></td>
<td>A0805</td>
</tr>
<tr>
<td></td>
<td>Fracture Management</td>
<td></td>
<td>A0806</td>
</tr>
<tr>
<td></td>
<td>Crush Syndrome</td>
<td></td>
<td>A0807</td>
</tr>
<tr>
<td></td>
<td>Diving Emergency</td>
<td></td>
<td>A0808</td>
</tr>
<tr>
<td>Environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hypothermia / Cold Exposure</td>
<td>2.1</td>
<td>A0901</td>
</tr>
<tr>
<td></td>
<td>Environmental Hyperthermia / Heat Stress</td>
<td></td>
<td>A0902</td>
</tr>
<tr>
<td>Obstetrics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post Partum Haemorrhage</td>
<td>2.1</td>
<td>A0903</td>
</tr>
</tbody>
</table>

Index Section One Adult Patient Guidelines
# Section Two Paediatric Patient Guidelines

<table>
<thead>
<tr>
<th>Title</th>
<th>Version</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal Values (Paediatric)</td>
<td>2.4</td>
<td>CPG P0101</td>
</tr>
<tr>
<td>Perfusion Status Assessment (Paediatric)</td>
<td>2.4</td>
<td>CPG P0101</td>
</tr>
<tr>
<td>Respiratory Status Assessment (Paediatric)</td>
<td>2.4</td>
<td>CPG P0101</td>
</tr>
<tr>
<td>Conscious State Assessment (Paediatric)</td>
<td>2.4</td>
<td>CPG P0101</td>
</tr>
<tr>
<td>APGAR Scoring System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain Assessment (Paediatric)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paediatric Char</td>
<td>2.5</td>
<td>CPG P0102</td>
</tr>
<tr>
<td><strong>Cardiac Arrest</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic Life Support (Paediatric)</td>
<td>2.5</td>
<td>CPG P0201</td>
</tr>
<tr>
<td>Asystole or Severe Bradycardia (Paediatric)</td>
<td>2.1</td>
<td>CPG P0201</td>
</tr>
<tr>
<td>Ventricular Fibrillation / Pulseless Ventricular Tachycardia (Paediatric)</td>
<td>2.3</td>
<td>CPG P0201</td>
</tr>
<tr>
<td>Pulseless Electrical Activity (Paediatric)</td>
<td>2.1</td>
<td>CPG P0201</td>
</tr>
<tr>
<td>ROSC Management (Paediatric)</td>
<td>2.1</td>
<td>CPG P0201</td>
</tr>
<tr>
<td><strong>Airway Management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endotracheal Intubation (Paediatric)</td>
<td>2.5</td>
<td>CPG P0301</td>
</tr>
<tr>
<td>Failed Intubation Drill (Paediatric)</td>
<td>2.4</td>
<td>CPG P0302</td>
</tr>
<tr>
<td><strong>Cardiac</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bradycardia (Paediatric)</td>
<td>2.4</td>
<td>CPG P0401</td>
</tr>
<tr>
<td>Tachyarrhythmias (Paediatric)</td>
<td>2.5</td>
<td>CPG P0402</td>
</tr>
<tr>
<td><strong>Pain Relief</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain Management (Paediatric)</td>
<td>2.5</td>
<td>CPG P0501</td>
</tr>
<tr>
<td><strong>Respiratory</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Airway Obstruction (Paediatric)</td>
<td>2.4</td>
<td>CPG P0601</td>
</tr>
<tr>
<td>Asthma (Paediatric)</td>
<td>2.4</td>
<td>CPG P0602</td>
</tr>
</tbody>
</table>
# Medical

<table>
<thead>
<tr>
<th>Condition</th>
<th>Section</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nausea and Vomiting</td>
<td>2.4</td>
<td>CPG P0701</td>
</tr>
<tr>
<td>Glycaemic Emergencies (Paediatric)</td>
<td>2.4</td>
<td>CPG P0702</td>
</tr>
<tr>
<td>Continuous or Recurrent Seizures (Paediatric)</td>
<td></td>
<td>CPG P0703</td>
</tr>
<tr>
<td>Anaphylaxis (Paediatric)</td>
<td>2.5</td>
<td>CPG P0704</td>
</tr>
<tr>
<td>Meningococal Septicaemia (Paediatric)</td>
<td>2.5</td>
<td>CPG P0706</td>
</tr>
<tr>
<td>Management of Overdose (Paediatric)</td>
<td>2.4</td>
<td>CPG P0707</td>
</tr>
<tr>
<td>Organophosphate Poisoning (Paediatric)</td>
<td></td>
<td>CPG P0709</td>
</tr>
</tbody>
</table>

# Trauma

<table>
<thead>
<tr>
<th>Condition</th>
<th>Section</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate Perfusion Associated with Hypovolaemia (Paediatric)</td>
<td>2.5</td>
<td>CPG P0801</td>
</tr>
<tr>
<td>Chest Injuries (Paediatric)</td>
<td></td>
<td>CPG P0802</td>
</tr>
<tr>
<td>Burns (Paediatric)</td>
<td></td>
<td>CPG P0803</td>
</tr>
</tbody>
</table>

# Environment

<table>
<thead>
<tr>
<th>Condition</th>
<th>Section</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothermia / Cold Exposure (Paediatric)</td>
<td>2.4</td>
<td>CPG P0901</td>
</tr>
<tr>
<td>Hyperthermia / Heat Stress (Paediatric)</td>
<td></td>
<td>CPG P0902</td>
</tr>
<tr>
<td>Title</td>
<td>Version</td>
<td>Number</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>Drug Presentation</td>
<td></td>
<td>CPG D000</td>
</tr>
<tr>
<td>Not Issued</td>
<td></td>
<td>CPG D001</td>
</tr>
<tr>
<td>Adenosine</td>
<td>2.4</td>
<td>CPG D002</td>
</tr>
<tr>
<td>Adrenaline</td>
<td>2.4</td>
<td>CPG D003</td>
</tr>
<tr>
<td>Amiodarone</td>
<td></td>
<td>CPG D004</td>
</tr>
<tr>
<td>Acetylsalicylic Acid (Aspirin)</td>
<td></td>
<td>CPG D005</td>
</tr>
<tr>
<td>Atropine</td>
<td></td>
<td>CPG D006</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>2.4</td>
<td>CPG D007</td>
</tr>
<tr>
<td>Dexamethasone</td>
<td></td>
<td>CPG D008</td>
</tr>
<tr>
<td>Ergometrine</td>
<td></td>
<td>CPG D009</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>2.5</td>
<td>CPG D010</td>
</tr>
<tr>
<td>Frusemide</td>
<td></td>
<td>CPG D011</td>
</tr>
<tr>
<td>Glucagon</td>
<td></td>
<td>CPG D012</td>
</tr>
<tr>
<td>Glucose 5%</td>
<td></td>
<td>CPG D013</td>
</tr>
<tr>
<td>Glucose 10%</td>
<td></td>
<td>CPG D014</td>
</tr>
<tr>
<td>Glucose Paste</td>
<td></td>
<td>CPG D015</td>
</tr>
<tr>
<td>Glyceryl Trinitrate (GTN)</td>
<td>2.3</td>
<td>CPG D016</td>
</tr>
<tr>
<td>Ipratropium Bromide (Atrovent)</td>
<td></td>
<td>CPG D017</td>
</tr>
<tr>
<td>Ketamine</td>
<td>2.4</td>
<td>CPG D018</td>
</tr>
<tr>
<td>Lignocaine Hydrochloride 1%</td>
<td></td>
<td>CPG D019</td>
</tr>
<tr>
<td>Magnesium Sulphate</td>
<td>2.4</td>
<td>CPG D020</td>
</tr>
<tr>
<td>Methoxyflurane</td>
<td>2.4</td>
<td>CPG D021</td>
</tr>
<tr>
<td>Metoclopramide</td>
<td>2.5</td>
<td>CPG D022</td>
</tr>
<tr>
<td>Midazolam</td>
<td></td>
<td>CPG D023</td>
</tr>
<tr>
<td>Morphine</td>
<td>2.5</td>
<td>CPG:D024</td>
</tr>
<tr>
<td>Naloxone</td>
<td></td>
<td>CPG D025</td>
</tr>
<tr>
<td>Normal Saline (Sodium Chloride)</td>
<td></td>
<td>CPG D026</td>
</tr>
<tr>
<td>Not Issued</td>
<td></td>
<td>CPG D027</td>
</tr>
<tr>
<td>Ondansetron</td>
<td>2.5</td>
<td>CPG D028</td>
</tr>
<tr>
<td>Oxygen</td>
<td></td>
<td>CPG D029</td>
</tr>
<tr>
<td>Paracetamol</td>
<td>2.5</td>
<td>CPG D030</td>
</tr>
<tr>
<td>Prochlorperazine</td>
<td></td>
<td>CPG D031</td>
</tr>
<tr>
<td>Salbutamol</td>
<td></td>
<td>CPG D032</td>
</tr>
<tr>
<td>Sodium Bicarbonate 8.4%</td>
<td></td>
<td>CPG D033</td>
</tr>
<tr>
<td>Water for Injection</td>
<td></td>
<td>CPG:D034</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Definition</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>AAA</td>
<td>Abdominal Aortic Aneurysm</td>
<td></td>
</tr>
<tr>
<td>ACS</td>
<td>Acute Coronary Syndrome</td>
<td></td>
</tr>
<tr>
<td>ADLs</td>
<td>Activities of Daily Living</td>
<td></td>
</tr>
<tr>
<td>AF</td>
<td>Atrial Fibrillation</td>
<td></td>
</tr>
<tr>
<td>AIVR</td>
<td>Accelerated Idioventricular Rhythm</td>
<td></td>
</tr>
<tr>
<td>AMI</td>
<td>Acute Myocardial Infarction</td>
<td></td>
</tr>
<tr>
<td>AP</td>
<td>Ambulance Paramedic</td>
<td></td>
</tr>
<tr>
<td>APH</td>
<td>Antepartum haemorrhage</td>
<td></td>
</tr>
<tr>
<td>APO</td>
<td>Acute Pulmonary Oedema</td>
<td></td>
</tr>
<tr>
<td>A-V</td>
<td>Atrioventricular</td>
<td></td>
</tr>
<tr>
<td>AVRT</td>
<td>Atrioventricular re-entry tachycardia</td>
<td></td>
</tr>
<tr>
<td>AVNRT</td>
<td>A-V nodal re-entry tachycardia</td>
<td></td>
</tr>
<tr>
<td>BGL</td>
<td>Blood Glucose Level</td>
<td></td>
</tr>
<tr>
<td>BLS</td>
<td>Basic Life Support</td>
<td></td>
</tr>
<tr>
<td>BP</td>
<td>Blood Pressure</td>
<td></td>
</tr>
<tr>
<td>bpm</td>
<td>beats per minute</td>
<td></td>
</tr>
<tr>
<td>BVM</td>
<td>Bag-Valve-Mask</td>
<td></td>
</tr>
<tr>
<td>C/I</td>
<td>Contraindication</td>
<td></td>
</tr>
<tr>
<td>CBR</td>
<td>Chemical / Biological / Radiation</td>
<td></td>
</tr>
<tr>
<td>CCF</td>
<td>Congestive Cardiac Failure</td>
<td></td>
</tr>
<tr>
<td>C.O.</td>
<td>Cardiac Output (L/min.)</td>
<td></td>
</tr>
<tr>
<td>COPD</td>
<td>Chronic Obstructive Pulmonary Disease</td>
<td></td>
</tr>
<tr>
<td>CPAP</td>
<td>Continuous Positive Airway Pressure</td>
<td></td>
</tr>
<tr>
<td>CPG</td>
<td>Clinical Practice Guideline</td>
<td></td>
</tr>
<tr>
<td>D5W</td>
<td>5% Dextrose</td>
<td></td>
</tr>
<tr>
<td>DCCS</td>
<td>Direct Current Counter Shock</td>
<td></td>
</tr>
<tr>
<td>DCR</td>
<td>Direct Current Reversion</td>
<td></td>
</tr>
<tr>
<td>DKA</td>
<td>Diabetic Ketoacidosis</td>
<td></td>
</tr>
<tr>
<td>dpm</td>
<td>Drops per minute</td>
<td></td>
</tr>
<tr>
<td>ECC</td>
<td>External Cardiac Compression</td>
<td></td>
</tr>
<tr>
<td>ECG</td>
<td>Electrocardiogram</td>
<td></td>
</tr>
<tr>
<td>EtCO₂</td>
<td>End-tidal carbon dioxide</td>
<td></td>
</tr>
<tr>
<td>ETT</td>
<td>Endotracheal tube</td>
<td></td>
</tr>
<tr>
<td>FG</td>
<td>French Gauge</td>
<td></td>
</tr>
<tr>
<td>FHR</td>
<td>Foetal Heart Rate</td>
<td></td>
</tr>
<tr>
<td>g</td>
<td>gram/s</td>
<td></td>
</tr>
<tr>
<td>GCS</td>
<td>Glasgow Coma Score</td>
<td></td>
</tr>
<tr>
<td>GIT</td>
<td>Gastrointestinal Tract</td>
<td></td>
</tr>
<tr>
<td>GR</td>
<td>Grade</td>
<td></td>
</tr>
<tr>
<td>GTN</td>
<td>Glyceryl trinitrate</td>
<td></td>
</tr>
<tr>
<td>hr</td>
<td>hour</td>
<td></td>
</tr>
<tr>
<td>HR</td>
<td>Heart Rate</td>
<td></td>
</tr>
<tr>
<td>Hx</td>
<td>History</td>
<td></td>
</tr>
<tr>
<td>ICP</td>
<td>Intensive Care Paramedic</td>
<td></td>
</tr>
<tr>
<td>IFS</td>
<td>Intubation Facilitated by Sedation</td>
<td></td>
</tr>
<tr>
<td>IM</td>
<td>Intramuscular</td>
<td></td>
</tr>
<tr>
<td>IN</td>
<td>Intranasal</td>
<td></td>
</tr>
<tr>
<td>I/O</td>
<td>Intravenous</td>
<td></td>
</tr>
<tr>
<td>IPPV</td>
<td>Intermittent Positive Pressure Ventilation</td>
<td></td>
</tr>
<tr>
<td>IU</td>
<td>International Unit</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>Intravenous</td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>Joules</td>
<td></td>
</tr>
<tr>
<td>kg</td>
<td>kilograms</td>
<td></td>
</tr>
<tr>
<td>LMA</td>
<td>Laryngeal Mask Airway</td>
<td></td>
</tr>
<tr>
<td>Lpm</td>
<td>litres per minute</td>
<td></td>
</tr>
<tr>
<td>LVF</td>
<td>Left Ventricular Failure</td>
<td></td>
</tr>
<tr>
<td>max.</td>
<td>maximum</td>
<td></td>
</tr>
<tr>
<td>MVA</td>
<td>Motor Vehicle Accident</td>
<td></td>
</tr>
<tr>
<td>mcg</td>
<td>microgram/s</td>
<td></td>
</tr>
<tr>
<td>mg</td>
<td>milligram/s</td>
<td></td>
</tr>
<tr>
<td>min</td>
<td>minutes</td>
<td></td>
</tr>
<tr>
<td>ml</td>
<td>millilitres</td>
<td></td>
</tr>
<tr>
<td>ml/hr</td>
<td>millilitres per hour</td>
<td></td>
</tr>
<tr>
<td>mmHg</td>
<td>millimetres of Mercury (Hg)</td>
<td></td>
</tr>
<tr>
<td>mmol/l</td>
<td>millimoles per litre</td>
<td></td>
</tr>
<tr>
<td>MOI</td>
<td>Mechanism of Injury</td>
<td></td>
</tr>
<tr>
<td>MTS</td>
<td>Major Trauma Service</td>
<td></td>
</tr>
<tr>
<td>MV</td>
<td>Minute Ventilation</td>
<td></td>
</tr>
<tr>
<td>Mx</td>
<td>Management</td>
<td></td>
</tr>
<tr>
<td>NB</td>
<td>Note well</td>
<td></td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>NEPT</td>
<td>Non Emergency Patient Transport</td>
<td></td>
</tr>
<tr>
<td>NFR</td>
<td>Not For Resuscitation</td>
<td></td>
</tr>
<tr>
<td>NG</td>
<td>Nasogastric</td>
<td></td>
</tr>
<tr>
<td>NPA</td>
<td>Nasopharyngeal Airway</td>
<td></td>
</tr>
<tr>
<td>NSTEMI</td>
<td>Non-ST Elevation Myocardial Infarction</td>
<td></td>
</tr>
<tr>
<td>O2</td>
<td>Oxygen</td>
<td></td>
</tr>
<tr>
<td>OD</td>
<td>Overdose</td>
<td></td>
</tr>
<tr>
<td>ODD</td>
<td>Oesophageal Detector Device</td>
<td></td>
</tr>
<tr>
<td>OG</td>
<td>Orogastic</td>
<td></td>
</tr>
<tr>
<td>OPA</td>
<td>Oropharyngeal Airway</td>
<td></td>
</tr>
<tr>
<td>PCI</td>
<td>Percutaneous Coronary Intervention</td>
<td></td>
</tr>
<tr>
<td>PCR</td>
<td>Pt Care Record</td>
<td></td>
</tr>
<tr>
<td>PEA</td>
<td>Pulseless Electrical Activity</td>
<td></td>
</tr>
<tr>
<td>PEEP</td>
<td>Positive End-Expiratory Pressure</td>
<td></td>
</tr>
<tr>
<td>PHx</td>
<td>Past History</td>
<td></td>
</tr>
<tr>
<td>PIP</td>
<td>Peak Inspiratory Pressure</td>
<td></td>
</tr>
<tr>
<td>pMDI</td>
<td>Pressurised Metered Dose Inhaler</td>
<td></td>
</tr>
<tr>
<td>PSA</td>
<td>Perfusion Status Assessment</td>
<td></td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
<td></td>
</tr>
<tr>
<td>PSV</td>
<td>Pressure Support Ventilation</td>
<td></td>
</tr>
<tr>
<td>Pt</td>
<td>Patient</td>
<td></td>
</tr>
<tr>
<td>PV</td>
<td>Per Vagina</td>
<td></td>
</tr>
<tr>
<td>QRS</td>
<td>QRS complex of ECG</td>
<td></td>
</tr>
<tr>
<td>ROSC</td>
<td>Return of Spontaneous Circulation</td>
<td></td>
</tr>
<tr>
<td>RSA</td>
<td>Respiratory Status Assessment</td>
<td></td>
</tr>
<tr>
<td>RSI</td>
<td>Rapid Sequence Intubation</td>
<td></td>
</tr>
<tr>
<td>RTA</td>
<td>Road Traffic Intubation</td>
<td></td>
</tr>
<tr>
<td>R/V</td>
<td>Rendezvous</td>
<td></td>
</tr>
<tr>
<td>Rx</td>
<td>Treatment</td>
<td></td>
</tr>
<tr>
<td>S Rural</td>
<td>Selected AV Rural APs permitted to perform skill</td>
<td></td>
</tr>
<tr>
<td>SCI</td>
<td>Spinal Cord Injury</td>
<td></td>
</tr>
<tr>
<td>sec.</td>
<td>second</td>
<td></td>
</tr>
<tr>
<td>SIMV</td>
<td>Synchronous Intermittent Mandatory Ventilation</td>
<td></td>
</tr>
<tr>
<td>S/L</td>
<td>Sublingual</td>
<td></td>
</tr>
<tr>
<td>SOB</td>
<td>Short of Breath</td>
<td></td>
</tr>
<tr>
<td>SpO2</td>
<td>Saturation of haemoglobin with O2 measured by Pulse Oximetry</td>
<td></td>
</tr>
<tr>
<td>SV</td>
<td>Stroke volume</td>
<td></td>
</tr>
<tr>
<td>SVT</td>
<td>Supraventricular tachycardia</td>
<td></td>
</tr>
<tr>
<td>STEMI</td>
<td>ST Elevation Myocardial Infarction</td>
<td></td>
</tr>
<tr>
<td>TBI</td>
<td>Traumatic Brain Injury</td>
<td></td>
</tr>
<tr>
<td>TCA</td>
<td>Tricyclic Antidepressent</td>
<td></td>
</tr>
<tr>
<td>TKVO</td>
<td>To Keep Vein Open</td>
<td></td>
</tr>
<tr>
<td>TPT</td>
<td>Tension Pneumothorax</td>
<td></td>
</tr>
<tr>
<td>Tx</td>
<td>Transport</td>
<td></td>
</tr>
<tr>
<td>UA</td>
<td>Unstable Angina</td>
<td></td>
</tr>
<tr>
<td>VF</td>
<td>Ventricular Fibrillation</td>
<td></td>
</tr>
<tr>
<td>Vol</td>
<td>Volume</td>
<td></td>
</tr>
<tr>
<td>VSS</td>
<td>Vital Signs Survey</td>
<td></td>
</tr>
<tr>
<td>Vr</td>
<td>Tidal Volume</td>
<td></td>
</tr>
<tr>
<td>VT</td>
<td>Ventricular Tachycardia</td>
<td></td>
</tr>
<tr>
<td>Wt</td>
<td>Weight (kg)</td>
<td></td>
</tr>
<tr>
<td>x/60</td>
<td>x minutes e.g. 5/60 = 5 minutes</td>
<td></td>
</tr>
<tr>
<td>@x/60</td>
<td>e.g. @ 5/60 = at 5 minutely intervals</td>
<td></td>
</tr>
</tbody>
</table>
Special Notes

- Information to support the Guideline and improve the user’s understanding of a concept.

General Care

- Provides supporting information or care related to the Guideline. e.g. Infusion preparations.
Status

- Presenting condition/signs and symptoms following Clinical Approach assessment

Assess / Consider

- More specific assessment criteria that may direct Rx pathway

Action

- Drug or intervention required for AP / ICP

Action

- Unique drug or intervention required for ICP only

Stop

- Either:
  - a contraindication exists
  - a high risk action follows
  - care must be exercised to proceed or an immediate action is required
### Clinical Approach to a Patient

#### Stop

<table>
<thead>
<tr>
<th>Stop</th>
<th>Primary Survey / Life Threat Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Standard Precautions:</strong> Gloves, safety glasses, helmet, mask, vest, other PPE as supplied</td>
</tr>
<tr>
<td></td>
<td><strong>Dangers</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Response</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Airway</strong></td>
</tr>
<tr>
<td></td>
<td>Cervical spine immobilisation if required</td>
</tr>
<tr>
<td></td>
<td><strong>Breathing</strong> Assist ventilations if $V_t$ inadequate</td>
</tr>
<tr>
<td></td>
<td><strong>Circulation</strong> Commence CPR if required and apply Cardiac Monitor</td>
</tr>
<tr>
<td></td>
<td><strong>Haemorrhage</strong> Control life threatening haemorrhage</td>
</tr>
<tr>
<td></td>
<td><strong>Immediate Mx + Sitrep required (Utilise ETHANE mnemonic)</strong></td>
</tr>
</tbody>
</table>

#### Action

<table>
<thead>
<tr>
<th>Action</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Rapport, Rest and Reassurance</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Posture / Position of comfort</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Oxygen as required (e.g. hypoxia, respiratory distress)</strong></td>
</tr>
<tr>
<td></td>
<td>In order of clinical need</td>
</tr>
<tr>
<td></td>
<td>If clinically applicable, assess Hx prior to physical contact with Pt e.g. Vital Signs Survey, applying monitor, exposing chest</td>
</tr>
</tbody>
</table>

#### Assess

<table>
<thead>
<tr>
<th>Assess</th>
<th>History</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Brief clinical Hx</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Event prior to Ambulance call</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Past medical Hx</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Pain – assessment</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Medications</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Allergies</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Accurate Hx + assessment essential for problem recognition</strong></td>
</tr>
<tr>
<td>Assess</td>
<td>Vital Sign Survey</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td>GCS</td>
</tr>
<tr>
<td></td>
<td>PSA</td>
</tr>
<tr>
<td></td>
<td>RSA</td>
</tr>
<tr>
<td></td>
<td>Pattern / mechanism of injury / medical condition</td>
</tr>
</tbody>
</table>

**Assessment Tools / Secondary Survey**

<table>
<thead>
<tr>
<th>Secondary Survey</th>
<th></th>
</tr>
</thead>
<tbody>
<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>
</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
### Action

- **Further Sitrep / Resource requirements as required**
- Consider ICP backup
- Consider time to hospital vs time to R/V with ICP
- IV access if required
- Specific treatment - appropriate CPG applied to Mx clinical problems
- Transport to appropriate facility
- Reassess frequently and adapt Mx as appropriate
- Final assessment at destination / handover

---

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 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.
<table>
<thead>
<tr>
<th>Perfusion Status Assessment</th>
<th>Skin</th>
<th>Pulse</th>
<th>BP</th>
<th>Conscious Status</th>
<th>Capillary Refill</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>
<td>Alert and orientated in time and place</td>
<td>≤ 2 secs</td>
</tr>
<tr>
<td><strong>Borderline Perfusion</strong></td>
<td>Cool, pale, clammy</td>
<td>50-100/min</td>
<td>80-100mmHg systolic</td>
<td>Alert and orientated in time and place</td>
<td>&gt; 2 secs</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>
<td>Either alert and orientated in time and place or altered</td>
<td>&gt; 2 secs</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>
<td>Altered or unconscious</td>
<td>&gt; 2 secs</td>
</tr>
<tr>
<td><strong>No Perfusion</strong></td>
<td>Cool, pale, clammy</td>
<td>Absence of palpable pulse</td>
<td>Unrecordable</td>
<td>Unconscious</td>
<td>NIL</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></td>
<td></td>
<td>Asthma: mild expiratory wheeze</td>
<td>Asthma: expiratory wheeze, +/- inspiratory wheeze</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LVF: may be some fine crackles at bases</td>
<td>LVF: crackles at bases - to mid-zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LVF: fine crackles – full field, with possible wheeze</td>
<td>Upper Airway Obstruction: Inspiratory stridor</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; 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>
<tr>
<td><strong>Oxygen Saturation Room Air</strong></td>
<td>&gt; 95%</td>
<td>&gt; 95%</td>
<td>&lt; 95%</td>
<td>&lt; 90%</td>
</tr>
</tbody>
</table>
**Glasgow Coma Score (GCS)**

**Introduction**
The conscious state of a pt needs to be assessed in a way that is reproducible and objective. The GCS is a neurological scale which enables a pt’s level of consciousness to be assessed in a methodical, reproducible way. GCS scores range from 3 to 15.

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Eye Opening</strong></td>
<td></td>
</tr>
<tr>
<td>Spontaneous</td>
<td>4</td>
</tr>
<tr>
<td>To Voice</td>
<td>3</td>
</tr>
<tr>
<td>To Pain</td>
<td>2</td>
</tr>
<tr>
<td>None</td>
<td>1</td>
</tr>
<tr>
<td><strong>B. Verbal Response</strong></td>
<td></td>
</tr>
<tr>
<td>Orientated</td>
<td>5</td>
</tr>
<tr>
<td>Confused</td>
<td>4</td>
</tr>
<tr>
<td>Inappropriate words</td>
<td>3</td>
</tr>
<tr>
<td>Incomprehensible sounds</td>
<td>2</td>
</tr>
<tr>
<td>None</td>
<td>1</td>
</tr>
<tr>
<td><strong>C. Motor Response</strong></td>
<td></td>
</tr>
<tr>
<td>Obeys Command</td>
<td>6</td>
</tr>
<tr>
<td>Purposeful Movement (pain)</td>
<td>5</td>
</tr>
<tr>
<td>Withdraws (pain)</td>
<td>4</td>
</tr>
<tr>
<td>Flexion (pain)</td>
<td>3</td>
</tr>
<tr>
<td>Extension (pain)</td>
<td>2</td>
</tr>
<tr>
<td>None</td>
<td>1</td>
</tr>
</tbody>
</table>

Total GCS (Max. Score = 15)

\[(A + B + C) = GCS\]
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 ICP 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>
Trauma Triage
Pts meeting the criteria for Major Trauma should be transported to the major regional facility unless transport times are prolonged >60 mins. 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 < 16 or > 60

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 and should be transported to the major regional facility unless transport times are prolonged >60 mins.
Assess Vital Signs

- Any of the following:
  - Respiratory Rate < 12 or > 24
  - BP < 90
  - Pulse < 50 or > 120
  - GCS < 13
  - Oxygen saturation < 90%

Assess Pattern of Injury

- Possible major trauma?

Vital Signs are normal

- Immediate triage
  - Transport to the major regional facility unless transport times are prolonged >60 mins
  - Consider ICP

Significant Pattern of Injury

- Vital Signs are normal

- Fractured pelvis
  - Femur / Tibia / Humerus
  - Fracture to two or more of the following:
    - Major compound fracture or open dislocation
    - Significant crush injury
  - Blunt > 20% of involving respiratory tract
  - Suspected spinal cord injury
  - Limb amputations / Limb threatening injuries
    - Specific Injuries
      - Fractures
      - Injuries involving two or more of the above body regions
        - Head / Neck / Chest / Abdomen / Axilla / Groin
      - Significant injury to a single region
        - Blunt Injuries
          - Axilla / Groin
          - Head / Neck / Chest / Abdomen / Pelvis
        - Penetrating Injuries
          - Any of the following:

- Possible major trauma

Emergency Time Critical

Action

- Transport to the major regional facility unless transport times are prolonged >60 mins
- Consider ICP

Actual Time Critical

Status

- Oxygen saturation > 90%
  - GCS > 13
  - Pulse > 90 or < 120
  - BP > 90
  - Respiratory Rate > 12 or < 24
  - Any of the following:
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

Assess Co-morbidities

- Age > 60
- Pregnancy
- Significant underlying medical condition

Positive MOI and NO Co-morbidities

- Vital Signs are normal
- No Pattern of Injury

Positive MOI and Co-morbidities

- Vital Signs are normal
- No Pattern of Injury

Action

Triage to nearest appropriate facility if required

Transport to the major regional facility unless transport times are prolonged >60 mins

Trauma Time Critical Guidelines CPG A0105

Trauma Time Critical

Not Time Critical

Potentially Time Critical

Time to nearest appropriate facility if required

Action

No Pattern of Injury

Vital Signs are normal

Positive MOI

No Pattern of Injury

Vital Signs are normal
Status
• Possible major trauma?

Assess Vital Signs

8

Assess Pattern of Injury

• Any of the following:
  • Penetrating Injuries
    - Head / Neck / Chest / Abdomen / Pelvis / Axilla / Groin
  • Blunt Injuries
    - Significant injury to a single region
    - Injuries involving two or more of the above body regions
      - Head / Neck / Chest / Abdomen / Axilla / Groin

Vital Signs not normal?

Significant Pattern of Injury

Vital Signs normal?

Vital Signs are normal

May have Pattern of Injury

Emergency Time Critical

Vital Signs critical

Consider ICP

Action

• Transport to the major regional facility unless transport times are prolonged >60 mins

Consider ICP

• Newborn (0-2 weeks)
  - Respiratory Rate: < 20 or > 50
  - BP: < 90 or > 170
  - GCS: < 15
  - N/A
  - Cold / pale / clammy

• Infant (0-1 year)
  - Respiratory Rate: < 40 or > 60
  - BP: < 90 or > 170
  - GCS: < 15
  - N/A
  - Cold / pale / clammy

• Child (2-15 years)
  - Respiratory Rate: < 35 or > 40
  - BP: < 90 or > 170
  - GCS: < 15
  - N/A
  - Cold / pale / clammy

• Large Child (9-15 years)
  - Respiratory Rate: < 20 or > 35
  - BP: < 80 or > 170
  - GCS: < 15
  - N/A
  - Cold / pale / clammy

• Adult (16+ years)
  - Respiratory Rate: < 20 or > 35
  - BP: < 70 or > 130
  - GCS: < 15
  - N/A
  - Cold / pale / clammy

• CPG A0105
  - Trauma Time Critical Guidelines (Pediatric)
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
- Pedestrian impact
- Prolonged extrication > 30min.
- Fatality in same vehicle
- Vital Signs are normal

Positive MOI

Positive MOI

If MOI is positive:

- Transport to the major regional facility unless transport times are prolonged >60 mins
- Triage to nearest appropriate facility if required

No MOI

If MOI is negative:

- Vital Signs are normal
- No Pattern of Injury

Trauma Time Critical Guidelines (Paediatric) CPG A0105

Version 2.1 - 01.08.12
**Possible Medical Time Critical?**

Assess Vital Signs

- Any of the following:
  - Severe Respiratory Distress
  - Oxygen saturation < 90% Room Air / 93% supplemental O2 (consider low SpO2 COPD patient)
  - Inadequate Perfusion
  - GCS < 13 (unless normal for Pt)
  - 12 lead ECG showing STEMI pattern

Assess Medical Condition

- Medical Symptoms / Syndromes
  - Acute Coronary Syndrome
  - Acute stroke
  - Severe sepsis, including suspected meningococcal disease
  - Acute Asthma / COPD with moderate resp.
  - Meningoencephalitis
  - Acute Respiratory Distress Syndrome
  - Possible Abdominal Aortic Aneurysm

**Vital Signs not normal?**

Consider ICP

**Vital Signs normal?**

May have significant medical condition?

**Vital Signs are normal**

**Possible Medical Time Critical?**

Transport to the major regional facility unless transport time is prolonged >60 mins

Consider ICP

**Significant Medical Condition**

- GCS < 13 (unless normal for Pt)
- Inadequate Perfusion
- Suspected meningitis
- Oxygen saturation < 90% Room Air / 93% supplemental O2 (consider low SpO2 COPD)
- Severe Respiratory Distress

Any of the following:

- 12 lead ECG showing STEMI pattern
- Acute Coronary Syndrome
- Acute stroke
- Meningoencephalitis
- Acute Respiratory Distress Syndrome
- Possible Abdominal Aortic Aneurysm
# 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.

### Observations

<table>
<thead>
<tr>
<th>1. Appearance</th>
<th>Neatness, cleanliness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pupils – size</td>
</tr>
<tr>
<td></td>
<td>Extraocular movements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Behaviour</th>
<th>Bizarre or inappropriate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Threatening or violent</td>
</tr>
<tr>
<td></td>
<td>Unusual motor activity, such as grimacing or tremors</td>
</tr>
<tr>
<td></td>
<td>Impaired gait</td>
</tr>
<tr>
<td></td>
<td>Psychomotor retardation or agitation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Speech</th>
<th>Rate, volume, quantity, content</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>4. Mood</th>
<th>Depressed, agitated, excited or irritable</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>5. Response</th>
<th>Flat – unresponsive facial expression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Appropriate / inappropriate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. Perceptions</th>
<th>Hallucinations</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>7. Thought content</th>
<th>Delusions (i.e., false beliefs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Suicidal thoughts</td>
</tr>
<tr>
<td></td>
<td>Overly concerned with body functions (eg. Bowels)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Thought flow</th>
<th>Jumping irrationally from one thought to another</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>9. Concentration</th>
<th>Poor ability to organise thoughts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Short attention span</td>
</tr>
<tr>
<td></td>
<td>Poor memory</td>
</tr>
<tr>
<td></td>
<td>Impaired judgement</td>
</tr>
<tr>
<td></td>
<td>Lack of insight</td>
</tr>
</tbody>
</table>
### Stroke Assessment

**Assess / Consider**
- Intoxication drug / alcohol
- Hypo / hyperglycaemia
- 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

---

![Stroke Assessment](https://example.com/stroke-assessment.png)

**Stroke signs and symptoms**

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

**Findings**

- **Facial Droop**
  - Normal: Both sides of the face move equally
  - Abnormal: One side of the face does not move as well as the other

- **Arm Drift**
  - Normal: Equal hand grip
  - Abnormal: Unilateral weakness

- **Speech**
  - Normal: The Pt says the correct words, no slurring
  - Abnormal: The Pt slurs words, says the wrong words, or is unable to speak or understand

- **Time**
  - Time of onset of these symptoms should be assessed

- **Blood glucose**
  - Normal: BGL
  - Abnormal: If hypoglycemia, manage as per CPG A0702 Glycaemic Emergencies

**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**
Key Considerations

Introduction:
- This CPG should only be applied to patients aged ≥ 16 years

Mx Principles
- O2 is a treatment for hypoxaemia, not breathlessness. O2 has not been shown to have any effect on the sensation of breathlessness in non-hypoxaemic patients.
- Treatment is aimed at achieving normal or near normal SpO2 in acutely ill patients. O2 should be administered to achieve a target SpO2 while continuously monitoring the patient for any changes in condition.
- Oxygen should not be given routinely to patients with normal SpO2. This includes those with stroke, ACS and arrhythmias.
- Oxygen given to raise SpO2 above 92% should be treated as a drug that can be harmful in some patients, particularly older people with underlying lung disease (particularly COPD) which may not be clinically apparent. Therefore, the default approach in patients with COPD should be to keep SpO2 between 88-92%, unless there is a clear indication for oxygen therapy.
- If pulse oximetry is not available or unreliable, consider an initial oxygen dose of 2-6 L/min via nasal cannulae or 5-10 L/min via face mask until a reliable SpO2 reading can be obtained or symptoms resolve.

Special Circumstances
- Early aggressive O2 administration may benefit patients who develop critical illnesses and are haemodynamically unstable, such as cardiac arrest or resuscitation; major trauma / head injury; carbon monoxide poisoning; shock; severe sepsis; and anaphylaxis. In the first instance, O2 should be administered with the aim of achieving an SpO2 of 100%. Once the patient is haemodynamically stable, O2 dose should be titrated to normal levels.
- Patients with chronic hypoxaemia (e.g. COPD, neuromuscular disorders, morbid obesity etc.) are at risk of hypoventilation and respiratory arrest if SpO2 is raised above 92%. However, if such a patient is critically ill and a cardio-respiratory arrest is thought to be imminent, high flow oxygen +/- assisted ventilation is probably warranted as initial therapy. Oxygen can be titrated down later, once the patient has stabilised.
- COPD should be suspected in any patient over 40 years old who is: a smoker or ex-smoker, experiencing dyspnoea that is progressive, persistent and worse with exercise, has a chronic cough or chronic sputum production, has a family history of COPD.
Critical illnesses for Oxygen Therapy CPG include:

- Cardiac arrest or resuscitation
- Major trauma/head injury
- Carbon monoxide poisoning
- Acute Coronary Syndrome
- Shock (including Severe Sepsis and Anaphyaxis)
- Stroke
- Decompression illness
- Status epilepticus

General Care

- O2 exchange is at its greatest in the upright position. Unless other clinical problems determine otherwise, the upright position is the preferred position when administering O2.
- Ensure the patient's fingertips are clean of soil or nail polish. Both may affect the reliability of the pulse oximeter reading. The presence of nail infection may also cause falsely low readings.
- Take due care with patients who show evidence of anxiety/panic disorders (e.g. hyperventilation syndrome). O2 is not required however no attempt should be made to retain CO2 (e.g. paper bag breathing).
- All women with evidence of hypoxaemia who are more than 20 weeks pregnant should be managed with left lateral tilt to improve cardiac output.
- Face masks should not be used for flow rates < 5 L/min due to the risk of CO2 retention.
- Nasal cannulae are likely to be just as effective with mouth-bearers. However, where nasal passages are congested or blocked, face masks should be used to deliver O2 therapy.

Special Notes

- Pulse oximetry may be particularly unreliable in patients with peripheral vascular disease, severe asthma, severe anaemia, cold extremities or peripherally 'shut down', severe hypotension and carbon monoxide poisoning.
- Pulse oximetry can be unreliable in the setting of severe hypoxia. An Sp02 reading below 80% increases the chance of being inaccurate.
- All patients with suspected carbon monoxide poisoning, Diving emergency or pneumothorax should be given high dose oxygen until arrival at hospital. In these clinical situations, patients who show no signs of breathlessness may still benefit from this treatment.
- Poisoning with substances other than carbon monoxide should be given O2 to maintain an Sp02 of 94-98%.
- Special circumstances occur in the setting of paraquat poisoning or bleomycin exposure where the use of O2 therapy may prove detrimental to the patient. The maintenance of prophylactic hypoxaemia in these patients (Sp02 of 88-92%) is recommended.
- Irrespective of Sp02 patient tidal volume should be assessed to ensure ventilation is adequate.

Oxygen Administration Strategies

- Nasal Cannulae with oxygen at 2-6L/minute
- Non Rebreather mask with oxygen at 10-15L/minute
- BVM ventilation with 100% oxygen
Oxygen Therapy

**Status**
- Evidence of hypoxaemia
- Breathlessness

**Assess**
- Acute or chronic?
- Respiratory status
- Assess and monitor SpO2 continuously
- Consider causes of hypoxaemia

**Acute Hypoxaemia**
- SpO2 < 93%

**Action**
- Utilise the minimum amount of oxygen to reach the target oxygen saturation
- Titrate O2 flow to SpO2 of 93% as default

**Chronic Hypoxaemia**

**Action**
- High - concentration O2 may be harmful in the COPD Pt at risk of hypercapnic respiratory failure
- Titrate O2 flow to SpO2 of 88-92%
- If Pt deteriorates or SpO2 remains < 88%
  - Consider utilising non rebreather mask or BVM ventilation

**Critical Illnesses**

**Action**
- If Chronic Hypoxaemia suspected, treat as Chronic Hypoxaemia treatment box.
- Titrate all patients with a critical Illness to 94-98% without evidence of chronic hypoxaemia.
- Patients with Carbon Monoxide Poisoning or Decompression Illness should receive high flow oxygen with no SpO2 target.
  - If inadequate tidal volume, patient deteriorates or no improvement in SpO2, consider BVM ventilation with 100% O2
  - Consider Advanced airway adjunct as required
**Principles of CPR**

**CPR**
- ECC is commenced immediately and continued throughout cardiac arrest.
- Generic for all adult cardiac arrest conditions
- Interruptions to chest compressions must be minimised
- Change operators every 2 mins to improve ECC performance and reduce fatigue
- Compress to 1/3 chest depth or at least 5cms (Adult); allowing chest recoil after each compression
- **Rhythm / Pulse check every 2min.**
- ECC commenced immediately after defibrillation and pulse check after 2 mins
- Remember to push hard and fast

**Ratios: compressions to ventilations**

**Not intubated**
- 30 : 2
- Rate: Approximately 100 - 120 compressions per min
  - Pause for ventilations

**Intubated / Supra Glottic device inserted**
- 15 : 1
- Rate: Approximately 100 - 120 compressions per min
  - 8-10 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 Amiodorone
- **Withhold Sodium Bicarbonate 8.4% IV**
Cardiac Arrest

**Unconscious/Pulseless VF/VT**

- **Action**
  - Defibrillate 200J Biphastic
    - Repeat @ 2 min 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 at 4 min interval
  - Consider IO if delay in IV access
    - Adrenaline 1mg IO

**VF/VT persists**

- **Action**
  - IV access / Normal Saline TKVO
  - Adrenaline 1mg IV
    - Repeat at 4 min interval
  - Consider IO if delay in IV access
    - Adrenaline 1mg IO

**PEA persists**

- **Action**
  - IV access / Normal Saline TKVO
  - Adrenaline 1mg IV
    - Repeat at 4 min interval
  - Consider IO if delay in IV access
    - Adrenaline 1mg IO
  - Consider Chest Decompression as per CPG A0802 Chest Injuries

**Asystole**

- **Action**
  - IV access / Normal Saline TKVO
  - Adrenaline 1mg IV
    - Repeat at 4 min interval
  - Consider IO if delay in IV access
    - Adrenaline 1mg IO
Sodium Bicarbonate may be administered if hyperkalaemia suspected or cardiac arrest secondary to TCA overdose per A707(B) Management of Overdose: TCA

Magnesium Sulphate 2g should be administered instead of Amiodarone in the event of Torsade de Pointes.

Repeat Magnesium Sulphate 2g once after 10 minutes as required.
Withholding and / or Ceasing Pre-hospital resuscitation

Special Notes

• An Advanced Care Directive 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 an order the default position of resuscitation should be adopted.

• An Advanced Care Directive only applies in relation to a current condition. When ceasing or withholding resuscitative efforts the attending Clinician needs to be satisfied that the Pt’s cardiac arrest is most likely due to this current condition cited in the Advanced Care Directive.

Special Notes

• Ambulance crews must clearly record full details of the information given to them and the basis for their decision regarding resuscitation. This is particularly important in circumstances when a copy of the Advanced Care Directive has not been sighted as this documentation may serve as evidence of their good faith.
Withholding and / or Ceasing out-of-hospital resuscitation

**Circumstances where resuscitation efforts may be withheld**

- There is a 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 the number of Pts (e.g. multi-casualty incidents)
- Death is declared by Medical Officer who is, or has been, at the scene
- An adult (18 years or older), where an Advanced Care Directive order 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
- Any patient 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 20min without effective CPR and there are no compelling reasons to continue, such as suspected hypothermia, suspected drug overdose, or family / bystanders request continued efforts.
- An Advanced Care Directive is available for the patient.

**Circumstances where resuscitation efforts may be ceased**

- Any patient who, after 30 mins of resuscitation has no return of spontaneous circulation, is not in VF or VT, there are no other signs of life present such as gasps or pupil reaction and when hypothermia or drug overdose are not suspected.
### General Care

- If insertion fails and ventilation is difficult or inadequate, check position of supraglottic airway. If minor adjustment fails to correct the problem, remove the supraglottic airway. Immediately insert an OPA/NPA and ventilate the Pt using a BVM.
- Only one attempt may be made to reinsert a supraglottic airway. If insertion fails on the 2nd attempt, do not delay returning to BVM using an OPA/NPA.
- A supraglottic airway may be used for the unconscious APO Pt. However, gentle assisted ventilation should be provided.
- A supraglottic airway 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 a supraglottic airway has been correctly inserted and taped in situ, using AT approved securing devices, 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 supraglottic airway, remove the device. (deflating cuff first if required by the device)

### Special Notes

- The supraglottic airway provides improved airway and ventilation Mx compared to using a facemask and OPA. The supraglottic airway 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). **A supraglottic airway should therefore **not be regarded as the equivalent of endotracheal intubation.**
- A supraglottic airway forms a low pressure seal around the posterior perimeter of the larynx and when correctly inserted is seated superior to the oesophageal sphincter enabling positive pressure ventilation via BVM or closed circuit resuscitator. Unconscious Pts who accept an OPA are generally suitable for insertion of a supraglottic airway.
- Pts with morbid obesity have naturally increased work of breathing and during assisted or intermittent positive pressure ventilation may 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.
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 supraglottic airway does not prevent passive regurgitation or gastric distension

I-Gel Size Chart

<table>
<thead>
<tr>
<th>Size</th>
<th>Wt</th>
<th>Gastric Tube</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 - 5kg</td>
<td>N/A</td>
</tr>
<tr>
<td>1 1/2</td>
<td>5 - 12kg</td>
<td>10 FG</td>
</tr>
<tr>
<td>2</td>
<td>10 - 25kg</td>
<td>12 FG</td>
</tr>
<tr>
<td>2 1/2</td>
<td>25 - 35kg</td>
<td>12 FG</td>
</tr>
<tr>
<td>3</td>
<td>30 - 60kg</td>
<td>12 FG</td>
</tr>
<tr>
<td>4</td>
<td>50 - 90kg</td>
<td>12 FG</td>
</tr>
<tr>
<td>5</td>
<td>&gt; 90kg</td>
<td>14 FG</td>
</tr>
</tbody>
</table>
Endotracheal Intubation Guide

Special Notes

- All intubations facilitated or maintained with drug therapy will be reviewed as part of AT Clinical governance processes.
Endotracheal Intubation Guide

- Status
  - Endotracheal intubation

- Primary indications, Precautions, CIs
  - Respiratory arrest
  - Cardiac arrest
  - GCS 3-8 with absent gag reflex due to:
    - Respiratory failure
      SpO₂ < 85%
    - Non-Traumatic
      Neurological injury
    - Overdose
    - DKA

- Preparation

- Insertion of ETT

- Care and maintenance
  - Sedation

- Failed intubation
  - See CPG A0303
Special Notes

- **Uncontrolled bleeding**
  - 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.
**Endotracheal Intubation**

**Indications, Precautions, CIs**

### 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 Directive document specifies “Not for Intubation”
- Opiate O/D prior to treatment with Naloxone

### Contraindication (CIs)
- Primary Traumatic Neurological Injury
- Paediatric patient unable to visualise cords
- Infant patient < 1 year
- Spontaneously breathing patient with easily maintained airway
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
- Attach capnography, pulse oximeter and cardiac monitor
- Ensure all monitoring is functional
- Prepare equipment
  - Suction
  - ETT (plus one size smaller than predicted immediately available) with AT approved introducer
  - Oesophageal Detector Device (ODD).
  - Ensure equipment for a difficult / failed intubation is immediately available, including bougie, Supraglottic Airway, cricothyroidotomy kit
  - Mark cricothyroid membrane as necessary
  - Brief assistant to provide cricoid pressure, where appropriate
  - If suspected spinal injury or traumatic head injury, intubate using Supraglottic Airway.
- Ensure patency and secure IV access
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 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 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 CPG A0303 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.
- Suction ETT and oropharynx in all Pt’s. Caution with neurologically injured patient due to possible increase in intracranial pressure.
- If time permits, insert orogastric or nasogastric tube. The orogastric tube must be used in head or facial trauma.
- Ventilate using 100% oxygen and tidal volume of 7 ml/kg. Aim to maintain SpO₂ > 94% and EtCO₂ @ 35 - 40mmHg (except asthma / COPD where a higher EtCO₂ is acceptable, tricyclic OD where the target is 25 - 30mmHg, and DKA where the EtCO₂ should be maintained at the level detected immediately post-intubation, with a min. of 25mmHg).
- Document all checks and observations made to confirm correct ETT placement.
Endotracheal Intubation Insertion of ETT

**Status**
- Insertion / General care of ETT

**Insertion and checks of ETT**
- Action
  - ODD
  - Capnography - EtCO₂
  - Length lips / teeth
  - Auscultate chest / epigastrium
    - Chest rise and fall, bag movement, SpO₂, wave capnography, tube misting
  - Specific insertion instructions as per Insertion of Endotracheal Tube

**General care / ventilation**
- Action
  - Disconnect and hold ETT during transfers
  - ETT checks with each Pt movement
  - Provide circulatory support if hypotension present
  - Ensure wave capnography is being captured at all times
  - Suction ETT and oropharynx when necessary
  - Insert OG/NG tube, if time permits
  - Ventilate V₇ml / per kg, EtCO₂ 35 - 40mmHg appropriate to Pt condition
  - Specific instructions as per General Care of the Intubated Pt

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

- For patients who become hypotensive after intubation consider additional fluids and/or Adrenaline infusion according to clinical context. If hypotension persists consider reducing the sedation dose while closely monitoring the patient for signs of under-sedation.

- When utilising bolus doses start at the lower amount and escalate dosing according to clinical response

- Bolus dosing is intended to be only utilised when sedation is required while preparing for an infusion, while escalating infusion dosing or if an infusions is unavailable.

- Bolus doses are written as the same preparation and concentration as the infusion preparation.

General Care of the Intubated Pt

- Post intubation Infusions
  - Morphine 10mg + Midazolam 10mg in 10ml normal saline
    - = 1mg Morphine / 1mg Midazolam in 1 ml
    - = 1ml/hr = 1mg/hr
  - Fentanyl 100mcg + Midazolam 10mg in 10ml normal saline
    - = 10mcg Fentanyl / 1mg Midazolam in 1 ml
    - = 1ml/hr = 10mcg/1mg/hr

- Handover
  The ETCo2 and respiratory wave-form immediately prior to patient handover must be demonstrated to the receiving physician and documented on the ePCR
Endotracheal Intubation Care and Mx. of Intubated Pt

**Status**
- Intubated Pt

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

**Post Intubation Sedation**
- Restlessness / signs of under sedation in the absence of other noxious stimuli
  - e.g. ETT too deep / irritating, occult pain
- Signs of inadequate sedation
  - HR and BP trending up together
  - Lacrimation
  - Diaphoresis
  - Cough / Gag / Movement

**Stop**
- The ETT must be secured and tracheal placement reconfirmed with electronic capnography

**Sedation**

**Action**
- Morphine/Midazolam infusion 1-10mg/1-10 mg/hr IV
  - OR
- Fentanyl/Midazolam infusion 10-100mcg/1mg -10mg/hr IV

Until sedation infusion established or as required
- Morphine/Midazolam 0.5mg-5mg IV each drug as required, OR
- Fentanyl/Midazolam 5mcg-50mcg/0.5mg-5mg IV as required
### Failed Intubation Drill

**Unsuccessful Intubation**

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

**Assess**

- Objective confirmation of tracheal placement using EtCO₂
- Check with ODD

**Yes**

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

**No**

- **Action**
  - Immediately remove ETT, insert OPA/NPA and ventilate with 100% O₂

**Action**

- Continue to manage ventilation with Bag Value Mask (BVM) or Insert Supraglottic Airway

**Assess**

- Able to ventilate/oxygenate with BVM or Supraglottic Airway

**Yes**

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

**No**

- **Action**
  - Cricothyroidotomy

**After total of 2 attempts - abandon further intubation**

---

**Ceiling Membrane**

- **Action**
  - Cut and remove pieces

---

**Cricothyroidotomy**

- **Action**
  - Insert OPA/NPA and ventilate with 100% O₂

---

**Failed Intubation Drill CPG A0303**
## Contraindications

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

## Action

- Perform Cricothyroidotomy using approved equipment.
Foreign Body Choking

**Status**
- Evidence of choking

**Assess**
- Respiratory status
- Conscious State
- Severity of obstruction (effective or ineffective cough)

**Incomplete Airway Obstruction (Effective cough)**
- Encourage coughing
- Transport
- Reassess

**Complete Airway Obstruction (Ineffective cough)**
- Action

**Conscious**
- Give up to 5 back blows
  - If unsuccessful
    - Give up to 5 chest thrusts
    - Alternate between back blows and chest thrusts until obstruction is relieved
    - If Pt becomes unconscious refer to unconscious choking patient

**Unconscious**
- Manual Clearance
- Laryngoscope and Magills clearance
  - If unsuccessful
    - Commence CPR
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 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 < 90 mins.
- A goal of management in ACS is to achieve pain control if safe to do so. This reduces Cardiac workload.
Acute Coronary Syndrome

### Status
- Acute Coronary Syndrome (ACS)
  - Unstable Angina
  - NSTEMI
  - STEMI

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

### ACS Mx
- **Action**
  - General Principles of ACS Mx (A)

### 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 A0403 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.

- 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 contraindicated 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
- Oxygen therapy

**Nitrates**

- If systolic BP > 100mmHg, administer **GTN 400mcg buccal/sub-lingual**
- If necessary and if systolic BP > 100mmHg, repeat **GTN** every 5 mins. Consider repeat doses of **400mcg** buccal/sub-lingual until pain reduced to a comfortable or tolerable level or the onset of side effects

**Antiplatelet Rx**

- Aspirin 300mg chewed

**Pain Relief**

- Pain relief as per **CPG A0501 Pain Relief**
  - Rx until pain reduced to comfortable or tolerable level

**Hypertension +/- symptoms**
- Systolic BP > 160 or
- Diastolic BP > 100

- Control pain as per **CPG A0501 Pain Relief**
- **GTN 400 mcg buccal/sub-lingual**
  - Repeat **400mcg @ 5 mins** if hypertension persists
**Special Notes**

- Bradycardia is defined as a heart rate of < 60 bpm in adults. It may be normal in some patients and is rarely symptomatic until heart rate is < 50 bpm. Management is determined by the evidence of less than adequate perfusion.

- **Atropine** is unlikely to be effective in complete heart block.

- If extremely poorly perfused and not responding to Atropine and Adrenaline treat with external pacing if available.

- Pacing may be considered for first line management in some situations (e.g. rapidly deteriorating patient or heart blocks)

- Notify appropriate hospital capable of managing a Pt likely to require pacing.

**General Care**

- **Adrenaline Infusion**
  - 3mg Adrenaline added to 47ml D5W = 60mcg/ml
  - Infusion rate 5ml/hr = 5mcg/min.

- If no response from Adrenaline infusion @ 20mcg/min, increasing infusion rate is unlikely to have additional chronotropic effects.

- If no response to Adrenaline commence Transcutaneous Pacing.

- When commencing Transcutaneous Pacing, initial rate should be no greater than double the initial intrinsic rate.

- Pacing should be initial commenced in 'demand' mode unless artefact or inconsistent capture is encountered

- Initial milliamps should be started between 30-40mA and increased as required.
### Bradycardia

**Status**
- Evidence of Bradycardia

**Assess**
- Perfusion status
- Cardiac Rhythm
- Heart Failure
- Ischemic Chest Pain

**Adequate Perfusion**
- **Action**
  - BLS
  - Rx as per Less than Adequate perfusion if Pt deteriorates

**Less than Adequate Perfusion**
- **Action**
  - Atropine 600mcg IV
    - If no response after 3 - 5 mins
    - Repeat 600mcg IV

**Adequate Perfusion achieved**
- **Action**
  - Continue current management

**Inadequate or Extremely Poor Perfusion persists**
- **Action**
  - If poor perfusion persists treat as per CPG A0407 Inadequate Perfusion Cardiogenic Causes
    - Adrenaline infusion (3mg/47ml D5W) commencing @ 5mcg/min (5ml/hr)
      - Increase by 5mcg/min (5ml/hr) at 2 min intervals until adequate perfusion / side effects (max 20mcg/min)
      - If infusion unavailable Adrenaline 5mcg increments IV titrated to response. Continue until adequate perfusion or side effects
    - Transcutaneous external pacing
      - If not tolerated consult for management options
Special Notes

- Narrow complex tachycardia is defined as a heart rate of > 100 bpm with a QRS width less than 0.12 seconds.
- Narrow complex tachycardia can have a cardiac or non-cardiac aetiology.
- Broad complex tachycardia is defined as a heart rate of >100 bpm with a QRS equal to or greater than 0.12 seconds. Ventricular tachycardia is one form of broad complex tachycardia.
- AIVR is defined as having a rate of up to 110 bpm.
- Treatment of patients with a broad complex tachycardia with a rate between 100 -110 bpm must be guided by the clinical scenario and patient presentation.
Tachyarrhythmias - incl. SVT & VT (Adult)

**Status**
- Tachyarrhythmias

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

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

**Adequate Perfusion**
- **Action**
  - See CPG A0403 SVT (A)

**< Adequate Perfusion / Unstable**
- **Action**
  - See CPG A0403 SVT (B)

**Ventricular Tachycardia**
- **Action**
  - See CPG A0403 VT (C)
**Supraventricular Tachyarrhythmias (SVT)**

### Special Notes

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

- **IV Adenosine** requires rapid Sodium Chloride 20ml flush

- **IV Adenosine** doses should be halved in patients taking Dipyridamole or Carbamazepine, or who have received a heart transplant

- Ensure to press "sync" button on the defibrillator before performing Synchronised Cardioversion

### 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

- IV Adenosine requires rapid Sodium Chloride 20ml flush

- IV Adenosine doses should be halved in patients taking Dipyridamole or Carbamazepine, or who have received a heart transplant

- Ensure to press "sync" button on the defibrillator before performing Synchronised Cardioversion
Supraventricular Tachyarrhythmias (SVT) CPG A0403

- **Status**
  - SVT

- **Adequate perfusion**
  - Maintaining BP > 100

- **Asymptomatic**
  - Action
    - Abdominal valsalva manoeuvre

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

- **Reversion**
  - Action
    - BLS
  - Action
    - Adenosine 6mg IV rapid push. If no effect after 2 mins
  - Action
    - Adenosine 12mg IV rapid push. If no effect after 2 mins

- **No Reversion**
  - Action
    - Consider synchronised cardioversion
Supraventricular Tachyarrhythmias (SVT)

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.
- Ensure to press "sync" button on the defibrillator before performing Synchronised Cardioversion

General Care

- If wide complex QRS or unsure of diagnosis treat as for CPG A0403 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) CPG A0403

<figure>

### Status
- If inadequate perfusion with altered concious state and deteriorating rapidly and / or unresponsive to **Adenosine**

### Unstable
- Rapidly deteriorating, altered conscious state

### Unstable / rapidly deteriorating

#### Action
- If sedation required **Midazolam 2mg IV** over 1min. Repeat **1mg** @ 2 min intervals until pt does not respond to verbal stimuli but does respond to pain (**max. 5mg**)
- Synchronised Cardioversion (*Ensure to 'activate the synchroniser' and it is functioning effectively while preparing airway & ventilation equipment.*)
  - Biphasic: 100J
- If successful, reassess clinical status
- If unsuccessful repeat cardioversion, if required
  - Biphasic: 200J
- If still unsuccessful, medical consult
- If another rhythm develops at any stage or Pt becomes pulseless, treat as per appropriate Clinical Practice Guideline

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

### Loss of Output
- **Action**
  - As per appropriate CPG
Ventricular Tachycardia (VT)

Special Notes

- **Unstable signs and symptoms:**
  - Congestive cardiac failure
  - Systolic BP < 80mmhg
  - GCS < 13
  - Rapidly deteriorating

- 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.

- Preference for anterior / posterior pad placement.

- If runs of VT associated with underlying Bradycardia treat as per CPG A0402 Bradycardia.

- Sedation should be considered where possible but should not delay cardioversion. The Pt’s conscious level and haemodynamic stability will guide the need for sedation.

- Ensure to press "sync" button on the defibrillator before performing Synchronised Cardioversion

General Care

- Consider ICP support as these Pts are dynamic and have a potential to deteriorate but do not delay transport.

- Pt presenting symptomatic and poorly perfused is likely to require sync. cardioversion prior to Amiodarone administration.

- **Amiodarone infusion**
  - Amiodarone 5mg/kg (max 300mg) diluted with required volume of D5W to make 50ml (6mg/ml) run over 20 mins.

  **Amiodarone infusion example**

<table>
<thead>
<tr>
<th>Weight</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>40kg</td>
<td>200mg</td>
</tr>
<tr>
<td>50kg</td>
<td>250mg</td>
</tr>
<tr>
<td>60kg</td>
<td>300mg</td>
</tr>
<tr>
<td>&gt; 60kg</td>
<td>300mg</td>
</tr>
</tbody>
</table>

- Ensure to press "sync" button on the defibrillator before performing Synchronised Cardioversion.
Ventricular Tachycardia (VT) CPG A0403

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

Stop
- Do not administer Amiodarone if suspected Tricyclic Antidepressant Medication Overdose

Torsade de Pointes
✓ Action
- Magnesium infusion 2g IV over 10 mins
- Repeat once after 10 mins if nil or poor response.
- If patient becomes unstable, consider Cardioversion/Defibrillation as indicated

Stable
✓ Action
- Amiodarone infusion 5mg/kg IV (max. 300mg) over 20 mins once only
- Rx as per Unstable if Pt deteriorates

Unstable
✓ Action
- If sedation required Midazolam 2mg IV over 1min. Repeat 1mg @ 2 min intervals until pt. does not respond to verbal stimuli but does respond to pain (max. 5mg)
- Perform Synchronised Cardioversion (Ensure to ‘activate the synchroniser’ and it is functioning effectively while preparing airway & ventilation equipment.)
  - Commence with 100J (Biphasic)
  - If unsuccessful, repeat using 200J (Biphasic)

Reversion
✓ Action
- Narrow complex
  - Amiodarone Infusion as above (if not already running)
- Other rhythms
  - Rx as per appropriate CPG

Loss of Output
✓ Action
- As per appropriate CPG

Only dilute Amiodarone with D5W
**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

**< 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 60-110**
- Action
  - Confirm chest is clear
  - Normal Saline 250ml IV bolus
    - Repeat 250ml IV if perfusion status not improved

**Ventricular rate > 110**
- Action
  - Rx as per CPG A0404
  - Ventricular Tachycardia
**Special Notes**

- Pts with pulmonary oedema may present with wheezes. Pts 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.
- Pulmonary oedema is a clinical syndrome resulting from a range of causes both cardiac and non cardiac. The guideline is primarily directed at cardiogenic pulmonary oedema secondary to left ventricular failure which is the most common cause.
- Other medical causes of pulmonary oedema such as liver disease, renal disease, nutritional deficiency and fluid overload would be treated using the guideline.
- Non medical causes may be due to altered alveolar permeability, e.g. inhalation of smoke or toxic gases, near drowning, aspiration and anaphylaxis. ThosePts should be primarily treated with oxygen therapy, assisted ventilation and if wheeze is present treated as per CPG A0601 Asthma
- Morphine is no longer indicated to control anxious/combative pulmonary oedema patients.
- Manage chest pain as per CPG A0401 Acute Coronary Syndrome.
- Frusemide to be considered only in cases of suspected fluid overload.

**GTN Infusions**

- A GTN infusion is only to be commenced in conjunction with CPAP
- Dramatic changes in Blood Pressure are possible so constant and regular blood pressure monitoring should occur every 5-10mins in the arm opposite to the infusion.
- 80% of the active agent may be absorbed by the PVC giving sets. Absorption also increases with high concentration and over time.
- Carefully use titrated doses to achieve the desired clinical effect

**GTN Infusion Preparation and Administration**

- Should only be commenced in conjunction with CPAP and Systolic BP >140mmHg
- Use Glyceryl Trinitrate 50mg in 10ml Ampoule
  
  Dilute 10mg (2ml) of GTN into a 100ml bag of 5% Dextrose. Subsequently drawing off 50ml in a syringe making a solution of 5mg:50ml
- Commence infusion at 10mcg/min (6ml/hr)
- Increase by 10mcg/min (6ml/hr) every 3-5minutes according to response

<table>
<thead>
<tr>
<th>Dose</th>
<th>Rate of Infusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 mcg/min</td>
<td>6 ml/hr</td>
</tr>
<tr>
<td>20 mcg/min</td>
<td>12 ml/hr</td>
</tr>
<tr>
<td>30 mcg/min</td>
<td>18 ml/hr</td>
</tr>
<tr>
<td>40 mcg/min</td>
<td>24 ml/hr</td>
</tr>
<tr>
<td>50 mcg/min</td>
<td>30 ml/hr</td>
</tr>
<tr>
<td>60 mcg/min</td>
<td>36 ml/hr</td>
</tr>
<tr>
<td>70 mcg/min</td>
<td>42 ml/hr</td>
</tr>
<tr>
<td>80 mcg/min</td>
<td>48 ml/hr</td>
</tr>
<tr>
<td>90 mcg/min</td>
<td>54 ml/hr</td>
</tr>
<tr>
<td>100 mcg/min</td>
<td>60 ml/hr</td>
</tr>
</tbody>
</table>

**Caution - GTN Infusion**

- GTN Infusions should be reduced if systolic blood pressure falls below 120mmHg (target systolic blood pressure 120-140 mmHg)
- In preparation avoid skin contact with concentrated solution
**Pulmonary Oedema**

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

**Breathing Difficulty**

- Basal / Midzone Crackles
  - Action
    - Treat as for Clinical Approach
    - Posture sitting with legs dependant
    - If systolic BP > 100mmHg, administer **Glyceryl Trinitrate** 400mcg buccal / sub-lingual
    - If symptoms unrelieved, systolic BP > 100mmHg; repeat 400mcg doses of **Glyceryl Trinitrate** @ 5 min intervals
    - Consider increasing incremental dose by 400mcg up to a maximum of 1.6mg per dose until symptoms relieved or onset of side effects

- Full Field Crackles
  - Action
    - Rx as per Basal / Midzone Crackles
    - ICP backup
    - CPAP
    - Consider **GTN Infusion 10mcg/min (6ml/hr)** if Systolic BP > 140 mmHg in conjunction with CPAP
      - Increasing by 10mcg/min every 3-5minutes as required
    - Intubate if necessary as per CPG A0302
  - Caution - GTN Infusion
    - GTN Infusion should be reduced if systolic blood pressure falls below 120mmHg (target systolic BP between 120-140mmHg)
    - Perform constant and regular blood pressure checks (every 5 - 10 minutes)

- Full Field Crackles
  - Action
    - Consider **Frusemide 20 - 40mg IV**

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

**Status**
- Pulmonary Oedema
Special Notes

- 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
  - 3mg Adrenaline added to 47ml D5W = 60mcg/ml
  - Infusion rate 5mls/hr = 5mcg/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 as per Inadequate or Extremely Poor Perfusion

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

**Inadequate or Extremely Poor Perfusion persists**
- **Action**
  - If chest clear continue Normal Saline 250ml IV boluses up to 20ml/kg
  - Adrenaline infusion (3mg/47ml D5W) commencing @ 5mcg/min (5ml/hr)
    - Increase by 5mcg/min (5ml/hr) @ 2 min intervals until adequate perfusion/side effects

If infusion unavailable / malfunction:
- Adrenaline 5mcg IV increments titrated to response or side effects

If poor response:
- Adrenaline up to 50 - 100mcg IV as required
Special Notes

- Specific indications for Fentanyl:
  - Contraindication to morphine
  - Short duration of action desired (e.g. dislocations)
  - Hypotension
  - Nausea and / or vomiting secondary to previous morphine administration
- Fentanyl should be the narcotic drug of choice for the trauma Pt with less than adequate perfusion.
- Opioids are NOT to be administered to patients with migraines.
- Consider smaller doses of IV pain relief if the patient has previously been administered opioids
- BP, HR, Resp Rate and SpO2 is to be recorded initially and repeated after administering a dose of pain relief.
- The analgesic effect of Morphine IM or Fentanyl IM are slow and variable. This route must be used as a last resort.
- Once initial opioid loading has occurred (2-3 doses) the dose of Morphine or Fentanyl should be reduced and the time between doses doubled.
- If administering >20mg of Morphine or >200mcg Fentanyl, strong consideration should be given to consulting for advice with ongoing management
- Ketamine is indicated for pain as a result of fractures unrelieved by opioids (doses of >20mg Morphine or 200mcg Fentanyl), severe burns or short lived painful procedures e.g. extrication, splinting of fractures
- Emergence Reactions, hallucinations or other behavioural disturbances associated with Ketamine administration may be managed utilising small doses of Midazolam as per CPG.

Stop

- Consider reducing narcotic doses for age and disease modifiers such as:
  - Pt Age >65
  - Shocked patients (Trauma or other)
  - Frail patients
  - Cardiovascular compromise
  - Underlying Lung disease or injury
  - Metabolism disorders (e.g. kidney or liver disease)
  - Any other condition the Paramedics clinical decision requires reduced doses or increased time between boluses.
- Narcotic pain relief must not be administered during labour.
- If respiratory depression occurs due to narcotic administration pt should be managed as per CPG A0707 Management of Overdose.

---

### Fentanyl IN Dosing Table

<table>
<thead>
<tr>
<th>Fentanyl IN 250mcg/1ml preparation</th>
<th>Age &lt; 65</th>
<th>Age &gt; 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial dose</td>
<td>100mcg</td>
<td>50mcg</td>
</tr>
<tr>
<td>No. 25mcg Sprays</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Repeat doses</td>
<td>50mcg</td>
<td>50mcg</td>
</tr>
<tr>
<td>No. 25mcg Sprays</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

The current device utilised by Ambulance Tasmania delivers a metered dose of approx 25mcg per spray.

**Remember** - The actuator takes 4-5 'priming' depressions before atomization occurs.
Pain Management

**Status**
- Complaint of Acute Pain

**Assess**
- Determine need for Pain Relief
- BP, HR, Resp Rate & SpO2 to be recorded before EVERY dose
- Consider non-pharmacological management options as appropriate e.g. splinting, cold/heat therapy, position

**Stop**
- Exercise caution in patients with age and disease modifiers. Consider reduced doses and/or increases in dosing intervals.

**Mild Pain**
- **Action**
  - Consider need for any pain relief
  - If patient requests analgesia consider Paracetamol 1000mg oral if not already administered within past 4 hours.
  - If pain not controlled or rapid pain relief required, consider treating as per Moderate pain
  - Paracetamol should not be used to treat chest pain in suspected acute coronary syndrome

**Moderate Pain**
- **Action**
  - Consider Paracetamol as per Mild Pain relief
  - **IV Access Available:**
    - Morphine IV or Fentanyl IV as per Severe Pain
    - If IV access significantly delayed (>10mins) or unsuccessful:
      - Fentanyl up to 100mcg IN (see IN Fentanyl dosing table)
        - Repeat up to 50mcg IN after no less than 5 mins, intervals titrated to pain or side effects (total max. dose 400mcg)
      - Methoxyflurane 3ml
        - Repeat 3ml if required (max. 6ml)
    - If unable to administer Fentanyl IN or Methoxyflurane:
      - Morphine up to 0.1mg/kg (max single dose 10mg) IM/SC OR Fentanyl up to 1mcg/kg (max single dose 100mcg) IM/SC, repeated once if required after no less than 20 minutes

**Severe Pain**
- **Action**
  - IV/IO Access Available:
    - Morphine up to 0.05mg/kg IV/IO (max 5mg)
      - Repeat after no less than 5 mins, (max. 20mg) titrated to pain or side effects
    - OR
      - Fentanyl up to 0.5mcg/kg IV/IO (max 50mcg)
        - Repeat after no less than 5 min, titrated to pain or side effects (max 200mcg)
    - Consider reducing 2nd and all subsequent doses
  - Pain remains uncontrolled:
    - Morphine IV/IO or Fentanyl IV/IO as above - no maximum
    - Repeat doses should be no less than 10 mins apart and half the bolus dose

**Fractures (Unresponsive to Opioids) Severe Burns or Procedures**
- **Action**
  - Consider Ketamine up to 20mg IV
    - Repeat up to 20mg IV / IO every 2-3 mins titrated to pain or side effects to a total max of 1mg/kg
  - Consider Midazolam up to 0.5mg IV for emergence following ketamine administration. Repeat Midazolam up to 0.5mg IV / IO per minute as required (Max total 3mg)
Acute Bronchoconstriction (Asthma, COPD)

- Status
  - Respiratory distress

- Assess
  - Severity of Asthma / COPD presentation

- Mild/Moderate/Severe
  - Action
  - See CPG A0601 (A)

- All exacerbation of COPD
  - Action
  - See CPG A0601 (B)

- Altered conscious state (Asthma)
  - Action
  - Witnessed loss of cardiac output - See CPG A0601 (D)
  - PEA as per CPG A0201 Cardiac Arrest

- No cardiac output
  - Action
  - See CPG A0601 (C)
**Special Notes**

- Asthmatic Pts are dynamic and can show initial improvement with treatment then deteriorate rapidly.
- Consider ICP 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 with a wheeze associated with heart failure and no asthma / COPD Hx.
- pMDI = Pressurised Metered Dose Inhaler

**General Care**

- **Magnesium infusion**
  - Magnesium 2.47g/5ml diluted in 45ml D5W
  - given over 20 mins delivery rate 150ml/hr
**Asthma** Mild/Moderate/Severe

### Mild or Moderate Respiratory Distress

**Action**
- **Salbutamol pMDI and spacer**
  - Deliver 6 puffs @ 5 mins until resolution of symptoms
- If pMDI spacer unavailable
  - **Salbutamol 10mg (5ml) Nebulised**
  - Repeat 5mg (2.5ml) Nebulised @ 5 mins if required

### Severe Respiratory Distress

**Action**
- **Salbutamol 10mg (5ml) and Ipratropium Bromide 500mcg (2ml) Nebulised**
  - Repeat Salbutamol 5mg (2.5ml) Nebulised @ 5 mins if required

**If further deterioration or no response**

- **Magnesium 2.47g/5ml (10.3mmol) infusion over 20 mins.**
  - Dilute Magnesium 2.47g in 45ml D5W over 20 mins - Administer @ 150ml/hr

  If Magnesium Infusion not available or patient fails to improve with Magnesium
  
  - **Salbutamol 250mcg IV**
    - Repeat 250mcg IV @ 15 mins if required
  
  - **Dexamethasone 8mg IV/IM**
• COPD Pts will often have significant cardiac disease. Therefore **IV Magnesium, IV Salbutamol** and **IM Adrenaline** should NOT be administered to these Pts.
**COPD Chronic Obstructive Pulmonary Disease**

**Status**
- Exacerbation of COPD

**Moderate to Severe exacerbations of COPD**

**Action**
- Irrespective of severity
  - Salbutamol 10mg + Ipratropium Bromide 500mcg Nebulised
- Consider
  - Dexamethasone 8mg IV

**Adequate response**

**Action**
- Titrate O₂ flow to target SpO₂ 88 - 92%
  - Consider low flow O₂ e.g. Nasal Prong O₂

**Inadequate response**

**Action**
- Repeat Salbutamol 5mg Neb
  - Titrate to target SpO₂ 88 - 92%

**Altered Conscious State**

**Action**
- Pt requires immediate assisted ventilation
  - Ventilate @ 5 - 8 ventilations/min, Vt 7ml/kg
  - Moderately high respiratory pressures
  - Allow for prolonged expiratory phase
  - Gentle lateral chest pressure during expiration if required
  - Consider intubation per CPG A0302 Endotracheal Intubation

If Pt loses output at any stage, see CPG A0601 (D)
Special Notes

- Extreme care is necessary when assisting ventilation in asthma. High positive pressures are necessary although severe bronchoconstriction, especially exhalation, causes gas trapping.
- High EtCO$_2$ levels should be anticipated in the asthmatic with altered conscious state. Pt. EtCO$_2$ levels of 120mmHg in this setting is considered safe and no attempt should be made to reduce this via increased ventilation except in the setting of severe persistent hypoxia.
**Asthma**

**Altered Conscious State**

**Status**
- Altered Conscious State
  - with poor or no ventilation but still with cardiac output

**Pt requires immediate assisted ventilation**

**Action**
- IPPV with 100% O₂
- Ventilation rate 5-8 / min
- Allow for prolonged expiratory phase
- Gentle lateral chest pressure during expiration if required

**Adequate Response**
- Rx as per Severe Respiratory Distress (A)

**Imminent or Impending Arrest**

**Action**
- Consider Adrenaline 300mcg IM (1:1,000)
- Repeat 300mcg IM @ 20 mins as required

If unable to gain IV administer Adrenaline 300mcg IM (1 : 1,000)
- Salbutamol 250mcg IV
  - Repeat 250mcg IV @ 15 mins if required

If IV access administer
- Magnesium 2.47g/5ml (10.3mmol) infusion over 20 mins.
  - Dilute Magnesium 2.47g in 45ml D5W over 20 mins - Administer @ 150ml/hr
- Adrenaline up to 50-100mcg increments IV / IO titrated to effect
- Normal Saline up to 20ml/kg
- Consider intubation per CPG A0302 Endotracheal Intubation

**If Pt loses output at any state, CPG A0601 (D)**
Special Notes

- Positive Pressure Ventilation, via gas trapping, may generate progressively higher intrathoracic pressures. This reduces venous return and the patient may lose palpable cardiac output, resulting in Electro Mechanical Dissociation. Clinical differentiation between tension pneumothorax and high intrathoracic pressure at this point is clinically impossible to differentiate. One minute of apnoea may permit gas trapping to decrease slowly via elastic recoil, aided by gentle lateral chest thrusts with return of pulses. If after one minute of apnoea, ventilation remains difficult and no output is detectable, tension pneumothorax must be presumed present. Due to the difficulty in identifying the affected side, it is advised that bilateral chest decompression is performed.
Asthma, COPD - No Cardiac Output

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

**Pt requires immediate intervention**
- **Action**
  - **Apnoea 1 min**
    - Gentle lateral chest pressure

**Cardiac output returns**
- **Action**
  - **Asthma**
    - Treat as per CPG A0601 (C)
  - **COPD**
    - Treat as per CPG A0601 (B)

**Carotid pulse, no BP**
- **Action**
  - **Adrenaline 50mcg IV**
    - Repeat up to 50 - 100mcg IV @ 2 mins as required
  - **Normal Saline up to 20ml/kg IV**

**No return of output**
- **Action**
  - **Bilateral Chest Decompressions**
  - **Rx as per Guideline**
    - CPG A0201 Cardiac Arrest
Nausea and Vomiting

**General Care**

- If nausea and vomiting are tolerated, basic care and transport are the only required treatments.
- Take care with Metoclopramide Polyamp as it is similar to Ipratropium Bromide and Atropine Polyamps in appearance.

**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.
- Antiemetics should never be administered if the Pt is suspected of having taken an oral drug overdose. This may increase the absorption of the ingested substance.
- **Ondansetron** is the preferred drug for Nausea and Vomiting secondary to cytotoxic drugs or radiotherapy.
- **Metoclopramide is not to be given to pts < 16 years.**
Nausea and Vomiting

**Status**
- Actual or potential for nausea and vomiting

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

**Stop**
- Prochlorperazine must not be given IV
- Metoclopramide and Prochlorperazine should not be administered in the same episode of Pt care

**Nausea and vomiting associated with:**
- Cardiac chest pain
- Iatrogenic secondary to narcotic analgesia
- Severe gastroenteritis
- Previously diagnosed migraine

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

**Action**
- **Prochlorperazine 12.5mg IM**
- **Ondansetron 4mg IV / IM**

If dehydrated
**Action**
- Manage as per CPG A0801 Inadequate Perfusion Associated with Hypovolaemia

---

**Prochlorperazine must never be given IV**

---

**Prophylaxis for:**
- Eye trauma
  - e.g. penetrating eye injury, hyphema
- Patients with suspected spinal injuries who are immobilise on the stretcher

**Action**
- **Ondansetron 4mg IV / IM**
  - Repeat once only after 10 mins if symptoms persist (max. 8mg)
**General Care**

- If Pt’s next meal is more than 20 mins away, encourage the Pt to eat a low Gl 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 the assistance of a friend or relative. 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 Primary Care Physician for follow up.
- If inadequate response transport without delay.
- Maintain general care of the unconscious Pt and ensure adequate airway and ventilation.
- A further dose of **Glucose 10%** may be required in some Hypoglycaemic episodes. Consider consultation if BGL remains less than 4 mmol/L and it is not possible to administer oral carbohydrates
- Continue initial Mx and transport.

**Special Notes**

- Pt may be aggressive during management.
- Ensure IV is patent before administering **Glucose**. Extravasation of **Glucose** can cause tissue necrosis.
- Ensure sufficient advice is provided on further management and follow-up if Pt refuses transport
- IV line must never be left In-Situ if the Pt refuses transport.
**Glycaemic Emergencies**

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

**Assess**
- BGL

- **BGL > 4mmol/L**
  - **Action**
    - BLS
    - Consider other causes of altered conscious state
      - e.g. stroke, seizure, hypovolaemia

- **BGL < 4 mmol/L**
  - **Responds to commands**
    - **Action**
      - Glucose 15g Oral
  - **Does not respond to commands**
    - **Action**
      - IV cannula in a large vein
      - Glucose 10% 20g (200ml) IV titrate to response
        - Normal Saline 10ml flush
      - If IV access not possible / unsuccessful – Glucagon 1mg (1 IU) IM

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

- **Poor response**
  - **Action**
    - Consider Glucose IV or Glucagon IM

- **Adequate response**
  - GCS 15
  - **Action**
    - Cease Glucose if still being given

- **Inadequate response**
  - GCS < 15 after 3 mins
  - **Action**
    - Repeat Glucose 10% 10g (100ml) IV titrating to Pt conscious state
      - Normal Saline 10ml flush
Glycaemic Emergencies

**Status**
- Evidence of probable Hyperglycaemia

**Assess**
- BGL

**BGL > 7 mmol/L**
- Pt unwell
  - **Action**
    - Pts require definitive medical assessment and treatment.

**BGL > 12 mmol/L**
- **Action**
  - **Normal Saline** 250 - 500ml
  - If shocked Rx as per CPG [A0801 Inadequate Perfusion Associated with Hypovolaemia](#)
Special Notes

- Seizures may not always present as 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, they may be left in the care of a responsible third party. Advise this person of actions to take if symptoms reoccur and emphasise the importance of early follow up with the patient's primary care physician.
- Administer IM Midazolam if IV access is not already established prior to seizure.
- If IV access is already established prior to a seizure, then consider IV administration of Midazolam.

Special Notes

- 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 (mls and mgs) each time as stock strength may change and reliance on familiarity may lead to errors.
- An accurate record of the time a seizure commenced, the duration of seizure, the time until GCS returns to 15 and a detailed description of seizure activity is critical.
Continuous or Recurrent Seizures

**Status**
- Continuous or recurrent seizures

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

**Continuous or Recurrent Seizure**
- Ensure accurate dosage - 1/2 dose for age > 60 yr

**Action**
- Age > 60 - Midazolam 0.05mg/kg IM (max. single dose 10mg)
- Age < 60 - Midazolam 0.1mg/kg IM (max. single dose 10mg)
- If IV access already established:
  - Midazolam 0.05mg/kg IV (max. single dose 10mg)

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

**Seizure activity continues > 5 mins**
- ✓ Action
  - Midazolam 0.05mg/kg IV
    - Repeat 0.05mg/kg IV @ 5 mins as required (max single dose 10mg)
    - max. combined dose IM + IV 0.25mg/kg
  - Consider intubation as per CPG A0302 Endotraheal Intubation

**Seizure activity continues >10 mins**
- ✓ Action
  - Repeat original Midazolam IM dose once only
  - Monitor airway and BP
# Special Notes

- Signs of allergy include a range of cutaneous manifestations and/or a history of allergen exposure. This history can include food, bites/stings, medications or the allergen can be unknown.

- In rare circumstances anaphylaxis can occur with symptoms in an isolated body system. If a patient has hypotension, bronchospasm or upper airway obstruction where anaphylaxis is considered possible following exposure to a known allergen for the patient, treat as anaphylaxis.

- International guidelines recommend IM administration of Adrenaline to the anterolateral mid-thigh as the preferred site due to improved absorption. While remaining alert to patient comfort and dignity issues, the mid-lateral thigh should be considered the preferred site of administration where possible.

- IV Adrenaline bolus doses are no longer considered acceptable practice where an IV infusion can be utilised.

- IM Adrenaline should be first route of administration even in the severely compromised patient.

- Any infusion established under this Guideline must be clearly labelled with the drug name and dose of any additive drug and their dilution.

- For patients persistently unresponsive to Adrenaline (especially if taking beta blocker medication) the administration of Glucagon 1-2IU IM or IV can be considered under medical consult. Glucagon administration must not delay further Adrenaline administration.

- Anaphylaxis with hypotension or cardiac arrest will require aggressive fluid resuscitation, and is an essential adjunct to adrenaline. Doses of up to 50ml/kg may sometimes be required.

---

# General Care

- Anaphylaxis can be difficult to identify. Cutaneous features are common though not mandatory. Irrespective of known allergen exposure, if 2 or more systemic manifestations are observed then anaphylaxis should be accepted.

- Deaths from anaphylaxis are far more likely to be associated with delay in management rather than due to inadvertant administration of Adrenaline.

- All patients with suspected anaphylaxis must be advised that they should be transported to hospital regardless of their presentation or response to management. International guidelines recommend at least 4 hours observation following treatment.

- Inhaled therapy may be of benefit in management of anaphylaxis though it should always be secondary therapy. Salbutamol may be of use for persistent bronchospasm and Nebulised Adrenaline may be of use for persistent upper airway oedema and stridor.

- Where poor perfusion persists despite initial Adrenaline therapy, large volumes of fluid may be extravasating. IV fluid therapy is indicated to support vasopressor administration.

- **Adrenaline infusion**
  - 3mg of 1:1000 Adrenaline added to 47ml D5W = 60mcg/ml
  - Infusion rate 1mls/hr = 1mcg/min titrated up or down according to response

- If Adrenaline Infusion pump unavailable
  - Mix 500mcg (0.5ml) of 1:1000 Adrenaline with 500ml Normal Saline = 1mcg/1ml
  - Start Adrenaline infusion at 10ml/min (10mcg/min - 200 drops per minute) titrating up or down according to response.
Anaphylaxis

**Assess**

- Sudden onset of Symptoms (minutes to hours), **AND**
  - R Respiratory distress (SOB, wheeze, cough, stridor)
  - A Abdominal symptoms (nausea, vomiting, diarrhea, abdominal pain/cramping)
  - S Skin/mucosal symptoms (hives, welts, itch, flushing, angioedema, swollen lips/tongue)
  - H Hypotension (or altered conscious state)

OR

- Isolated hypotension (SBP <90mmHg), or isolated bronchospasm, or Isolated upper airway obstruction, following likely exposure to a known antigen

OR

- Any single symptoms of R.A.S.H. in a patient exposed to a known antigen and previous history of Anaphylaxis/Severe allergic reactions to the same antigen

**Status**

- Suspected anaphylaxis

**Stop**

- If patient has history of anaphylaxis and has received management prior to arrival, they **MUST** be transported to hospital for observation and follow up

**No Anaphylaxis**

- Basic life support
- Reassess for potential deterioration
- Consider transport for observation and further management

**Action**

- Monitor Pt for cardiac arrhythmias
- Adrenaline 500mcg IM (1 : 1,000)
  - Repeat 500mcg IM @ 5 mins until satisfactory results or side effects occur
- Treat bronchospasm as per A0601 Asthma (A)
- Consider fluid as per CPG A0801 Inadequate Perfusion Associated with Hypovolaemia
- Consider Nebulised Adrenaline for upper airway oedema as per P0601 Upper Airway Obstruction

**Anaphylaxis / Severe Allergic reaction**

- If no IV access consider I/O
- Adrenaline infusion (3mg in 50ml via syringe driver) commencing @ 10mcg/min (10mls/hr) titrated to response or adverse effects

**Inadequate Response or Deteriorating**

- If patient has history of anaphylaxis and has received management prior to arrival, they MUST be transported to hospital for observation and follow up
**Inadequate Perfusion** Non-cardiogenic / Non-hypovolaemic

### General Care

- Unstable Pts may require bolus **Adrenaline** concurrently with the infusion.

  **Adrenaline infusion**
  - 3mg Adrenaline added to 47ml D5W = 50mcg/ml
    - Infusion rate $5ml/hr = 5mcg/min$

- If sepsis is suspected and a prolonged transport times exist, Medical CONSULT for Ceftriaxone and Dexamethasone (dose on consult)

- Consider treatment as per CPG A0706 Meningococcal Septicaemia

### Special Notes

- Any infusions established under this Guideline must be clearly labelled with the name and dose of additive drugs and their dilution.

- Sepsis criteria are relevant in the presence of an infection or other causes of SIRS (Systemic Inflammatory Response Syndrome).
  - 2 or more of:
    - Temp $>38^\circ$ or $<36^\circ$
    - HR $>90$
    - RR $>20$
    - BP $<90$

  Consider Meningococcal Sepsis
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**
- **Repeat up to 20ml/kg IV (max. 40ml/kg)**

**Inadequate or Extremely Poor Perfusion persists following 40ml/kg fluid**

**Action**
- Adrenaline infusion (3mg/47ml D5W) commencing @ 5mcg/min (5ml/hr)
  - Increase by 5mcg/min. (5ml/hr) titrated to response / side effects (Max dose 50mcg/min)
  - If infusion unavailable
    - **Adrenaline**
    - 5mcg IV titrated to response
- If poor response
  - **Adrenaline** up to 50 - 100mcg IV as required
  - NB. Doses > 100mcg may be required
- If chest clear, continue Normal Saline up to 20ml/kg IV boluses as per CPG A0801 Inadequate Perfusion Associated with Hypovolaemia
General Care

Ceftriaxone preparation

- Dilute each 1g of Ceftriaxone with 9.5ml of Normal Saline and administer 1g IV / IO over approximately 2 mins. (i.e. 2g over 4mins)
- If unable to obtain IV / IO access, or not accredited in IO access, dilute each 1g of Ceftriaxone with 3.5ml 1% Lignocaine HCL and administer each 1g IM into the upper lateral thigh or other large muscle mass.

Special Notes

- Meningococcal septicaemia is a life-threatening infection, caused by the meningoccus bacteria Neisseria Meningitides. Deterioration can be rapid and irreversible, with treatment becoming less effective as the disease state progresses. A Non-blanching rash, either petechial (pinpoint) or purpuric (bruises) can be a late sign. If Meningococcal septicaemia is suspected administer Ceftriaxone.
- 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 occupational exposure.
Meningococcal Septicaemia

Status
- Suspected meningococcal septicaemia

PPE

Suspected Meningococcal Septicaemia
- Evidence of septicaemia
  - Headache, fever, joint pain, altered conscious state, hypotension and/or tachycardia; with or without:
- Typical purpuric rash

IV Access

Action
- Ceftriaxone 2g IV
  - Dilute each 1g with normal saline to make 10ml
  - Administer each gram slowly over 2 mins
  - If < Adequate Perfusion manage as per CPG A0705 Inadequate Perfusion Associated with Non-Cardiogenic/Non-Hypovolaemia

No IV Access

Action
- Unable to gain IV access
- Ceftriaxone 2g IM
  - Dilute each 1g with 1% Lignocaine HCL to make 4ml
  - Administer into upper lateral thigh or other large muscle mass
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)?

General Care

- Provide Supportive Care (all cases)
  - Provide appropriate airway management and ventilatory support
  - If Pt is in an altered conscious state, assess BGL and if necessary manage as per CPG A0702 Glycaemic Emergencies
  - If Pt is bradycardic with poor perfusion manage as per CPG A0402 Bradycardia
  - If Pt is inadequately perfused, manage as per CPG A0801 Inadequate Perfusion Associated with Hypovolaemia
  - Assess Pt temp. and manage as per CPG A0901 Hypothermia / Cold Exposure, or CPG A0902 Environmental Hyperthermia / Heat Stress
Management of Overdose

Status
• Suspected overdose

Assess
• Substance involved

Stop
• Do not administer Amiodarone if suspected Tricyclic Antidepressant Medication Overdose

Action
• Consider Medical Consultation

Narcotics (A)
• Heroin
• Morphine
• Codeine
• Other narcotic preparations

TCA Antidepressants (B)
• Amitriptyline
• Nortriptyline
• Dothiepin

Sedatives (C)
• GHB
• Alcohol
• Benzodiazepines
• Volatile agents

Psychostimulants (C)
• Cocaine
• Amphetamines
Management of Overdose: Narcotics

**General Care**
- If inadequate response after 10 mins, 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.

**Special Notes - Partial Reversal**
- Most patients require only partial reversal of a narcotic overdose. This may be in instances of recreational, palliative or chronic pain narcotic usage.
- Partial reversal of the overdose and the transport of the patient to hospital is the preferred treatment.
- This is to avoid precipitating withdrawal which may make the patient unmanageable due to behavioural disturbances and possible harmful cardiovascular effects.
- The use of both GCS and Resp Rate as a guide to treatment is acceptable, with a goal of a GCS>12 and RR >8 min (ensuring adequate tidal volume).

**Special Notes - Complete Reversal**
- This is to be a less commonly utilised treatment pathway reserved for patients who are severely compromised or imminent arrest.
- In this instance complete reversal is the preferred treatment pathway.
- Transport of these patients is still strongly recommended, however may not always be practical due to patient agitation.
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. obvious head injury)

**Narcotic Overdose**
- GCS < 12 and/or Resp Rate <8

**Narcotic overdose**
**Action**
- Assist and maintain airway / ventilation

**Partial Reversal**
**Action**
- Naloxone 100mcg IV bolus every 60 seconds titrated to response. *(max 2mg)*
- If no response after 1mg Naloxone strongly consider other causes of presentation and transport without delay.
  - Consider airway Mx CPG A0301 Laryngeal Mask Airway
  - Consider airway Mx CPG A0302 Endotracheal Intubation

**Complete Reversal**
**Action**
- Naloxone 800mcg IM

**Inadequate response after 5 mins**
**Action**
- Naloxone 800mcg IV, IM Repeat at 400mcg IV, IM *(Total max 2mg)*
- Consider airway Mx CPG A0301 Laryngeal Mask Airway
- 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
  - 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 positive R wave > 3mm in aVR, prolonged PR, QRS and QT intervals. If QRS widening and >0.12 sec - indicates severe toxicity with risk of ventricular arrhythmias and seizures.

QTc is the corrected QT interval. QTc > 500 msec indicates toxicity with tricyclic overdose. MRX monitors are able to measure QTc when a 12 lead is taken.

- Caution must be used when administering Sodium Bicarbonate 8.4% and hyperventilation as the combination has been associated with fatal alkalaemia. Do not allow ETCO₂ to fall below 25mm Hg.

- Sodium Bicarbonate 8.4% should NEVER be administered to patients with a EtCO2 below 25mmHg.
Management of Overdose: Tricyclic Antidepressants (TCA)

Status
- Possible TCA overdose

Assess
- Substance involved
- Perfusion status
- ECG criteria

Stop
- Do not administer Amiodarone if suspected Tricyclic Antidepressant Medication Overdose

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

Signs of TCA toxicity
- Any of the following
  - Less than adequate perfusion
  - Positive R wave > 3mm aVR
  - Progressively widening QRS > 0.12 sec.
  - QT prolongation (> 1/2 R-R interval)
  - QTc > 500 msec

Action
- Hyperventilate with 100% O₂ - rate 20 - 24/min
- **Sodium Bicarbonate 8.4% 100ml IV** given over 3 mins
  - Repeat 100ml IV after 10 mins if signs of toxicity persist
  - Severe cases may require continuing doses
  - Consider Medical Consult
- Consider Intubation as per CPG A0302 Endotracheal Intubation if signs of toxicity and GCS 3-8 persist after initial Mx
  - Hyperventilate with 100% O₂ - rate 20 - 24bpm
  - EtCO₂ target 25-30 mmHg if intubated
Special Notes

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

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.

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

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.

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.
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 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 or Recurrent 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 Agitated Patient
Special Notes

Before administering midazolam, the attending paramedic must first:

- Make a reasonable assessment\(^1\) of whether the ‘patient’ has legal capacity to consent to, or refuse first aid (“capacity”); and
- Make a reasonable assessment\(^1\) of the nature of the Pt’s condition (“perceived medical condition”).

After making the above assessments, the attending Paramedic(s) will be able to lawfully administer midazolam if either of criterion “a” or “b”, which follow, applies:

a The administration of midazolam is reasonably necessary\(^2\) to avert a serious and imminent threat to the Pt’s life or physical or mental health,\(^3\) and either:
  - The Pt has been assessed as lacking capacity; or
  - The Pt has been assessed as having capacity and has consented to being administered with midazolam;

b Regardless of whether the Pt has capacity, the administration of midazolam is reasonably necessary to prevent a Pt harming another person, provided that its use is a proportionate response to the perceived risk of harm to the other person.

Special Notes

1. What will constitute a reasonable assessment in the field will depend on the prevailing circumstances, such as whether it is safe to approach the Pt, accordingly, a reasonable assessment may require the assessment to be conducted from a considerable distance. Furthermore, the urgency of the situation may also required that such an assessment be only fleeting.

2. What is necessary first aid is not something that should be adjudged after the fact with the benefit of hindsight. Rather, in the context of provision of first aid by Paramedics in the field, what is necessary first aid is that which is ‘reasonably necessary’. That is, necessary first aid is first aid that would be necessary to avert a serious and imminent threat to the Pt’s life or to prevent a deterioration of his or her physical or mental health, assuming the Pt’s perceived medical condition is his or her medical condition in fact.

3. Administration of midazolam may be ‘indirectly necessary’ in that it is reasonably necessary to facilitate the administering of first aid which is itself ‘reasonably necessary’, or it may be ‘directly necessary’ either to prevent harm to a person other than the Pt or as necessary first aid itself.
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 Exposure.
- If not already completed, ensure that all possible clinical causes of agitation are assessed and managed by the appropriate Guideline.
- Medical Consult is required before sedation of head injured patients.

Special Notes

- 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 should not be placed on a pt in the prone position and 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.
- 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.
- The indications for the use of sedation and/or restraint must be clearly documented on the PCR.
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 (>38.5°C) psychostimulant Pt)
  - Drug withdrawal
  - Intracerebral pathology
  - Acute psychiatric condition
  - Head injury

Agitated Pt

Action

• Communicate with Pt
  - Avoid confrontational behaviour
  - Gain Pt co-operation for assessment
  - Utilise verbal de-escalation strategies

✔ Agitated Pt

- ✔ Agitated Patient CPG A0708
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

**Action**
- Does not respond to verbal de-escalation
- Clinical causes have been excluded
- Pt risk to themselves or others
  - e.g. combative, agitated or aggressive

Stop

- Ensure sufficient physical assistance
- Reduced sedation dose for age >60yrs, low body weight or frail
- Reduced sedation dose for <100mmHg systolic blood pressure

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

- Sedation may be utilised to facilitate transportation of patients in protective custody/under escort, with whom de-escalation techniques have failed and the crew consider it necessary to do so.
- Exercise extreme caution in elderly and/or low body weight patients. Administer considerably smaller doses.
- Provide supportive care and airway management appropriate to the clinical condition, administer oxygen to all patients and assist ventilation if required.

Mechanical Restraint

- Mechanical restraint may be utilised without the use of sedation in circumstances where the patient will not sustain further harm by fighting the restraints.
- Mechanical restraints are never to be placed on a patient in the prone position and must be removed if there is any indication that the restraint is compromising the provision of supportive care.

General

- The indications for the use of sedation and/or restraint must be clearly documented on the patient care report.
- The type of restraint used and its time of application and/or removal must be clearly documented on the patient care report.

Stop

- The patient has to be in protective custody prior to administration of sedation or restraint.
- Paramedic safety is to be considered paramount at all times.
- Do not attempt any element of this guideline unless appropriate resources (police and/or ambulance) are on scene.

Mental Health Act/Protective Custody

Paramedics may sedate a patient in protective custody if:
- The paramedic considers it necessary or prudent to do so and;
- The paramedic has exhausted other means of getting the patient to hospital in a less restrictive manner.

A paramedic may take a person into protective custody if they reasonable believe that:
- The person has a mental illness; and
- The person should be examined to see if he/she needs to be assessed against the assessment or treatment criteria; and
- The persons safety or the safety of other persons is likely to be at risk if the person is not taken into protective custody.

Stop

- This guideline is only to be utilised by paramedics authorised by the Chief Civil Psychiatrist to perform the functions of a Mental Health Officer (MHO) with consent of the Director of Ambulance Services

Mental Health CPG A0708(b)
Mental Health CPG A0708(b)

**Status**
- Agitated Pt

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

**Agitated Pt**

**Action**
- Communicate with Pt
  - Avoid confrontational behaviour
  - Gain Pt co-operation for assessment
  - Utilise verbal de-escalation strategies

**Assess/Consider**
- Assess and manage clinical causes (as far as possible)
  - Hypoglycaemia - Drug withdrawal
  - Hypoxia - Intracerebral pathology
  - Post-ictal - Acute psychiatric condition
  - Drug intoxication (initiate sedation early in hyperthermic (>38.5°C) psychostimulant Pt) - Head injury
**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**

**Action**
- Does not respond to verbal de-escalation
- Clinical causes have been excluded
- Pt risk to themselves or others
  - e.g. combative, agitated or aggressive

**Stop**
- Ensure sufficient physical assistance
- Reduced sedation dose for age >60yrs, low body weight or frail
- Reduced sedation dose for < 100mmHg systolic blood pressure

**Action**
- **Age > 60 and/or BP < 100**
  - Midazolam up to 0.05mg/kg IM
    - Repeat initial dose @ **10 mins IM (max 4 doses)** as required
- **Age < 60 and BP > 100**
  - Midazolam up to 0.05 - 0.1mg/kg IM (max 10mg per dose)
    - Repeat initial dose @ **10 mins IM (max 4 doses)** as required
- Apply mechanical restraint devices if required
- Above doses may be given IV and repeated @ **5 mins** as required
- IM injections may be indicated until IV access has been established
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 both commercially and 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 prior to Ambulance Mx
- Pt must be decontaminated prior to entering hospital

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

- Monitor for excessive cholinergic effects

Excessive cholinergic effects

Action

- Atropine Sulphate 1.2mg IV
  - Repeat 1.2mg IV @ 5 mins until excessive cholinergic effects resolve
Autonomic Dysreflexia

Special Notes

- Move and transport the Pt gently and slowly, 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.

- Due to the infrequency of Paramedics encountering pts suffering from Autonomic Dysreflexia, Medical Consult is encouraged, especially for Paediatric pt presentations.
**Autonomic Dysreflexia**

*Status*
- Suspected 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 400mcg Sub Lingual / Buccal

*Adequate response - BP < 160*

*Action*
- Transport to nearest appropriate hospital

*Inadequate response - BP remains > 160*

*Action*
- Repeat initial dose of GTN @ 10 mins until either:
  - Symptoms resolve
  - Onset of side effects
  - BP < 160

- Transport to nearest appropriate hospital
**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.

**Special Notes**

Clinical signs of significant dehydration include;
- Postural perfusion changes including tachycardia, hypotension and dizziness
- Decreased sweating and urination
- Poor skin turgor, dry mouth, dry tongue
- Fatigue and altered consciousness
- Evidence of poor fluid intake compared to fluid loss

Dehydration in the hyperglycaemic patient should be managed under this guideline.

**Modifying factors**

- Complete spinal cord transection Rx as per CPG A0804 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
- Penetrating Trunk Injury, suspected aortic aneurysm or uncontrolled haemorrhage - Accept palpable carotid pulse with adequate conscious state and transport immediately.

**Remember**

Consider Tourniquet application for severe extremity bleeding unresponsive to direct pressure or where direct pressure is considered impractical.
Inadequate Perfusion Associated with Hypovolaemia

- Evidence of Hypovolaemia

- Identify and manage
  - Haemorrhage, fractures, pain, tension pneumothorax, hypoxia
  - Assess need for application of Tourniquet

- SCI, chest injury, penetrating trunk injury, AAA, Uncontrollable haemorrhage

- HR < 100 BP > 100
  - Fluid not required

- Isolated Tachycardia
  - HR > 100 BP > 100
  - Normal Saline up to 20ml/kg IV

- Hypotension
  - BP < 100
  - Normal Saline up to 20ml/kg IV

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

- BP remains < 100
  - After 40ml/kg
  - Medical Consult for further dose
  - Normal Saline up to 20ml/kg IV

- BP < 100 and/or HR > 100
  - No further fluid required

- Hypotension
  - BP < 100
  - Normal Saline up to 20ml/kg IV

- BP remains < 100
  - After 40ml/kg
  - Medical Consult for further dose
  - Normal Saline up to 20ml/kg IV
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
- May require Decompression (A)
**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 an approved Pneumothorax set.
  - If air escapes, or air and blood bubble through the cannula, or no air/blood detected, leave insitu and secure.
  - If no air escapes but copious blood flows through the cannula then a major haemothorax is present.

**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 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**.
- Insertion site for Pneumothorax Set
  - Second intercostal space
  - Mid clavicular line (avoiding medial placement)
  - Above rib below (avoiding neurovascular bundle)
  - Right angles to chest (towards body of vertebrae)
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 SpO₂ on room air
  - Subcutaneous emphysema

**Action**
- Continue BLS and supplemental O₂
- Monitor closely for possible development of TPT

**Tension pneumothorax (TPT)**
- Signs of Simple pneumothorax with any of the following:
  - Inadequate perfusion
  - Agitated / Decreasing Conscious state
  - Severe respiratory distress
- Ventilated Pts
  - Increased PEAK inspiratory pressure / stiff bag
  - Decreasing ETCO₂

**Action**
- Chest decompression as per General Care

**PEA in the setting of traumatic Chest Injury**
- Action - consider Tension Pneumothorax
- Chest decompression as per General Care
**Special Notes**

- **Fentanyl** should be the narcotic drug of choice for Traumatic Head Injury Pts.
- Patients with head injury requiring intubation should be managed with a Supraglottic Airway due to potential for Spinal Cord Injury (SCI).
- **Ketamine** is contraindicated for traumatic head injury patients.
- Caution should be exercised with the use of nasopharyngeal airway with patient with suspected base of skull fracture.
- For mechanically ventilated patient - avoid barotrauma. Peak Inspiratory Pressure < 35cm H₂O
- **Medical Consult** is required before sedation of head injured patients.

**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

**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 absent gag reflex (GCS 3-4), intubate using Supraglottic airways per CPG A0302 Endotracheal Intubation Guide
  - If intubation is not possible/authorised and gag is absent insert Supraglottic airway

**Ventilation**
- **Action**
  - Ensure adequate ventilation and V_t of 7ml/kg
  - Maintain SpO\_2 > 95% and treat causes of hypoxia
  - Maintain EtCO\_2 @ 35 - 40mmHg Avoid hypo/hypercapnia

**Perfusion**
- **Action**
  - Manage with Normal Saline as per CPG A0801 Inadequate Perfusion Associated with Hypovolaemia

**General Care**
- **Action**
  - Treat sustained seizure activity with Midazolam as per CPG A0703 Continuous or Recurrent Seizures
  - Measure BGL and rectify hypoglycaemia as per CPG A0702 Glycaemic Emergencies
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 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.
• Forcibly immobilising the patient may be detrimental to the patient’s condition.
• 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).
• Suspect high spinal injury in the unconscious trauma patient with bradycardia and hypotension.

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 should be considered.
• Pts with a SCI may develop pressure areas within as little as 30 min following placement on a spine board and the duration on a spine board must therefore be noted on the case report.
• For transport times in excess of 30 min 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.
• A motor sensory assessment is essential to assess for spinal cord injury. When spinal cord injury identified, consult with Clinical Coordinator for appropriate destination.
Spinal Injury

CPG A0804

**Status**
- Potential SCI

**Assess**
- Major Trauma Criteria

**If Pt Meets Major Trauma Criteria**

- Manage airway as appropriate
- Provide spinal immobilisation
- Administer pain relief as required
- Immobilise and support fractures
- Manage hypovolaemia as per
  CPG A0801 Inadequate Perfusion Associated with Hypovolaemia
- Transport without delay to the major regional facility unless transport time is prolonged >60 mins

**Does Not Meet Major Trauma Criteria**

- Has Positive Mechanism of Injury

**Action**

**Assessment for spinal clearance must be completed in numerical order**

- If any of the following present then provide spinal immobilisation
  1. Age > 60 years
  2. History of bone disease (e.g. osteoporosis, osteoarthritis or rheumatoid arthritis)
  3. Unconscious or altered conscious state (GCS < 15)
  4. Drug or alcohol affected
  5. Significant distracting injury e.g. extremity fracture or dislocation
  6. Neurological or motor deficit (motor sensory assessment)
  7. Spinal column pain / bony tenderness

- If all of the above are negative, and the patient does not experience any pain when requested to rotate their head 45° left and right, spinal immobilisation/cervical collar is 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 should be provided**

**This spinal clearance is not to be used for Paediatric pts**
General Care

- Cool burn area for preferably up to 20 mins
  - Running water if possible
  - Normal Saline or wet combine as substitute
  - Avoid/eliminate shivering
  - Avoid ice or ice water

   **AVOID OVER COOLING**

- Cover cooled area with appropriate dressing
  - Ensure cling wrap is applied longitudinally to allow for swelling.

- Assess Pt temp. and manage as required.

- Caution 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**

### Assess mechanism of burn and burn injury
- Assess burn injury
  - Airway injury
  - Body surface area of injury - Refer to Wallace Rule of Nines
  - Burn classification e.g. superficial full/partial thickness

### Status
- Evidence of burn injury

### Initial burn management
- Cool burn area
- Cover cooled area with appropriate dressing
- Analgesia as per CPG A0501 Pain Relief
- Monitor patient temperature and manage as required

### Action
- BLS/first aid
- Normal Saline IV fluid replacement
  - 2ml/kg x % burn over the first 8hrs
- Elevate burn area if possible
- Transport to an appropriate facility

### All other burn presentations
- Transport to an appropriate facility

### Partial or full thickness burns > 10%
- Pre-notify and immediate transport.
**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 *Normal Saline* 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.**
**Special Notes**

If compressive injury less than 30 mins or involving torso and head, remove immediately.

If compressive force to limb greater than 30 mins, establish IV access and commence 500 ml **Nomal Saline** and cardiac monitor prior to removal of force.

Indications for administration of Sodium Bicarbonate
- Progressive widening of QRS complexes
Crush Syndrome

**Status**
- Suspected crush syndrome

**Assess**
- Continuous cardiac monitoring
- Progressive widening of QRS

**Action prior to removal of crushing force**
- Supplemental O₂
- Establish IV access. Commence 500ml Normal Saline
- Pain Relief as per CPG A0501 Pain Relief
- Look for and manage haemorrhage
- If inadequately perfused manage as per CPG A0801 Inadequate Perfusion Associated with Hypovolaemia
- If Hyperkalaemia suspected administer 50ml Sodium Bicarbonate 8.4% IV
- Continue fluid regime as above
### Special Notes

**Barotrauma / Gas Embolus**
- Arises from gas expansion in body cavities
  - Check for pneumothorax and manage as per CPG A0802 Chest Injuries
  - Assess for Cerebral Artery Gas Embolus (CAGE) – sudden LOC or other CNS symptoms at surface after rapid ascent

**Decompression Sickness (DCS)**
- DCS arises from
  - More gradual onset, usually post dive. Consider this for any Pt developing symptoms within 0 - 36hr of diving
  - Pt may present with; generalised aches, headache, SOB, rash, joint pain, paresthesia, paralysis, seizures, unconscious

### Special Notes
- Assess all other divers on scene
Diving Emergency

Status
- Possible diving emergency

Assess
- Mechanism of diving emergency
- Respiratory status
- Check for Pneumothorax
- GCS

Action
- Medical Consult required in order to notify appropriate hospital
- Keep Pt flat
- Fluid resuscitation - Normal Saline 1000ml then Medical Consult
- Tx AVOID HIGH ALTITUDES
- Pain Relief as per CPG A0501 Pain Relief

Diving Emergency CPG A0808
**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.

**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.

The use of aural or oral thermometers may be limited in assessing a patient in a Hypothermic emergency

---

**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 8 minutely.
- Gentle handling of this PT is essential. Position flat or lateral and avoid head up position.

Hypothermia/Cold Exposure CPG A0901
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 < 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
  - 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
  - **Action**
    - Continue CPR and rewarming until temp. > 30°C
    - One defibrillation shock only
    - One dose of Adrenaline
    - One dose of Amiodarone
  - **Withhold Sodium Bicarbonate 8.4% IV**
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.
Environmental Hyperthermia Heat Stress

**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 A0801 Inadequate Perfusion Associated with Hypovolaemia
  - Cooled fluid preferable if available
- Treat low BGL as per CPG A0702 Glycaemic Emergencies
- Airway and ventilation support with 100% O₂ as required

**Adequate response**

**Action**
- BLS
- Transport

**Poor response after 10/60**

**Action**
- Transport without delay
  - Consider intubation as per CPG A0302 Endotracheal Intubation Guide
  - If intubated, sedation is essential to prevent shivering and reduce heat production
## Post Partum Haemorrhage

### General Care

- Before administration of **Ergometrine** ensure **Medical Consult**
- Before administration of **Ergometrine** ensure that all foetuses have delivered.
- Ergometrine is contraindicated in patients of Hx of pre-eclampsia (PIH) or Hx of hypertension.

### Special Notes

- Uterus cannot contract with placenta in situ or in presence of a full bladder. Actions must be initiated to resolve these conditions to assist with haemorrhage control.
Post Partum Haemorrhage

Assess evidence of post partum haemorrhage
- Primary 600ml first 24hrs
- Ensure all foetuses have been delivered
  - Secondary Excessive haemorrhage from 1 day to 6 weeks post partum

Inadequate Perfusion
- Action
  - Treat with CPG A0801 Inadequate Perfusion Associated with Hypovolaemia
  - Ensure all foetuses have been delivered.
  - Medical CONSULT prior to Ergometrine
  - Ergometrine 250mcg IV

Adequate Response
- Action
  - Continue high flow O₂
  - BLS

Inadequate Response
- Action
  - Medical Consult
  - Repeat Ergometrine 250mcg IV
Eclampsia

**Special Notes**

- Pre-eclamptic women are extremely sensitive to outside stimuli and should be managed in a calm, dark and quiet environment.
- Pre-eclampsia and Eclampsia is a time critical emergency requiring early diagnosis, intervention and prompt transport to reduce peri-natal and maternal mortality
- Signs and symptoms of pre-eclampsia include
  - hypertension BP Systolic >140 and or Diastolic >90
  - headache
  - visual disturbances
  - nausea and/or vomiting
  - dizziness
- Uterine pain and/or PV bleeding may signify abruption
- The most common cause of seizure in pregnancy is pre-existing epilepsy. New onset seizures in the latter half of pregnancy are most commonly Eclampsia
- Seizures may occur during or post birth, usually within 48 hours of birth

**General Care**

**CAUTION: Magnesium Sulphate can be supplied in different presentations**

Magnesium Sulphate Infusion
- MgSO₄ 4g diluted with 42ml D5W
  
  Run infusion over 20/60 (150ml / hr)

An early sign of toxicity following Magnesium Sulphate infusion is the loss of deep tendon reflexes.

If the loss of deep tendon reflexes is evident, **Magnesium Sulphate Infusion** must be paused immediately.
Eclampsia

**Status**
- Suspected eclampsia

**Signs of Severe Pre-eclampsia**
- Systolic BP > 140mmHg
- Diastolic BP > 90mmHg
- Peripheral / generalised oedema
- Gastrointestinal disturbance

**Action**
- Position lateral to avoid hypotension
- High flow O₂ therapy
- Dark calm environment
- Medical Consult for further management

**Eclampsia**
- Hx of Pre-eclampsia
- Continuous seizure

**Action**
- Position lateral and maintain airway
- Emergency ICP backup
- High flow O₂ therapy
- If delay in Magnesium infusion is likely, treat as per CPG AO703 Continuous or Recurrent Seizures
  - Magnesium Sulphate 4g in 42ml D5W over 20 mins (150ml/hr)

**Medical Consult**
- Maintenance infusion
  - Magnesium Sulphate 1g in 49ml D5W over 1 hr (50ml/hr)
Special Notes

- For children up to the age of 12, drug doses are quoted on a dose per kilo basis.
- Patients over 12 years are generally considered adults.
- The body mass to body surface area ratio (body mass index) and the fat-carbohydrate-protein make-up of the child and developing young adolescent is different to that of an adult.
- Preterm is classified as under 37 week's gestation, or approximately 1,000g-1,500g. Neonates less than 1,000g often require substantially modified drug doses; consult prior to commencing any pharmacological treatment.
Normal Values

1. Definitions

<table>
<thead>
<tr>
<th>Age</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>Birth to first few hours of life</td>
</tr>
<tr>
<td>Infant</td>
<td>First few hours to one year</td>
</tr>
<tr>
<td>Young child</td>
<td>1 – 8 years</td>
</tr>
<tr>
<td>Older child</td>
<td>9 – 12 years</td>
</tr>
</tbody>
</table>

2. Paediatric Weight Calculation

For children the doses of drugs, DC shock and fluid therapy are based on body weight. If the body weight is unknown, it can be estimated from the child’s age using the following:

<table>
<thead>
<tr>
<th>Age</th>
<th>Body Weight Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>3.5kg</td>
</tr>
<tr>
<td>5 months</td>
<td>7kg</td>
</tr>
<tr>
<td>1 year</td>
<td>10kg</td>
</tr>
<tr>
<td>1 – 9 years</td>
<td>age x 2 + 8kg</td>
</tr>
<tr>
<td>10 – 12 years</td>
<td>age x 3.3kg</td>
</tr>
</tbody>
</table>

Refer to the Paediatric Tables for calculations of estimated body weight for specific ages.
Perfusion status assessment

1. Normal Blood Volume

<table>
<thead>
<tr>
<th>Age</th>
<th>Pulse</th>
<th>Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>120 – 160</td>
<td>N/A</td>
</tr>
<tr>
<td>Infant and child</td>
<td>100 – 160</td>
<td>&gt; 70mmHg systolic</td>
</tr>
<tr>
<td>Small child</td>
<td>80 – 120</td>
<td>&gt; 80mmHg systolic</td>
</tr>
<tr>
<td>Large child</td>
<td>80 – 100</td>
<td>&gt; 90mmHg systolic</td>
</tr>
</tbody>
</table>

2. Definition and Observations

Same as for adults

3. Criteria

a) Adequate Perfusion

- Skin – warm, pink, dry
- Conscious, alert, active
Perfusion status assessment

b) Inadequate Perfusion

<table>
<thead>
<tr>
<th>Age</th>
<th>Pulse</th>
<th>Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>&lt;100/ or &gt; 170</td>
<td>N/A</td>
</tr>
<tr>
<td>Infant</td>
<td>&lt; 90/ or &gt; 170</td>
<td>&lt; 60mmHg systolic</td>
</tr>
<tr>
<td>Small child</td>
<td>&lt; 75/ or &gt; 130</td>
<td>&lt; 70mmHg systolic</td>
</tr>
<tr>
<td>Large child</td>
<td>&lt; 65/ or &gt; 100</td>
<td>&lt; 80mmHg systolic</td>
</tr>
</tbody>
</table>

- Skin – cool, pale, clammy, peripheral cyanosis.
- Altered conscious state, restless

c) No Perfusion

- Absence of palpable pulses
- Skin – cool, pale
- Unrecordable blood pressure
- Unconscious
Respiratory status assessment

1. Normal Respiratory Rates

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>40 – 60 breaths/min</td>
<td></td>
</tr>
<tr>
<td>Infant</td>
<td>20 – 50 breaths/min</td>
<td></td>
</tr>
<tr>
<td>Small child</td>
<td>20 – 35 breaths/min</td>
<td></td>
</tr>
<tr>
<td>Large child</td>
<td>15 – 25 breaths/min</td>
<td></td>
</tr>
</tbody>
</table>

2. Definition and Observations

Same as for adults

3. Criteria

a) Signs of respiratory distress include:

- tachypnoea
- grunting
- wheezing
- chest wall retraction
- use of accessory muscles
- pallor
- cyanosis (late sign)
- abdominal protrusion
Respiratory status assessment

b) Signs of Hypoxia include:

**Infants**
- lethargy
- bradycardia
- hypotension
- apnoea
- pallor

**Children**
- restlessness
- tachypnoea
- tachycardia (bradycardia late sign)
- cyanosis

(c) Carbon dioxide retention is manifested by:

- sweating (uncommon in infants)
- tachycardia
- pupillary dilatation
- hypertension
- bounding pulse
- eventually leading to cardiovascular and central nervous system depression

Respiratory failure is common in the first two years of life. Small calibre airways are prone to obstruction. Respiratory distress may reflect disorder of other body systems – cardiac failure, abdominal distension, neurological problems.
Conscious State Assessment (Glasgow Coma Scale)

<table>
<thead>
<tr>
<th>Child ≤ 4 years</th>
<th>Child &gt; 4 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Eye Opening</strong></td>
<td><strong>Eye Opening</strong></td>
</tr>
<tr>
<td>Spontaneous</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>Reacts to speech</td>
<td>To voice</td>
</tr>
<tr>
<td>Reacts to pain</td>
<td>To pain</td>
</tr>
<tr>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>B. Best Verbal Response</strong></th>
<th><strong>Best Verbal Response</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate words or social smile, fixes, follows</td>
<td>Orientated</td>
</tr>
<tr>
<td>Cries but consolable</td>
<td>Confused</td>
</tr>
<tr>
<td>Persistently irritable</td>
<td>Inappropriate words</td>
</tr>
<tr>
<td>Restless and agitated</td>
<td>Incomprehensible sounds</td>
</tr>
<tr>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>C. Best Motor Response</strong></th>
<th><strong>Best Motor Response</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneous</td>
<td>Obeys command</td>
</tr>
<tr>
<td>Localises to pain</td>
<td>Localises to pain</td>
</tr>
<tr>
<td>Withdraws from pain</td>
<td>Withdraws (pain)</td>
</tr>
<tr>
<td>Flexion response</td>
<td>Flexion (pain)</td>
</tr>
<tr>
<td>Extension response</td>
<td>Extension (pain)</td>
</tr>
<tr>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

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

**Total GCS (Max. Score = 15)**
**APGAR Scoring System**

The APGAR score should be conducted 1min. after delivery and repeated at 5min. after delivery. A score of:

- **7 – 10** Satisfactory
- **4 – 6** Moderate depression and may need respiratory support
- **0 – 3** Newborn requiring resuscitation

<table>
<thead>
<tr>
<th></th>
<th>0 points</th>
<th>1 point</th>
<th>2 points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Blue, pale</td>
<td>Body pink, extremities blue</td>
<td>Totally pink</td>
</tr>
<tr>
<td><strong>Pulse</strong></td>
<td>Absent</td>
<td>&lt; 100</td>
<td>&gt; 100</td>
</tr>
<tr>
<td><strong>Grimace</strong></td>
<td>None</td>
<td>Grimaces</td>
<td>Cries</td>
</tr>
<tr>
<td><strong>Activity</strong></td>
<td>Limp</td>
<td>Flexion of extremities</td>
<td>Active motion</td>
</tr>
<tr>
<td><strong>Respiratory effort</strong></td>
<td>Absent</td>
<td>Slow and weak</td>
<td>Good strong cry</td>
</tr>
</tbody>
</table>
Paediatric Pain Assessment

Paediatric pain assessment should be appropriate to the developmental level of the child. Pain can be communicated by words, expressions and behaviour such as crying, guarding a body part or grimacing. The QUESTT principles of pain (Baker and Wong, 1987) may be helpful in assessing paediatric pain.

- **Q**uestion the child
- **U**se pain rating scales
- **E**valuate behaviour and physiological changes
- **S**ecure parent’s involvement
- **T**ake cause of pain into account
- **T**ake action and evaluate results

The following pain rating scales may be useful when assessing pain in children.

**FLACC Scale**
This is a behaviour scale that can be used for children less than 3 years of age or who are unable to communicate. Each of the five categories below is scored from 0 – 2 and the scores are added to get a total from 0 – 10. Behavioral pain scores need to be considered within the context of the child’s psychological status, anxiety and other environment factors.
### Paediatric Pain Assessment

<table>
<thead>
<tr>
<th></th>
<th>Face</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No particular expression or</td>
<td>Occasional grimace or frown, withdrawn,</td>
<td>Frequent to constant frown, clenched</td>
</tr>
<tr>
<td></td>
<td>smile</td>
<td>disinterested</td>
<td>jaw, quivering chin</td>
</tr>
<tr>
<td>Legs</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Normal position or relaxed</td>
<td>Uneasy, restless, tense</td>
<td>Kicking or legs drawn up</td>
</tr>
<tr>
<td>Activity</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Lying quietly, normal position, moves easily</td>
<td>Squirming, shifting back and forth, tense</td>
<td>Arched, rigid or jerking</td>
</tr>
<tr>
<td>Cry</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>No cry (awake or asleep)</td>
<td>Moans or whimpers, occasional complaints</td>
<td>Crying steadily, screams or sobs, frequent complaints</td>
</tr>
<tr>
<td>Consolability</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Content, relaxed</td>
<td>Reassured by occasional touching, hugging or “talking too”, distractible</td>
<td>Difficult to console or comfort</td>
</tr>
</tbody>
</table>

The FLACC is a behaviour pain assessment scale which is reproduced with permission of University of Michigan Health System and Ambulance Victoria for clinical use by Ambulance Tasmania.
Paediatric Pain Assessment

**Wong – Baker Faces Pain Rating Scale**

This scale can be used with young children aged 3 years and older and may also be useful for adults and those from a non-English-speaking background. Point to each face using the words to describe the pain intensity. Ask the child to choose the face that best describes their own pain and record the appropriate number.


**Verbal Numerical Rating Scale**

This scale asks the Pt to rate their pain from “no pain” (0) to “worst pain possible” (10) and is suitable for use in children over 6 years of age who have an understanding of the concepts of rank and order. Avoid using numbers on this scale to prevent the Pt receiving cues. Some Pt's are unable to use this scale with only verbal instructions but may be able to look at a number scale and point to the number that describes the intensity of their pain.
Orogastric Tube (Paediatric)

An orogastric tube may be inserted to relieve gastric distension:

- < 4 years  12 FG
- > 4 years  14 FG

Alternative Route for Drug Administration Endotracheal Route

The following drugs can be administered safely and effectively by the endotracheal route:

- Adrenaline

Do not administer any other drugs by this route.

To administer drugs via the endotracheal route:

- Place an approved catheter down to the end of the endotracheal tube
- Spray the appropriate volume of the desired solution down the catheter
- Flush the suction catheter using Normal Saline
to ensure the proper dose of active drug reaches the airway mucosa
- Follow the administration of the drug with five forceful ventilations.

Adult

The ETT route is thought to be less effective than the IV route. All ETT drugs should be diluted with Normal Saline to make 10ml.

Paediatric

The drugs should be diluted with Normal Saline as required and the total volume administered via the ETT route should not exceed:

- newborn and infants  1ml
- small child  5ml
- large child  10ml

For Adrenaline, the ETT dose is 10 times the initial IV dose, i.e. 10 x 0.01mg/kg in 1:1000 dilution (0.1 mg/kg), diluted as above.
Intraosseous Route
The use of the intraosseous route is justified in all age groups in circumstances where lifesaving intravenous drugs and/or fluid are required and intravenous access is not possible. This would include where ETT is indicated and sedation/paralysis pre or post ETT is required and timely intravenous access is not possible.

Contraindications
- If any part of the limb is traumatised or infected
- The proposed site cannot be adequately cleansed

Precautions
- Care should be taken not to inject air
- Beware of extravasation

Complications
- Necrosis of surrounding soft tissue due to extravasation
- Infection of bony tissue

Note: The proximal tibial site is preferred in adults and children 4 years and older
# Paediatric Chart

<table>
<thead>
<tr>
<th>Age</th>
<th>0 Mth</th>
<th>2 Mth</th>
<th>6 Mth</th>
<th>1 Yrs</th>
<th>2 Yrs</th>
<th>3 Yrs</th>
<th>4 Yrs</th>
<th>5 Yrs</th>
<th>6 Yrs</th>
<th>7 Yrs</th>
<th>8 Yrs</th>
<th>9 Yrs</th>
<th>10 Yrs</th>
<th>11 Yrs</th>
<th>12 Yrs</th>
<th>Yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>3.5</td>
<td>5</td>
<td>7</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>20</td>
<td>22</td>
<td>24</td>
<td>26</td>
<td>33</td>
<td>36</td>
<td>40</td>
<td>kg</td>
</tr>
<tr>
<td>Resps Normal lower limit</td>
<td>40</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>/min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resps Normal upper limit</td>
<td>60</td>
<td>50</td>
<td>50</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>/min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulse Inadequate perfusion</td>
<td>&lt;100</td>
<td>&lt;90</td>
<td>&lt;90</td>
<td>&lt;75</td>
<td>&lt;75</td>
<td>&lt;75</td>
<td>&lt;75</td>
<td>&lt;75</td>
<td>&lt;75</td>
<td>&lt;65</td>
<td>&lt;65</td>
<td>&lt;65</td>
<td>&lt;65</td>
<td>/min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulse Normal lower limit</td>
<td>120</td>
<td>100</td>
<td>100</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>/min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulse Normal upper limit</td>
<td>160</td>
<td>160</td>
<td>160</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>/min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulse Inadequate perfusion</td>
<td>&gt;170</td>
<td>&gt;170</td>
<td>&gt;170</td>
<td>&gt;130</td>
<td>&gt;130</td>
<td>&gt;130</td>
<td>&gt;130</td>
<td>&gt;130</td>
<td>&gt;130</td>
<td>&gt;100</td>
<td>&gt;100</td>
<td>&gt;100</td>
<td>&gt;100</td>
<td>/min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP/Sys Normal lower limit</td>
<td>NA</td>
<td>&gt;70</td>
<td>&gt;70</td>
<td>&gt;80</td>
<td>&gt;80</td>
<td>&gt;80</td>
<td>&gt;80</td>
<td>&gt;80</td>
<td>&gt;80</td>
<td>&gt;90</td>
<td>&gt;90</td>
<td>&gt;90</td>
<td>&gt;90</td>
<td>mmHg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP/Sys Inadequate perfusion</td>
<td>NA</td>
<td>&lt;60</td>
<td>&lt;60</td>
<td>&lt;70</td>
<td>&lt;70</td>
<td>&lt;70</td>
<td>&lt;70</td>
<td>&lt;70</td>
<td>&lt;70</td>
<td>&lt;80</td>
<td>&lt;80</td>
<td>&lt;80</td>
<td>&lt;80</td>
<td>mmHg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ETT Internal diameter</td>
<td>3.0</td>
<td>3.0</td>
<td>3.5</td>
<td>4.0</td>
<td>4.5</td>
<td>5.0</td>
<td>5.0</td>
<td>5.5</td>
<td>5.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.5</td>
<td>7.0</td>
<td>7.0</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>ETT Length at lips</td>
<td>9.5</td>
<td>9.5</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>13.5</td>
<td>14</td>
<td>14.5</td>
<td>15</td>
<td>15.5</td>
<td>16</td>
<td>16.5</td>
<td>17</td>
<td>17.5</td>
<td>18</td>
<td>cm</td>
</tr>
<tr>
<td>Naso/Orogastric Tube</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>FG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suction Catheter for ETT</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>FG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCCS Biphasic</td>
<td>4 joules/kg</td>
<td>15</td>
<td>20</td>
<td>30</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>150</td>
<td>150</td>
<td>170</td>
<td></td>
</tr>
</tbody>
</table>
Resuscitation drugs

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight</th>
<th>0</th>
<th>2 Mth</th>
<th>4 Mth</th>
<th>6 Mth</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>Yrs</th>
<th>Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adrenaline 1:1,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Upper Airway oedema</td>
<td></td>
</tr>
<tr>
<td>Adrenaline 1:1,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Anaphylaxis, Asthma</td>
<td></td>
</tr>
<tr>
<td>Adrenaline 1:1,000</td>
<td>10mcg/kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cardiac Arrest</td>
<td></td>
</tr>
<tr>
<td>Amiodarone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ICP Anaphylaxis, Asthma</td>
<td></td>
</tr>
<tr>
<td>Sodium Bicarbonate 8.4%</td>
<td>1ml/kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cardiac Arrest</td>
<td></td>
</tr>
<tr>
<td>Sodium Bicarbonate 8.4%</td>
<td>2ml/kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TCA OD (2ml/kg)</td>
<td></td>
</tr>
<tr>
<td>Amiodarone</td>
<td>5mg/kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>VF/ VT Arrest</td>
<td></td>
</tr>
<tr>
<td>Sodium Bicarbonate 8.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>VF/ VT Arrest</td>
<td></td>
</tr>
</tbody>
</table>

* 0.1 has been made a minimum vol. to reduce dosage error. The minimum vol. is sometimes different to the prescribed dose and should be recorded/handed over as the dose delivered.
## Ceftriaxone and Dextrose

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight</th>
<th>0</th>
<th>2 Mth</th>
<th>6 Mth</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceftriaxone (IM) 50mg/kg</td>
<td></td>
<td>0.35</td>
<td>0.5</td>
<td>0.7</td>
<td>1</td>
<td>1.2</td>
<td>1.4</td>
<td>1.6</td>
<td>1.8</td>
<td>2</td>
<td>2.2</td>
<td>2.4</td>
<td>2.6</td>
<td>3.3</td>
<td>3.6</td>
<td>4</td>
<td>Meningococcal Disease</td>
</tr>
<tr>
<td>1g diluted with 3.5ml 1% Lignocaine (1ml = 250mg)</td>
<td>175</td>
<td>250</td>
<td>350</td>
<td>500</td>
<td>600</td>
<td>700</td>
<td>800</td>
<td>900</td>
<td>1000</td>
<td>1100</td>
<td>1200</td>
<td>1300</td>
<td>1650</td>
<td>1800</td>
<td>2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceftriaxone (IM) 100mg/kg</td>
<td>1.75</td>
<td>2.5</td>
<td>3.5</td>
<td>5.0</td>
<td>6.0</td>
<td>7.0</td>
<td>8.0</td>
<td>9.0</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>Meningococcal Disease</td>
</tr>
<tr>
<td>Glucose 10% 5ml/kg</td>
<td>17.5</td>
<td>25</td>
<td>35</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>80</td>
<td>90</td>
<td>100</td>
<td>110</td>
<td>120</td>
<td>130</td>
<td>165</td>
<td>180</td>
<td>200</td>
<td>Hypoglycaemia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use a 50ml syringe or infusion depending on volume to be delivered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Paediatric Chart

## Midazolam, Morphine, Naloxone and Ketamine

<table>
<thead>
<tr>
<th>Age</th>
<th>0 Mth</th>
<th>2 Mth</th>
<th>6 Mth</th>
<th>1 Yrs</th>
<th>2 Yrs</th>
<th>3 Yrs</th>
<th>4 Yrs</th>
<th>5 Yrs</th>
<th>6 Yrs</th>
<th>7 Yrs</th>
<th>8 Yrs</th>
<th>9 Yrs</th>
<th>10 Yrs</th>
<th>11 Yrs</th>
<th>12 Yrs</th>
<th>Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Midazolam (IM/IV)</strong> 0.15mg/kg 5mg/1ml (1mg=0.2ml)</td>
<td>0.15</td>
<td>0.15</td>
<td>0.2</td>
<td>0.2</td>
<td>0.3</td>
<td>0.36</td>
<td>0.42</td>
<td>0.48</td>
<td>0.54</td>
<td>0.6</td>
<td>0.66</td>
<td>0.72</td>
<td>0.78</td>
<td>1.0</td>
<td>1.1</td>
<td>1.2 ml Seizures</td>
</tr>
<tr>
<td></td>
<td>0.5</td>
<td>0.75</td>
<td>1.0</td>
<td>1.5</td>
<td>1.8</td>
<td>2.1</td>
<td>2.4</td>
<td>2.7</td>
<td>3.0</td>
<td>3.3</td>
<td>3.6</td>
<td>3.9</td>
<td>5.0</td>
<td>10</td>
<td>11</td>
<td>12 ml Sedation for Overdose</td>
</tr>
<tr>
<td><strong>Midazolam (IM)</strong> 0.1mg/kg 5mg/1ml (1mg=0.2ml) Maximum dose shown</td>
<td>0.07</td>
<td>0.1</td>
<td>0.14</td>
<td>0.2</td>
<td>0.24</td>
<td>0.28</td>
<td>0.32</td>
<td>0.36</td>
<td>0.4</td>
<td>0.44</td>
<td>0.48</td>
<td>0.52</td>
<td>0.66</td>
<td>0.72</td>
<td>0.8</td>
<td>ml</td>
</tr>
<tr>
<td></td>
<td>0.35</td>
<td>0.5</td>
<td>0.7</td>
<td>1</td>
<td>1.2</td>
<td>1.4</td>
<td>1.6</td>
<td>1.8</td>
<td>2</td>
<td>2.2</td>
<td>2.4</td>
<td>2.6</td>
<td>3.3</td>
<td>3.6</td>
<td>4</td>
<td>mg</td>
</tr>
<tr>
<td><strong>Midazolam (IV)</strong> 0.1mg/kg 5mg/1ml (1mg=0.2ml) Maximum dose shown</td>
<td>0.07</td>
<td>0.1</td>
<td>0.14</td>
<td>0.2</td>
<td>0.24</td>
<td>0.28</td>
<td>0.32</td>
<td>0.36</td>
<td>0.4</td>
<td>0.44</td>
<td>0.48</td>
<td>0.52</td>
<td>0.66</td>
<td>0.72</td>
<td>0.8</td>
<td>ml Sedation for Overdose</td>
</tr>
<tr>
<td></td>
<td>0.35</td>
<td>0.5</td>
<td>0.7</td>
<td>1</td>
<td>1.2</td>
<td>1.4</td>
<td>1.6</td>
<td>1.8</td>
<td>2</td>
<td>2.2</td>
<td>2.4</td>
<td>2.6</td>
<td>3.3</td>
<td>3.6</td>
<td>4</td>
<td>mg</td>
</tr>
<tr>
<td><strong>Morphine (IM)</strong> 0.1mg/kg 10mg/1ml</td>
<td>0.04</td>
<td>0.05</td>
<td>0.07</td>
<td>0.1</td>
<td>0.12</td>
<td>0.14</td>
<td>0.16</td>
<td>0.18</td>
<td>0.2</td>
<td>0.22</td>
<td>0.24</td>
<td>0.26</td>
<td>0.33</td>
<td>0.36</td>
<td>0.4</td>
<td>ml Pain Relief</td>
</tr>
<tr>
<td></td>
<td>0.35</td>
<td>0.5</td>
<td>0.7</td>
<td>1</td>
<td>1.2</td>
<td>1.4</td>
<td>1.6</td>
<td>1.8</td>
<td>2</td>
<td>2.2</td>
<td>2.4</td>
<td>2.6</td>
<td>3.3</td>
<td>3.6</td>
<td>4</td>
<td>mg</td>
</tr>
<tr>
<td><strong>Morphine (IV)</strong> 0.05mg/kg 10mg/1ml dilute to 10ml (1ml = 1mg)</td>
<td>0.18</td>
<td>0.25</td>
<td>0.35</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
<td>0.9</td>
<td>1.0</td>
<td>1.1</td>
<td>1.2</td>
<td>1.3</td>
<td>1.65</td>
<td>1.8</td>
<td>2.0</td>
<td>ml Pain Relief</td>
</tr>
<tr>
<td></td>
<td>0.18</td>
<td>0.25</td>
<td>0.35</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
<td>0.9</td>
<td>1.0</td>
<td>1.1</td>
<td>1.2</td>
<td>1.3</td>
<td>1.65</td>
<td>1.8</td>
<td>2.0</td>
<td>mg</td>
</tr>
<tr>
<td><strong>Naloxone (IM)</strong> 10mcg/kg 400mcg/1ml</td>
<td>0.1</td>
<td>0.125</td>
<td>0.175</td>
<td>0.25</td>
<td>0.3</td>
<td>0.35</td>
<td>0.4</td>
<td>0.45</td>
<td>0.5</td>
<td>0.55</td>
<td>0.6</td>
<td>0.65</td>
<td>0.825</td>
<td>0.9</td>
<td>1</td>
<td>ml Narcotic Overdose</td>
</tr>
<tr>
<td></td>
<td>40*</td>
<td>50</td>
<td>70</td>
<td>100</td>
<td>120</td>
<td>140</td>
<td>160</td>
<td>180</td>
<td>200</td>
<td>220</td>
<td>240</td>
<td>260</td>
<td>330</td>
<td>360</td>
<td>400</td>
<td>mcg</td>
</tr>
<tr>
<td><strong>Ketamine (IV)</strong> 0.5mg/kg 200mg/2ml dilute with 8ml to 200mg in 10ml (20mg = 1ml)</td>
<td>0.09</td>
<td>0.13</td>
<td>0.18</td>
<td>0.25</td>
<td>0.3</td>
<td>0.35</td>
<td>0.4</td>
<td>0.45</td>
<td>0.5</td>
<td>0.55</td>
<td>0.6</td>
<td>0.65</td>
<td>0.85</td>
<td>0.9</td>
<td>1</td>
<td>ml Pain Relief</td>
</tr>
<tr>
<td></td>
<td>1.8</td>
<td>2.5</td>
<td>3.5</td>
<td>5.0</td>
<td>6.0</td>
<td>7.0</td>
<td>8.0</td>
<td>9.0</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>16.5</td>
<td>18</td>
<td>20</td>
<td>mg Severe Trauma Uncontrolled Pain Severe Burns</td>
</tr>
</tbody>
</table>
### Normal Saline, Salbutamol and Dexamethasone

<table>
<thead>
<tr>
<th>Age (Yrs)</th>
<th>Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-12 Mth</td>
<td>Hypovolaemia, asthma, arrest, anaphylaxis</td>
</tr>
<tr>
<td>13+ Yrs</td>
<td>Asthma, Anaphylaxis</td>
</tr>
<tr>
<td>13+ Yrs</td>
<td>Asthma</td>
</tr>
</tbody>
</table>

#### Normal Saline

- **20ml/kg**:
  - 20ml
  - 70, 100, 140, 200, 240, 280, 320, 360, 400, 440, 480, 520, 660, 720, 800 ml

#### Salbutamol (IV)

- **5mcg/kg**:
  - 0.5, 0.7, 1, 1.2, 1.4, 1.6, 1.8, 2, 2.2, 2.4, 2.6, 3.3, 3.6, 4 ml
- **2.5mcg/kg**:
  - 0.18, 0.25, 0.35, 0.5, 0.6, 0.7, 0.8, 0.9, 1, 1.1, 1.2, 1.3, 1.65, 1.8, 2 ml

  - Add 1ml (500mcg) Salbutamol to 9ml Normal Saline in a 10ml syringe

#### Dexamethasone (IV)

- **0.6mg/kg**:
  - 0.52, 0.75, 1.05, 1.5, 1.8, 2.1, 2.4, 2.7, 3, 3, 3, 3, 3, 3, 3, 3 ml
  - 2.1, 3, 4.2, 6, 7.2, 8.4, 9.6, 10.8, 12, 12, 12, 12, 12, 12 mg

  - 1ml syringe
  - 2.5ml syringe
  - 5ml syringe

#### Magnesium (IV infusion)

- **50mg/kg**:
  - N/A, N/A, N/A, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2, 2.4, 2.6, 3.3, 3.6, 4.0 ml

  - N/A, N/A, N/A, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1650, 1800, 2000 mg

  - Add to 50ml 5% glucose and run infusion over 20 min (150ml/hr)

  - 100 ml 5% glucose
**Causes and resuscitation principles**

- Cardio-respiratory arrest in infants and children is most commonly caused by hypoxaemia, hypotension or both, and should be suspected when the child or infant loses consciousness, appears pale or cyanosed or is apnoeic or pulseless. Examples of conditions causing cardiac arrest in infants and children are trauma, drowning, septicaemia, sudden infant death syndrome, asthma, upper airway obstruction and congenital abnormalities of the heart and lungs.

- Infants and children most commonly arrest into severe bradycardia or asystole. VF may occur associated with congenital heart conditions or secondary to poisoning to cardioactive drugs and is often encountered during the course of resuscitation. Respiratory arrest may occur alone but if treated promptly may not progress to cardio-respiratory arrest.

- Resuscitation is directed at adequate airway control, ventilation, chest compressions and Adrenaline.

- The basic principles of paediatric life support are similar to those of adults. However, drug dosages are usually related to body weight and some procedures need to be adapted for differences in paediatric anatomy. Older children may be treated as per adult Guidelines but it should be noted that they do not have the same susceptibility to VF.

**Airway and breathing**

- To assess an airway in a newborn, infant or child, the positioning and techniques are similar to those for an adult with the exception that care should be taken to avoid over extension of the neck and head. Noisy breathing, stridor or wheeze and/or neck and chest soft tissue retraction on inspiration are signs of significant partial airway obstruction.

- To position the head and neck to maintain an open airway:
  - **Newborn and infants**: head and neck should be placed in the neutral position, avoiding additional neck flexion and head extension.
  - **Children**: use neck flexion and head extension with caution in the younger child.

- If necessary use chin lift or jaw thrust to clear the airway. The pharynx should be inspected with a laryngoscope and cleared of secretions using a Yankauer sucker. Magill forceps may be needed to remove a foreign body.

- If spontaneous ventilation is not present, an appropriate size OPA should be inserted and assisted ventilation should be commenced immediately. Effective airway control and adequate ventilation with oxygen supplementation is the keystone of paediatric resuscitation.
Cardiac Arrest (Paediatric)

External Cardiac Compression (ECC)

- Commence (ECC) if:
  - No palpable pulse (carotid, brachial or femoral) or
  - HR < 60 (infants) or
  - HR < 40 (children)

- Depth of Compression/Method of Compression
  - Approximately 1/3 the depth of the chest for all age groups. Approximately 50% of a compression cycle should be devoted to compression of the chest and 50% to relaxation.

Newborn and Infant
- Two fingers or by a two-thumb technique. In this latter technique, the hands encircle the chest and the thumbs compress the sternum. This is considered a more effective technique and is the preferred option for two-rescuers. However, care should be taken to avoid restricting chest expansion during inspiration. The two-finger technique should be used by a single rescuer in order to minimise the transition time between ECC and ventilation.

Child
- One handed technique for small children or two handed technique for larger children as for adults

Ratios of Compressions to Ventilations

- Newborn (birth to first few hours a life only)
  - 3:1 (single rescuer)
  - 3:1 (two rescuers)
  - Rate: Approximately 120 compressions per min.
  - No change in ratio if intubated

- Infants and Children
  (Includes Newborns after first hours of birth)
  Not intubated
  - 30:2 (single rescuer)
  - 15:2 (two rescuers)
  - Rate: Approximately 100-120 compressions per min.
  - Pause for ventilations

Intubated (ICP)/Supgraioptic Airway inserted
  - 15:2
  - Rate: Approximately 100-120 compressions per min.
  - < 14 ventilations/min.
  - No pause for ventilations
Cardiac Arrest (Paediatric)

Principles of CPR

CPR
- Assumption that CPR is commenced immediately and continued throughout cardiac arrest as required
- Generic for all paediatric 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
- Rhythm/Pulse check every 2min
- CPR commenced immediately after defibrillation and pulse check after 2min.

Intraosseous (I/O) insertion
- If delay in IV insertion (> 90 sec) then insert an I/O cannula.

Automated External Defibrillator
- An Automated External Defibrillator with paediatric adapter is suitable for use in children 1 – 8 years of age. Children over 8 years may be treated with adult preset energy levels.

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 Amiodorone
  - Withhold Sodium Bicarbonate 8.4% IV
Assessment and Management of Newborn Baby

**Assess**
- Status of Newborn
  - Effective breathing / crying with good muscle tone

**Status**
- Pulse rate <100 or inadequate breathing

**Action**
- Commence IPPV (room air for 10min) until pulse >100 and infant breathing

**Assess**
- After 30 sec IPPV breathing remains inadequate and pulse <60

**Action**
- Commence CPR ratio 3:1, at 30 cycles per min

**Action**
- If pulse does not increase >60, reassess ventilation technique
  - Adrenaline $10\text{mcg}/\text{kg}$ IV/IO
  - Normal Saline $10\text{ml}/\text{kg}$ fluid challenge, repeat if required
  - If no response treat as per CPG P0201 Cardiac Arrest (Paediatric)

**Action**
- Dry, stimulate and provide warmth
  - Clear airway only if needed
  - Assess breathing, colour and heart rate

**Assess**
- Breathing and pulse rate

**Action**
- Commence IPPV (room air for 10min) until pulse >100 and infant breathing

**Assess**
- If baby is breathing, heart rate >100 and beginning to pink, then give routine care and observations appropriate to gestation
  - If heart rate >100 with inadequate breathing, assist with IPPV with room air
Cardiac Arrest (Paediatric) CPG P0201

- **Identify and Rx causes**
  - Hypoxia
  - Anaphylaxis
  - Asthma
  - Exsanguination
  - Upper airway obstruction
  - Tension Pneumothorax

- **Unconscious/Pulseless VF/VT**
  - **Action**
    - Defibrillation 4J/kg (Biphasic)
    - Repeat 4J/kg @ 2 mins if VF/VT persists

- **Pulseless Electrical Activity (PEA)**
  - **Action**
    - IV access/Normal Saline TKVO
    - I/O if delay in IV access
    - Adrenaline 10mcg/kg IV or IO
    - Repeat at 4 min interval

- **Asystole or Severe Bradycardia**
  - **Action**
    - Commence CPR if either:
      - Pulseless
      - HR < 60 (Infants)
      - HR < 40 (Children)

- **Unconscious/Pulseless VF/VT**
  - **Action**
    - IV access/Normal Saline TKVO
    - I/O if delay in IV access
    - Adrenaline 10mcg/kg IV or IO
    - Repeat at 4 min interval

- **PEA persists**
  - **Action**
    - IV access/Normal Saline TKVO
    - I/O if delay in IV access

- **Asystole or Severe Bradycardia persist**
  - **Action**
    - IV access/Normal Saline TKVO
    - I/O if delay in IV access
    - Adrenaline 10mcg/kg IV or IO
    - Repeat at 4 min interval
**Sodium Bicarbonate** may be administered if hyperkalaemia suspected or in cardiac arrest secondary to TCA overdose per P0707(B) Management of Overdose: (TCA) Paediatric

**Magnesium Sulphate**, 50mg/kg, max dose of 2g. No repeat dose. should be administered instead of Amiodarone in the event of Torsade de Pointes.
**Cardiac Arrest (Paediatric)**

**Stop Assess Consider Action**

**ICP Action Status**

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

**Intubation/Ventilation**

- Determine if intubation required as per CPG P0301 Endotracheal Intubation (Paediatric) if not already intubated
- Maintain intubation as per P0301 Endotracheal Intubation (Paediatric)
- Aim for EtCO₂ 35-40 mmHg
- Ventilate V₆ 7ml/kg

**Perfusion management**

- 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

**Transport**

- Appropriate receiving hospital
- Notify early
Special Notes

- All intubations facilitated or maintained with drug therapy will be reviewed as part of AT Clinical governance processes.
Endotracheal Intubation Guide (Paediatric)

**Primary indications**
- Respiratory arrest
- Cardiac arrest
- GCS 3-8 with absent airway reflex due to:
  - Respiratory failure
  - SpO₂ < 85%
  - Non-traumatic neurological injury
  - Overdose

**Preparation**
- Insertion of ETT

**Insertion of ETT**
- Sedation

**Care and maintenance**
- Sedation

**Failed Intubation**
- See CPG P0302
  - Failed Intubation Drill
Special Notes

• **Status epilepticus**
  - Intubation is not desirable in the patient with status epilepticus who are best managed with BVM and OPA / NPA.

• **Uncontrolled bleeding**
  - 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.
**Endotracheal Intubation Indications, Precautions, CIs (Paediatric) CPG P0301**

**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”

**Contraindication (CIs)**
- Primary Neurological Injury
- Unable to visualise cords
- < 1 year
- Spontaneously breathing patient with easily maintained airway
### Special Notes

<table>
<thead>
<tr>
<th>Age</th>
<th>Endotracheal Tube Size</th>
<th>Length at Lips</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 months</td>
<td>4.0mm</td>
<td>12.0cm</td>
</tr>
<tr>
<td>&gt; 12 months</td>
<td>Age/4 + 4mm</td>
<td>Age/2 + 12cm</td>
</tr>
</tbody>
</table>

1. Children under the age of 10 years should be intubated with an uncuffed endotracheal tube – the largest uncuffed ETT available is a size 6.5mm.

2. If in doubt, refer to paediatric graph. The correct size tube should allow a small leak around the tube with positive pressure but not so great as to make ventilation inadequate. A closer fitting tube may be necessary when ventilating stiff lungs, e.g. near drowning.

### ETT Suction (Paediatric)

This may be necessary to remove tracheal secretions or aspirated material:

<table>
<thead>
<tr>
<th>Suction Catheter Size</th>
<th>ETT Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 FG</td>
<td>3mm</td>
</tr>
<tr>
<td>8 FG</td>
<td>3.5 – 5.5mm</td>
</tr>
<tr>
<td>10 FG</td>
<td>6mm</td>
</tr>
</tbody>
</table>
Endotracheal Intubation Preparation (Paediatric) CPG P0301

General Preparation for Intubation

Action

- 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 and one size larger than predicted immediately available) with introducer
  - Oesophageal Detector Device (ODD).
  - Ensure equipment for a difficult/failed intubation is immediately available, including bougie, supraglottic airway, 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
Endotracheal Intubation Insertion (Paediatric)

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 (if applicable)
- Confirm tracheal placement via capnography (note: Pt in cardiac arrest may not have CO₂ initially detectable).
- Exclude right main bronchus intubation 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 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 CPG P0302 Failed Intubation Drill.

General Care of the intubated Pt

- Cervical collars should be placed on all intubated children over the age of 4 where practicable.
- Reconfirm tracheal placement using EtCO₂ after every Pt movement. Disconnect and hold ETT during all transfers.
- Suction ETT and oropharynx in all Pts. Caution with neurologically injured patient due to possible increase in intracranial pressure.
- Insert oro gastric tube and aspirate.
- Ventilate using 100% oxygen and tidal volume of 7 ml/kg. Aim to maintain SpO₂ > 95% and EtCO₂ @ 35 - 40mmHg (except asthma where a higher EtCO₂ may be permitted, tricyclic OD where the target is 25 - 30mmHg, and DKA where the EtCO₂ should be maintained at the level detected immediately post-intubation, with a min. of 25mmHg).
- Document all checks and observations made to confirm correct ETT placement.
Endotracheal Intubation (Paediatric) CPG P0301

Status
- Insertion / General care of ETT

Insertion and checks of ETT

Action
- Capnography - EtCO₂
- Length lips / teeth
- Auscultate 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
- Disconnect and hold ETT during transfers
- ETT checks with each Pt movement
- Provide circulatory support if hypotension present
- Ensure wave capnography is being captured at all times
- Suction ETT and oropharynx when necessary
- Insert OG tube
- Ventilate V₁ 7ml / per kg, EtCO₂ 35 - 40mmHg appropriate to Pt condition
- Specific instructions as per General Care of the Intubated Pt
Special Notes

- For patients who become hypotensive after intubation consider additional fluids and/or Adrenaline infusion according to clinical context. If hypotension persists consider reducing the sedation dose while closely monitoring the patient for signs of under-sedation.
- When utilising bolus doses start at the lower amount and escalate dosing according to clinical response.
- Bolus dosing is intended to be only utilised when sedation is required while preparing for an infusion, while escalating infusion dosing or if an infusions is unavailable.
- Bolus doses are written as as the same preperation and concentration as the infusion preperation.

General Care of the Intubated Pt

- Post intubation Infusions
  - Morphine 10mg + Midazolam 10mg in 10ml normal saline
    = 1mg Morphine / 1mg Midazolam in 1 ml
    = 1ml/hr = 1mg/hr
  - Fentanyl 100mcg + Midazolam 10mg in 10ml normal saline
    = 10mcg Fentanyl / 1mg Midazolam in 1 ml
    = 1ml/hr = 10mcg/1mg/hr

- Handover
  The ETCO2 and respiratory wave-form immediately prior to patient handover must be demonstrated to the recieving physician and documented on the ePCR
**Indications**

- Restlessness / signs of under sedation in the absence of other noxious stimuli

**Assess**

- Assess Pt perfusion status
- Does Pt require sedation

**Post Intubation Sedation**

- Restlessness / signs of under sedation in the absence of other noxious stimuli

**Sedation**

**Action**

- Morphine/Midazolam infusion 0.1mg - 0.2mg/kg/hr IV OR
- Fentanyl/Midazolam infusion 1-2mcg/0.1mg-0.2mg/kg/hr IV

Until sedation infusion established or as required
- Morphine/Midazolam 0.1mg/kg IV each drug as required
- Fentanyl/Midazolam infusion 1mcg/0.1mg/kg IV
Special Notes

- Insert appropriate sized Supraglottic airway where required.

<table>
<thead>
<tr>
<th>Size</th>
<th>Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2 - 5kg</td>
</tr>
<tr>
<td>1.5</td>
<td>5 - 12kg</td>
</tr>
<tr>
<td>2</td>
<td>10 - 25kg</td>
</tr>
<tr>
<td>2.5</td>
<td>25 - 35kg</td>
</tr>
<tr>
<td>3</td>
<td>30 - 60kg</td>
</tr>
</tbody>
</table>

- If cricothyroidotomy is required for children under the age of 12 years then needle cricothyroidotomy should be performed and jet ventilation administered.
Failed Intubation Drill (Paediatric) CPG P0302

**Unsuccessful Intubation**

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

**Assess**

- Objective confirmation of tracheal placement using EtCO₂, ODD
- Check with ODD

- Action
  - Reattemt intubation using bougie with blind placement of ETT over bougie

- Total maximum of 2 attempts

- Action
  - Immediately remove ETT, insert OPA/NPA and ventilate with 100% O₂

- Action
  - Continue to manage ventilation with Bag Value Mask (BVM) or Insert Supraglottic Airway

**Assess**

- Able to ventilate/oxygenate with BVM or Supraglottic Airway

- Action
  - Cricothyroidotomy

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

- Action
  - Continue Management in accordance with relevant CPG

- Action
  - Continue Management in accordance with relevant CPG
Bradycardia

Special Notes

- It is common for bradycardia to be the result of hypoxia and/or hypovolaemia in paediatrics. Hypoxia and/or hypovolaemia should be corrected if possible prior to drug therapy.
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
• Correct Hypoxia
• Commence chest compressions if heart rate <60 (infants) and <40 (children) associated with altered conscious state

• Adrenaline 10mcg/kg IV/IO
  - Repeat at 3 mins as required
• If bradycardia and inadequate perfusion persist administer Normal Saline up to 20ml/kg
• Consult for Transcutaneous External Pacing if poor response
### Special Notes

- **Symptomatic signs and symptoms**
  - Rate related severe or persistent chest pain
  - Shortness of breath with crackles
  - Altered conscious state
- **Adenosine** requires rapid NaCL flush IV

- Ensure to press "sync" button on the defibrillator before performing Synchronised Cardioversion

### General Care

#### Comparison

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Sinus Tachycardia (ST)</th>
<th>SVT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hx compatible with ST eg. fever, injury, dehydration, pain</td>
<td>Hx does not support ST or non-specific</td>
<td></td>
</tr>
<tr>
<td>P waves present / normal</td>
<td>P waves absent / abnormal</td>
<td></td>
</tr>
<tr>
<td>Heart rate often varies with activity</td>
<td>Heart rate does not vary with activity</td>
<td></td>
</tr>
<tr>
<td>Variable R-R with constant PR</td>
<td>Abrupt rate changes</td>
<td></td>
</tr>
<tr>
<td>Infants: heart rate usually less than 220 bpm</td>
<td>Infants: heart rate usually greater than 220 bpm</td>
<td></td>
</tr>
<tr>
<td>Children: heart rate usually less than 180 bpm</td>
<td>Children: heart rate usually greater than 180 bpm</td>
<td></td>
</tr>
</tbody>
</table>

Sedation should be considered but should not delay cardioversion. The patient’s conscious level and haemodynamic stability will guide the need for sedation.
Tachyarrhythmias

- **Status**
  - SVT

- **Adequate perfusion**
  - BP as per Paed. Chart

- **Asymptomatic**
  - Action
    - Abdominal valsalva manoeuvre

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

- **Reversion**
  - Action
    - BLS

- **No Reversion**
  - Action
    - Adenosine **100mcg/kg IV** rapid push. If no effect after 2 mins
    - Adenosine **200mcg/kg IV** rapid push. If no effect after 2 mins
    - If unresponsive to Adenosine, consider Synchronised Cardioversion

- **Pt Becomes Unconscious at any time**
  - Action
    - Synchronised Cardioversion
**Status**

- If inadequate perfusion with altered consciousness and deteriorating rapidly and/or unresponsive to Adenosine?

**Unstable / rapidly deteriorating**

**Action**

- If sedation required Midazolam 50mcg/kg IV over 1 min. Repeat 50mcg/kg @ 2 min intervals until pt does not respond to verbal stimuli but does respond to pain (max. 200mcg/kg)

- Synchronised Cardioversion (*Ensure to ‘activate the synchroniser’ and it is functioning effectively while preparing airway & ventilation equipment.*)
  - Biphasic: 1J/kg
  - Medical Consult if unsuccessful

- If another rhythm develops at any stage treat as appropriate [Clinical Practice Guideline](#).

- If Pt becomes pulseless, Rx as per [CPG P0201 Cardiac Arrest (Paediatric)](#).

**Reversion**

**Action**

- BLS

**Loss of output**

**Action**

- As per appropriate CPG
Special Notes

- The max dose of Methoxyflurane is 6ml per 24hr period.
- Opioids are NOT to be administered to patients with migraines.
- BP, HR, Resp Rate and SpO2 is to be recorded initially and repeated after administering a dose of pain relief.
- If respiratory depression occurs due to narcotic administration should be managed as per CPG P0707 Management of Overdose if required.
- IM Morphine effect on pain relief is slow and variable. This protocol must be used as a last resort and strictly within indicated Guidelines.
- IV Ketamine is only to be given on medical consult, and its use is strictly as a last resort.
- Consider smaller doses of IV pain relief if the patient has previously been administered opioids.
- Once initial opioid loading has occured (2-3 doses) the dose of Morphine or Fentanyl should be reduced and the time between doses doubled.

General Care

- It is essential that the dose + volume is double checked prior to administration.
- In younger patients (1-2 years) adequate analgesia may be attained with a single dose of Fentanyl IN. Carefully monitor for side effects such as excessive sedation and respiratory depression.

<p>| Paracetamol 15mg/kg dose (based on 120mg in 5mL liquid) |</p>
<table>
<thead>
<tr>
<th>Age (Years)</th>
<th>Weight (Kg)</th>
<th>Dose (mg)</th>
<th>Volume (nearest ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 months</td>
<td>6</td>
<td>90</td>
<td>4</td>
</tr>
<tr>
<td>6 months</td>
<td>8</td>
<td>120</td>
<td>5</td>
</tr>
<tr>
<td>1 year</td>
<td>10</td>
<td>150</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>180</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>210</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>240</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>18</td>
<td>270</td>
<td>11</td>
</tr>
<tr>
<td>6</td>
<td>20</td>
<td>300</td>
<td>13</td>
</tr>
<tr>
<td>7</td>
<td>22</td>
<td>330</td>
<td>14</td>
</tr>
<tr>
<td>8</td>
<td>24</td>
<td>360</td>
<td>15</td>
</tr>
<tr>
<td>9</td>
<td>26</td>
<td>390</td>
<td>16</td>
</tr>
<tr>
<td>10</td>
<td>33</td>
<td>495</td>
<td>21</td>
</tr>
<tr>
<td>&gt;11</td>
<td>36</td>
<td>500</td>
<td>500mg tablet</td>
</tr>
</tbody>
</table>

NB. Children ages 10-14 yrs can have a single 500mg tablet as an alternative to the liquid preparation depending on patient preference.

IN Fentanyl Dosing Table

<table>
<thead>
<tr>
<th>Small Child (10-24kg)</th>
<th>Large Child (&gt;25kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Dose</td>
<td></td>
</tr>
<tr>
<td>25 mcg</td>
<td>50 mcg</td>
</tr>
<tr>
<td>Volume</td>
<td></td>
</tr>
<tr>
<td>1 Spray</td>
<td>2 Sprays</td>
</tr>
<tr>
<td>Subsequent doses</td>
<td></td>
</tr>
<tr>
<td>25mcg</td>
<td>50 mcg</td>
</tr>
<tr>
<td>Volume</td>
<td></td>
</tr>
<tr>
<td>1 Spray</td>
<td>2 Sprays</td>
</tr>
</tbody>
</table>

Children under 10kg Consult with Clinical Coordinator regarding Pain Management
**Pain Management (Paediatric)**

**Status**
- Complaint of pain

**Assess**
- Determine need for Pain Relief
- BP, HR, Resp Rate & SpO2 to be recorded before EVERY dose
- Consider non-pharmacological management options as appropriate e.g. splinting, cold/heat therapy, position

**Mild Pain**

- **Action**
  - Consider need for any pain relief
  - If Pt or carer requests analgesia consider Paracetamol 15 mg/kg oral if not already administered in 4/24hrs
  - If pain not controlled or rapid pain relief required, consider treating as per Moderate pain

**Moderate Pain**

- **Action**
  - Consider Paracetamol 15 mg/kg oral as per mild pain relief
  - Fentanyl IN
    - 25mcg Small Child (10-24kg)
    - 50mcg Large Child (≥ 25kg)
    - Repeat Initial IN dose after no less than 5 mins titrated to obtain pain reduction to comfortable/tolerable level or side effects (total max. 3 doses)
  - Methoxyflurane 3ml inhaled
    - Repeat x1 if required (max 6ml)

**Severe Pain**

- **Action**
  - Fentanyl IN or Methoxyflurane as per Moderate Pain
  - Consider Morphine IM as last resort if pain not controlled by above and unable/not authorised to give IV Pain relief
    - Morphine up to 0.1 mg/kg IM (max dose 5mg)
    - Single dose only - Medical Consult for further doses
  - Morphine up to 0.05 mg/kg IV
    - Repeat up to 0.05mg/kg IV at no less than 5 minute intervals.
    - Max 0.2mg/kg Medical Consult for further doses
  - Fentanyl up to 0.5mcg/kg IV
    - Repeat up to 0.5mcg/kg IV at no less than 5 minute intervals.
    - Max 2mcg/kg Medical Consult for further doses

**Severe Trauma Multiple Fractures or Severe Burns**

- Medical Consult for the use of Ketamine 0.5mg/kg
Upper Airway Obstruction (Paediatric) CPG P0601

Status
- Identify possible cause

Partial obstruction
- Passive techniques
  - Encourage cough
  - Gravity
  - Maintain BLS

Complete obstruction
- Use manual techniques
  - Gravity
  - Back blows
  - Chest thrusts
  - Laryngoscope
  - Magill forceps

Croup
- See CPG P0601 (A)

Suspected Epiglottitis
- Do not inspect airway
  - See CPG P0601 (A)
  - Time critical Pt
  - Transport

Back blows should not be used on newborns
Special Notes

- Neb. Adrenaline for croup is indicated for children presenting with signs of hypoxia, e.g. agitated, distressed, cyanosis, SpO₂ of < 92% on air, evidence of decreasing SpO₂ or with severe obstruction indicated by marked use of accessory muscles.
Upper Airway Obstruction (Paediatric)

Status

- Croup/suspected croup
- Epiglottitis

Assess

- Respiratory distress

Mild/Moderate

Action

- BLS
- Treat as per Severe if Pt deteriorates

Severe

Action

- Agitated
- Increasing respiratory distress
- Cyanosis
- Marked respiratory effort

Action

- Adrenaline 5mg/5ml neb. (1:1,000)

If croup suspected

Action

- Dexamethasone 200mcg/kg IV or IM Max 8mg

If improved

Action

- Continue to monitor Pt
- Transport

If unimproved

Action

- Continue to monitor Pt
- Transport
- Repeat Adrenaline as above
Asthma (Paediatric) CPG P0602

- **Status**
  - Respiratory distress

- **Assess**
  - Severity of asthma presentation

- **Mild or Moderate**
  - Action
    - See CPG P0602 (A)

- **Severe**
  - Action
    - See CPG P0602 (A)

- **Altered Conscious State**
  - Action
    - See CPG P0602 (B)

- **No cardiac output**
  - Action
    - Witnessed loss of cardiac output - See CPG P060 (C)
    - PEA as per CPG P0201
    - Cardiac Arrest (Paed.)
Asthma (Paediatric) CPG P0602

Special Notes
- Asthmatic Pts are dynamic and can show initial improvement with treatment then deteriorate rapidly.
- Consider ICP 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.
- An improvement in SpO₂ may not be a sign of improvement in clinical condition.
- pMDI = Pressurised Metered Dose Inhaler

General Care
- Magnesium infusion
  - Magnesium 50mg/kg (max 2g) diluted in 50ml D5W given over 20 mins @ delivery rate 150ml/hr
Asthma (Paediatric) CPG P0602

Stop Assess Consider Action  ICP ActionStatus

Version 2.4 - 01.06.15 Page 3 of 7

Asthma

Stop Assess Consider Action  ICP ActionStatus

Asthma (Paediatric) CPG P0602

Action
• Salbutamol 5mg (2.5ml) Neb. and Ipratropium Bromide 500mcg (1ml)
- Repeat Salbutamol 5mg (2.5ml) @ 5 mins if required
• Magnesium Infusion 50mg/kg to max. 2g over 20mins IV
If Magnesium infusion not available
• Salbutamol 5mcg/kg IV
- Repeat 2.5mcg/kg IV @ 2 - 3 mins if required (max. 10mcg/kg)
• Dexamethasone 600mcg/kg IV / IM (max 8mg)

Mild or Moderate

✓ Action
• Salbutamol pMDI and spacer
  - Deliver 6 puffs every 5 mins until resolution of symptoms
• If pMDI spacer unavailable
  - Salbutamol 5mg (2.5ml) Neb.
    Repeat 5mg (2.5ml) @ 5 mins if required

✓ Action
• Transport with continued reassessment
• Rx as per Severe

No Significant Response after 10/60

✓ Action
• Respiratory distress

Adequate Response

Severe

✓ Action
• Salbutamol 5mg (2.5ml) Neb. and Ipratropium Bromide 500mcg (1ml)
  - Repeat Salbutamol 5mg (2.5ml) @ 5 mins if required

✓ Action
• Respiratory distress

If further deterioration or no response

• Magnesium Infusion 50mg/kg to max. 2g over 20mins IV
If Magnesium infusion not available
• Salbutamol 5mcg/kg IV
- Repeat 2.5mcg/kg IV @ 2 - 3 mins if required (max. 10mcg/kg)
• Dexamethasone 600mcg/kg IV / IM (max 8mg)
Asthma (Paediatric)

Special Notes

- Extreme care is necessary when assisting ventilation in asthma. High positive pressures are necessary although severe bronchoconstriction, especially exhalation, causes gas trapping.
- High EtCO₂ levels should be anticipated in the asthmatic with altered conscious state. Pt. EtCO₂ levels of 120mmHg in this setting is considered safe and no attempt should be made to reduce this via increased ventilation except in the setting of severe persistent hypoxia.
Asthma (Paediatric)

**Status**
- Altered Conscious State
  - with poor or no ventilation but still with cardiac output

**Immediate Action**
- **Pt requires immediate assisted ventilation**
  - Ventilate @:
    - **Infant 15 - 20** ventilations/min., \( V_t, 7\text{ml/kg} \)
    - **Small child 10 - 15** ventilations/min., \( V_t, 7\text{ml/kg} \)
    - **Large child 8 - 12** ventilations/min., \( V_t, 7\text{ml/kg} \)
  - Moderately high respiratory pressures
  - Allow for prolonged expiratory phase
  - Gentle lateral chest pressure during expiration if required

**Adequate Response**
- **Action**
  - Treat as per Severe Respiratory Distress

**Imminent or Impending Arrest**
- **Action**
  - Consider **Adrenaline 10mcg/kg IM (1:1,000)**
    - Repeat @ **20 mins** as required (**max. 30mcg/kg IM**)
  - **Magnesium Infusion 50mg/kg IV to max. 2g over 20mins**
  - **Adrenaline 10mcg/kg IV**
    - Repeat **10mcg/kg IV @ 5 mins** as required
  - **Normal Saline up to 20ml/kg**
  - Consider Intubation as per CPG P0301 Endotracheal Intubation
    - If unable to gain IV administer **Adrenaline 10mcg/kg IM (1:1,000)**

- If Pt loses output at any stage see CPG P0602 (C)
Special Notes

- Positive Pressure Ventilation, via gas trapping, may generate progressively higher intrathoracic pressures. This reduces venous return and the patient may lose palpable cardiac output, resulting in Electro Mechanical Dissociation. Clinical differentiation between tension pneumothorax and high intrathoracic pressure at this point is clinically impossible to differentiate. One minute of apnoea may permit gas trapping to decrease slowly via elastic recoil, aided by gentle lateral chest thrusts with return of pulses. If after one minute of apnoea, ventilation remains difficult and no output is detectable, tension pneumothorax must be presumed present. Due to the difficulty in identifying the affected side, it is advised that bilateral chest decompression is performed.
**Asthma (Paediatric)**

**CPG P0602 (C)**

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

**Pt requires immediate intervention**

- **Action**
  - Apnoea 30 sec.
    - Gentle lateral chest pressure

**Cardiac output returns**

- **Action**
  - Treat as per CPG A0602 (A)

**Carotid pulse, no BP**

- **Action**
  - Adrenaline 10mcg/kg IV / IM
    - Repeat 10mcg/kg IV @ 5 mins as required
  - Normal Saline up to 20ml/kg IV

**No return of output**

- **Action**
  - Bilateral Chest Decompressions
  - Rx as per Guideline
    - CPG A0201 Cardiac Arrest
Special Notes

- **Ondansetron is indicated for patients > 2 years old.**
- Antiemetics should never be administered if the Pt is suspected of taking an oral drug overdose. This may increase the absorption of the ingested substance.

General Care

- If nausea and vomiting are tolerated, basic care and transport are the only treatment required.
Severe Nausea and Vomiting?

• Actual or potential for nausea and vomiting

Assess for:
• Nausea and vomiting

Severe Nausea and Vomiting

✓ Action
• Ondansetron 0.1mg/kg IV or IM (max 4mg)

If dehydrated

✓ Action
• Manage as per CPG P0801 Inadequate Perfusion Associated with Hypovolaemia

Prophylaxis for:

✓ Action
• Ondansetron 0.1mg/kg IV or IM (max 4mg)

Status

• Actual or potential for nausea and vomiting

Assess for:
• Nausea and vomiting

Prophylaxis for:

• Planned aeromedical evacuation

Action
• Ondansetron 0.1mg/kg IV or IM (max 4mg)
**Special Notes**

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

**General Care**

- If Pt’s next meal is more than 20mins away, encourage the Pt to eat a low GI 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, use a relative or friend to reinforce the advice for transport using friend or relative. If Pt still refuses transport, document the refusal, and leave the Pt with a responsible third person. Advise the third person of actions to take if symptoms re-occur and of the need to make early contact with Primary Care Physician for follow up.
- If inadequate response transport without delay.
- Maintain general care of the unconscious Pt and ensure adequate airway and ventilation.
- A further dose of Glucose 10% may be required in some Hypoglycaemic episodes. Consider consultation if BGL remains less than 4mmol/L and it is not possible to administer oral carbohydrates.
- Continue initial Mx and transport.
**Glycaemic Emergencies (Paediatric)**

**Question:** 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**
  - Glucose 10% 5ml/kg (500mg/kg) IV
    - Normal Saline 10ml IV flush
  - If unable to obtain IV access, Glucagon
    - < 25kg Glucagon 0.5IU IM (0.5ml)
    - > 25kg Glucagon 1IU IM (1ml)

**Inadequate response**
- **✓ Action**
  - Repeat Glucose 10% 5ml/kg (500mg/kg) IV titrating to Pt conscious state

**BGL < 4 Responds to commands**
- **✓ Action**
  - Glucose 15g Oral

**Adequate response**
- **✓ Action**
  - Consider transport

**Poor response**
- **✓ Action**
  - Consider Glucose IV or Glucagon IM

**Adequate response**
- **✓ Action**
  - GCS 15

**Poor response**
- **✓ Action**
  - Consider Glucose IV or Glucagon IM

**Adequate response**
- **✓ Action**
  - Cease Glucose if still being given
**Status**
- Evidence of probable Hyperglycaemia

**Assess**
- BGL

**BGL > 7**
- Pt unwell
  - **Action**
    - Pts require definitive medical assessment and treatment.

**BGL > 12**
- **Action**
  - Normal Saline 10ml/kg
  - If shocked Rx as per CPG P0801 Inadequate Perfusion Associated with Hypovolaemia
Continuous or Recurrent Seizures (Paediatric)

Special Notes

- Seizures may not always present with tonic/clonic limb activity, e.g. unconsciousness with flicking eye movements (nystagmus) may indicate ongoing seizure activity.

- If the Pt has a past history of seizures, and refuses transport, leave them in the care of a responsible third person. 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.

Midazolam Dosage Chart

<table>
<thead>
<tr>
<th>Age</th>
<th>0</th>
<th>2 Mth</th>
<th>6 Mth</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>Yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>3.5</td>
<td>5</td>
<td>7</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>20</td>
<td>22</td>
<td>24</td>
<td>26</td>
<td>33</td>
<td>36</td>
<td>40</td>
<td>kg</td>
</tr>
<tr>
<td>Midazolam (IM)</td>
<td>0.15mg/kg</td>
<td>0.1</td>
<td>0.15</td>
<td>0.2</td>
<td>0.3</td>
<td>0.36</td>
<td>0.42</td>
<td>0.48</td>
<td>0.54</td>
<td>0.6</td>
<td>0.66</td>
<td>0.72</td>
<td>0.78</td>
<td>1.0</td>
<td>1.1</td>
<td>1.2</td>
</tr>
<tr>
<td>5mg/1ml (1mg=0.2ml)</td>
<td>0.5</td>
<td>0.75</td>
<td>1.0</td>
<td>1.5</td>
<td>1.8</td>
<td>2.1</td>
<td>2.4</td>
<td>2.7</td>
<td>3.0</td>
<td>3.3</td>
<td>3.6</td>
<td>3.9</td>
<td>5.0</td>
<td>5.4</td>
<td>6</td>
<td>mg</td>
</tr>
<tr>
<td>1ml syringe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5mg/1ml x 2 3ml syringe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Midazolam (IV)</td>
<td>0.15mg/kg</td>
<td>0.5</td>
<td>0.75</td>
<td>1.0</td>
<td>1.5</td>
<td>1.8</td>
<td>2.1</td>
<td>2.4</td>
<td>2.7</td>
<td>3.0</td>
<td>3.3</td>
<td>3.6</td>
<td>3.9</td>
<td>5.0</td>
<td>1.1</td>
<td>1.2</td>
</tr>
<tr>
<td>5mg/5ml (1mg=1ml)</td>
<td>0.5</td>
<td>0.75</td>
<td>1.0</td>
<td>1.5</td>
<td>1.8</td>
<td>2.1</td>
<td>2.4</td>
<td>2.7</td>
<td>3.0</td>
<td>3.3</td>
<td>3.6</td>
<td>3.9</td>
<td>5.0</td>
<td>5.4</td>
<td>6</td>
<td>mg</td>
</tr>
<tr>
<td>5mg/1ml</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dilute 5mg/1ml with 4ml normal saline in 5 ml syringe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5mg/1ml x 2 3ml syringe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Special Notes

- Ensure accurate dose calculation and confirm this 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 and familiarity may lead to errors.

- If a single seizure has spontaneously terminated continue with initial management and transport.
Continuous or Recurrent Seizures (Paediatric) CPG P0703

**Status**
- Continuous recurrent seizures

**Assess/Manage**
- Protect Pt
- Continuously monitor airway and ventilation - Assist as required
- Obtain BGL
- Consider Pt’s own management plan and treatment already given

**Continuous or Recurrent Seizures**

**Ensure accurate dosage**

**Action**
- Midazolam 0.15mg/kg IM (max. single dose 10mg)
- Midazolam 0.15mg/kg IV (max. single dose 10mg)

**Seizure activity ceases**

**Action**
- BLS
- Monitor airway and BP

**Seizure activity continues > 5 mins**

**Action**
- IV access
- Midazolam 0.15mg/kg IV (max. single dose 10mg)
- Consider intubation

**Seizure activity continues > 10 mins**

**Action**
- No IV access
- Repeat original Midazolam IM dose once
- Monitor airway and BP
Special Notes

- Signs of allergy include a range of cutaneous manifestations and/or a history of allergen exposure. This history can include food, bites/stings, medications or the allergen can be unknown.

- In rare circumstances anaphylaxis can occur with symptoms in an isolated body system. If a patient has hypotension, bronchospasm or upper airway obstruction where anaphylaxis is considered possible following exposure to a known allergen for the patient, treat as anaphylaxis.

- International guidelines recommend IM administration of Adrenaline to the anterolateral mid-thigh as the preferred site due to improved absorption. While remaining alert to patient comfort and dignity issues, the mid-lateral thigh should be considered the preferred site of administration where possible.

- IV Adrenaline bolus doses are no longer considered acceptable practice where an IV infusion can be utilised.

- IM Adrenaline should be first route of administration even in the severely compromised patient.

- Any infusion established under this Guideline must be clearly labelled with the drug name and dose of any additive drug and their dilution.

- For patients persistently unresponsive to Adrenaline (especially if taking beta blocker medication) the administration of Glucagon 1-2IU IM or IV can be considered under medical consult. Glucagon administration must not delay further Adrenaline administration.

- Anaphylaxis with hypotension or cardiac arrest will require aggressive fluid resuscitation, and is an essential adjunct to adrenaline. Doses of up to 50ml/kg may sometimes be required.

General Care

- Anaphylaxis can be difficult to identify. Cutaneous features are common though not mandatory. Irrespective of known allergen exposure, if 2 or more systemic manifestations are observed then anaphylaxis should be accepted.

- Deaths from anaphylaxis are far more likely to be associated with delay in management rather than due to inadvertant administration of Adrenaline.

- All patients with suspected anaphylaxis must be advised that they should be transported to hospital regardless of their presentation or response to management. International guidelines recommend at least 4 hours observation following treatment.

- Inhaled therapy may be of benefit in management of anaphylaxis though it should always be secondary therapy. Salbutamol may be of use for persistent bronchospasm and Nebulised Adrenaline may be of use for persistent upper airway oedema and stridor.

- Where poor perfusion persists despite initial Adrenaline therapy, large volumes of fluid may be extravasating. IV fluid therapy is indicated to support vasopressor administration.

Paediatric Adrenaline Infusion

Preparation of Adrenaline Infusion (Paediatric):

- 300mcg Adrenaline added to 49.7ml D5W = 6mcg/ml
- 1ml = 6mcg 1ml/hr = 0.1mcg/min

At low flow rates in younger children, an infusion may not be as effective as providing boluses. Clinical Judgement should be applied regarding the most effective route of administration.
## Assess

- **Sudden onset of Symptoms (minutes to hours), AND**
- Two or more symptoms of **R.A.S.H.** with or without confirmed antigen exposure
  - **R** Respiratory distress (SOB, wheeze, cough, stridor)
  - **A** Abdominal symptoms (nausea, vomiting, diarrhea, abdominal pain/cramping)
  - **S** Skin/mucosal symptoms (hives, welts, itch, flushing, angioedema, swollen lips/tongue)
  - **H** Hypotension (or altered conscious state)

OR

- Isolated hypotension, or isolated bronchospasm, or Isolated upper airway obstruction, following likely exposure to a known antigen

OR

- Any single symptoms of **R.A.S.H.** in a patient exposed to a known antigen and previous history of Anaphylaxis/Severe allergic reactions to the same antigen

### Anaphylaxis / Severe Allergic reaction

- **Monitor Pt** for cardiac arrhythmias
- **Adrenaline 10mcg/kg IM (1 : 1,000)**
  - **(max dose 500mcg)**
  - **Repeat 10mcg/kg IM @ 5 mins** until satisfactory results or side effects occur
- Treat bronchospasm as per P0601 Asthma
- Consider fluid as per CPG P0801 Inadequate Perfusion Associated with Hypovolaemia
- Consider Nebulised Adrenaline for upper airway oedema as per P0601 Upper Airway Obstruction

### Inadequate Response or Deteriorating

- If no IV access consider **I/O**
- **Adrenaline infusion** commencing **@ 0.1mcg/kg/min**
  - **(0.1mcg/kg/min = 1ml/kg/hr)** titrated to response or adverse effects (Max starting rate 10mcg/min)

### No Anaphylaxis

- Basic life support
- Reassess for potential deterioration
- Consider transport for observation and further management

### Stop

- If patient has history of anaphylaxis and has received management prior to arrival, they MUST be transported to hospital for observation and follow up
Meningococcal Septicaemia (Paediatric)

Special Notes

- Meningococcal septicaemia is a life-threatening infection, caused by the meningoccus bacteria Neisseria meningitides. Deterioration can be rapid and irreversible, with treatment becoming less effective as the disease state progresses. A Non-blanching rash, either; petechial (pin-point) or purpuric (bruises) can be a late sign. If Meningococcal septicaemia is suspected then administer Ceftriaxone.
- A typical purpuric rash may be subtle in some cases and present as a single ‘spot’ only.
- The presence of rapid onset symptoms of sepsis +/- rash may be a sign of Meningococcal Septicaemia.
- Meningococcal is transmitted by close personal exposure to airway secretions/droplets.
- Ensure face mask protection especially during intubation/suctioning.
- Ensure follow up for staff post occupational exposure.

General Care

- Ceftriaxone preparation
  - Dilute each **1g of Ceftriaxone** with **9.5ml of normal saline** and administer **100mg/kg IV/IO** over approximately 2-4mins.
  - If unable to obtain IV/IO access, dilute each **1g of Ceftriaxone** with **3.5ml 1% Lignocaine HCL** and administer **50mg/kg IM** into the upper lateral thigh.
  - Multiple IM sites may be necessary to deliver dose

Paediatric Chart

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight (kg)</th>
<th>Ceftriaxone IM (50mg/kg)</th>
<th>Ceftriaxone IV (100mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Mth</td>
<td>3.5</td>
<td>0.7</td>
<td>3.5</td>
</tr>
<tr>
<td>2 Mth</td>
<td>5</td>
<td>1.0</td>
<td>5.0</td>
</tr>
<tr>
<td>6 Mth</td>
<td>7</td>
<td>1.4</td>
<td>7.0</td>
</tr>
<tr>
<td>1 Yrs</td>
<td>10</td>
<td>2</td>
<td>10.0</td>
</tr>
<tr>
<td>2 Yrs</td>
<td>12</td>
<td>2.4</td>
<td>12.0</td>
</tr>
<tr>
<td>3 Yrs</td>
<td>14</td>
<td>2.8</td>
<td>14.0</td>
</tr>
<tr>
<td>4 Yrs</td>
<td>16</td>
<td>3.2</td>
<td>16.0</td>
</tr>
<tr>
<td>5 Yrs</td>
<td>18</td>
<td>3.6</td>
<td>18.0</td>
</tr>
<tr>
<td>6 Yrs</td>
<td>20</td>
<td>4.0</td>
<td>20.0</td>
</tr>
<tr>
<td>7 Yrs</td>
<td>22</td>
<td>4.4</td>
<td>22.0</td>
</tr>
<tr>
<td>8 Yrs</td>
<td>24</td>
<td>4.8</td>
<td>24.0</td>
</tr>
<tr>
<td>9 Yrs</td>
<td>26</td>
<td>5.2</td>
<td>26.0</td>
</tr>
<tr>
<td>10 Yrs</td>
<td>30</td>
<td>6.6</td>
<td>30.0</td>
</tr>
<tr>
<td>11 Yrs</td>
<td>33</td>
<td>7.2</td>
<td>33.0</td>
</tr>
<tr>
<td>12 Yrs</td>
<td>36</td>
<td>8</td>
<td>36.0</td>
</tr>
<tr>
<td>12 Yrs</td>
<td>40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ceftriaxone IM (50mg/kg)</th>
<th>1g diluted with 3.5ml 1% Lignocaine (1ml = 250mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1ml syringe</td>
<td>175</td>
</tr>
<tr>
<td>2.5ml syringe</td>
<td>250</td>
</tr>
<tr>
<td>10ml syringe</td>
<td>350</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ceftriaxone IV (100mg/kg)</th>
<th>1g diluted with 9.5ml normal saline (1ml = 100mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10ml syringe</td>
<td>350</td>
</tr>
<tr>
<td>700</td>
<td>5.0</td>
</tr>
<tr>
<td>1000</td>
<td>7.0</td>
</tr>
<tr>
<td>1200</td>
<td>10.0</td>
</tr>
<tr>
<td>1400</td>
<td>12.0</td>
</tr>
<tr>
<td>1600</td>
<td>14.0</td>
</tr>
<tr>
<td>1800</td>
<td>16.0</td>
</tr>
<tr>
<td>2000</td>
<td>18.0</td>
</tr>
<tr>
<td>2000</td>
<td>20.0</td>
</tr>
<tr>
<td>2000</td>
<td>20.0</td>
</tr>
<tr>
<td>2000</td>
<td>20.0</td>
</tr>
<tr>
<td>2000</td>
<td>20.0</td>
</tr>
<tr>
<td>2000</td>
<td>20.0</td>
</tr>
</tbody>
</table>

Meningococcal Septicaemia (Paediatric) CPG P0706
**Meningococcal Septicaemia (Paediatric) CPG P0706**

**Status**
- Possible meningococcal septicaemia

**PPE**

**Confirm Meningococcal Septicaemia**
- Evidence of septicaemia
  - Headache, fever, joint pain, altered conscious state, hypotension and/or tachycardia; with or without
- Typical purpuric rash

**IV/IO Access**
- **Action**
  - **Ceftriaxone 100mg/kg IV/IO max. 2g**
    - Dilute each 1g with normal saline to make 10ml
    - Administer each 1g slowly over 2 mins
  - If < Adequate Perfusion manage as per CPG P0801 Inadequate Perfusion Associated with Hypovolaemia

**No IV Access**
- **Action**
  - Unable to gain, not IO accredited
  - **Ceftriaxone 50mg/kg IM max. 2g**
    - Dilute each 1g with Lignocaine 1%
    - Administer into upper lateral thigh
    - Multiple IM sites will normally be required
Management of Overdose (Paediatric)

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)?

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 P0702 Glycaemic Emergencies (Paediatric).
  - If Pt is bradycardic with poor perfusion manage as per CPG P0201 Bradycardia (Paediatric).
  - If Pt is inadequately perfused, manage as per CPG P0801 Inadequate Perfusion Associated with Hypovolaemia (Paediatric).
  - Assess Pt temperature and manage as per CPG P0901 Hypothermia / Cold Injury (Paediatric), or CPG P0902 Environmental Hyperthermia / Heat Stress (Paediatric).
Management of Overdose (Paediatric)

- **Status**
  - Suspected overdose

- **Assess**
  - Substance involved

- **Action**
  - Consider Medical Consultation

- **Narcotics (A)**
  - e.g. - Heroin
    - Morphine
    - Codeine
    - Other narcotic preparations

- **TCA Antidepressants (B)**
  - e.g. - Amitriptyline
    - Nortriptyline
    - Dothepin

- **Sedatives (C)**
  - e.g. - GHB
    - Alcohol
    - Benzodiazepines
    - Volatile agents

- **Psychostimulants (C)**
  - e.g. - Cocaine
    - Amphetamines
**Special Notes**

- Newborns effected by maternal narcotic administration may be delivered with respiratory depression that may require this Guideline to Mx.

**General Care**

- If inadequate response after 10 mins 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.
Management of Overdose: Narcotics (Paediatric)

**Status**
- Possible Narcotic overdose

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

**Assess evidence of narcotic overdose**
- Altered conscious state
- Respiratory depression
- Substance involved
- Exclude other causes (e.g. obvious head injury)

**Narcotic overdose**
- Assist and maintain airway / ventilation
- Naloxone 10mcg/kg (max 400mcg per bolus) IM

**Adequate response**
- BLS

**Inadequate response after 10 mins**
- Repeat Naloxone 10mcg/kg (max 400mcg per bolus) IM
- Total max 2mg
- Repeat Naloxone 10mcg/kg (max 400mcg per bolus) IV
- Total max IM or IV 2mg
- Consider airway management
  - CPG P0301 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
  - 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.

### ECG changes

ECG changes include positive R wave > 3mm in aVR, prolonged PR, QRS and QT intervals. If QRS widening and >0.12 sec - indicates severe toxicity with risk of ventricular arrhythmias and seizures.

QTc is the corrected QT interval. QTc > 500 msec indicates toxicity with tricyclic overdose. MRX monitors are able to measure QTc when a 12 lead is taken.

- When performing Hyperventilation only in the TCA overdose, it is reasonable to target EtCo2 to a range between 22-25mmHg.

- Caution must be used when administering Sodium Bicarbonate 8.4% and hyperventilation as the combination has been associated with fatal alkalaemia. Do not allow ETCO2 to fall below 25mm Hg.

- Sodium Bicarbonate 8.4% should NEVER be administered to patients with a EtCO2 below 25mmHg.
Management of Overdose: Tricyclic Antidepressants (TCA) (Paediatric) CPG P0707

**Status**
- Possible TCA overdose

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

**Stop**
- Do not administer Amiodarone if suspected Tricyclic Antidepressant Medication Overdose

**No toxicity**

**Action**
- BLS
- Consider potential to develop signs of toxicity

**Signs of TCA toxicity**
Any of the following:
- Less than adequate perfusion
- Positive R wave > 3mm aVR
- QRS > 0.12 sec (> 0.16 sec indicates severe toxicity)
- QT prolongation (> 1/2 R-R interval)

**Action**
- Hyperventilate with 100% O₂
  EtCO₂ target 25-30 mmHg if intubated
- Sodium bicarbonate 8.4% 2ml/kg IV over 3 mins
  - Repeat 2ml/kg IV after 10 mins if signs of toxicity persist
  - Severe cases may require continuing doses
- Consider Intubation if required as per CPG P0301
  Endotracheal Intubation if signs of toxicity persist after initial Mx
  - Hyperventilate with 100% O₂
  - EtCO₂ target 25-30 mmHg
Special Notes

- For young persons, Paramedics should strongly encourage them to make contact with a responsible adult.
- If Pt still refuses transport, repeat the advice using friend/relative assistance. Advice the Pt and responsible third person of follow up, counselling facilities and actions to take for immediate continuing care if symptoms reoccur.
- 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.

Special Notes

- 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.
Management of Overdose:
Sedative Agents/Psychostimulants (Paediatric)

- **Status**
  - Sedative agents
  - Psychostimulants

- **Assess**
  - Substances involved

- **Sedative agents**
  - Action
    - 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**
  - Action
    - Be aware of potential for violent behaviour particularly with Methamphetamines
    - Reduce stimulus by calming and controlling Pt environment
    - Manage seizures as per CPG P0703 Continuous or Recurrent Seizures (Paediatric)
    - Manage temperature as per CPG P0901 Hypothermia/Cold Exposure (Paediatric), or CPG P0902 Environmental Hyperthermia/Heat Stress (Paediatric)
    - Manage agitation/aggression as per CPG A0708 The Agitated Patient
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 used 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 (Paediatric) CPG P0709

Status

- Possible Organophosphate exposure

Stop

- Avoid self contamination - wear PPE
- Pt decontamination if possible
- Pt must be decontaminated prior to entering the hospital

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 perfusion

No excessive cholinergic effects

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

Excessive cholinergic effects

- Action
  - Atropine Sulphate 20mcg/kg IV
    - Repeat 20mcg/kg IV @ 5 mins until excessive cholinergic effects resolve

Evidence of excessive cholinergic effects

- Bradycardia with inadequate perfusion

Plus

Stop

- Avoid self contamination - wear PPE
- Pt decontamination if possible
- Pt must be decontaminated prior to entering the hospital

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 perfusion

No excessive cholinergic effects

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

Excessive cholinergic effects

- Action
  - Atropine Sulphate 20mcg/kg IV
    - Repeat 20mcg/kg IV @ 5 mins until excessive cholinergic effects resolve
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 5ml/kg Normal Saline bolus to correct hypotension
- Chest injury - Consider tension pneumothorax Rx as per CPG P0802 Chest Injury (Paediatric)
- Penetrating Trunk Injury, suspected aortic aneurysm or uncontrolled haemorrhage - Accept palpable carotid pulse with adequate conscious state and transport immediately

Special Notes

- Consider Tourniquet application for severe extremity bleeding unresponsive to direct pressure or where direct pressure is considered impractical.

General Care

- Titrate fluid administration to Pt response.
- Modifying factors must be considered and managed prior to aggressive fluid 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.
- If IV access is unable to be obtained and the Pt is obtunded, insert I/O.
- Pain relief as per CPG P0501 Pain Relief (Paediatric)
- Consider establishing IV en route. Do not delay transport for IV therapy.
Inadequate Perfusion Associated with Hypovolaemia (Paediatric)

**Status**
- Evidence of Hypovolaemia

**Stop**
- Identify and manage Haemorrhage, fractures, pain, tension pneumothorax, hypoxia
- Assess need for application of Tourniquet

**Consider Modifying factors/Assess Perfusion**
- SCI, Chest Injury, Penetrating Trunk Injury or Uncontrolled Haemorrhage

**Adequate Perfusion**
- Action
  - Fluid not required

**Inadequate or No Perfusion**
- Action
  - IV access
  - Normal Saline up to 20ml/kg IV

**Adequate Response**
- Action
  - No further fluid required

**Inadequate Response**
- Action
  - Nil or inadequate improvement
  - Repeat Normal Saline up to 20ml/kg IV or IO
    - If after 40ml/kg Pt remains < adequately perfused
  - Medical Consult for further doses

**Stop Assess Consider Action**

Inadequate Perfusion Associated with Hypovolaemia (Paed.) CPG P0801
Chest Injuries (Paediatric)

**Status**
- Chest injury
  - Traumatic
  - Spontaneous
  - Iatrogenic

**Assess**
- Respiratory status
- Type of chest injury

**Action**
- Supplemental oxygen
- Pain relief as per CPG P0501 Pain Relief (Paediatric)
- Position Pt upright if possible unless perfusion is < adequate, altered consciousness, associated barotrauma or potential spinal injury

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

**Open chest wound**
- Action
  - 3-sided sterile occlusive dressing

**Pneumothorax**
- Action
  - Signs of pneumothorax
  - See CPG P0802 (A)
**Chest Injuries** (Paediatric)

**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.

**Insertion site for Cannula**
- 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 16G cannula.
  - If air escapes, or air and blood bubble through the cannula, or no air/blood detected, leave in situ and secure.
  - If no air escapes but copious blood flows through the cannula then a major haemothorax is present. Cap cannula and secure.
  - Trouble shooting
    - Pt may re-tension as lung inflates if catheter kinks off.
    - Catheter may also clot off. Flush with sterile **Normal Saline**.
Chest Injuries (Paediatric)

### 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 SpO₂ on room air
  - Subcutaneous emphysema

### Action
- Continue BLS and supplemental O₂
- Monitor closely for possible development of TPT

### Tension pneumothorax (TPT)
- Signs of Simple pneumothorax with any of the following:
  - Inadequate perfusion
  - Agitated / Decreasing Conscious state
  - Severe respiratory distress
- Ventilated Pts
  - Increased PEAK inspiratory pressure / stiff bag
  - Decreasing ETCO₂

### Action
- Chest decompression as per General Care

### PEA in the setting of traumatic chest injury
- Action - consider Tension Pneumothorax
- Chest decompression as per General Care
**General Care**

- Cool burn area for preferably up to 20 mins
  - Running water if possible
  - Normal Saline or wet combine as substitute
  - Avoid/eliminate shivering
  - Avoid ice or ice water

**AVOID OVER COOLING**

- Cover cooled area with appropriate dressing
  - Ensure cling wrap is applied longitudinally to allow for swelling.
- Assess Pt temp. and manage as required.
- Caution 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.
Paediatric Burns (Paediatric) CPG P0803

**Status**
- Evidence of burn injury

**Assess mechanism of burn and burn injury**
- Assess burn injury
  - Airway injury
  - Body surface area injury - Refer to Lund and Browder chart
  - Burn classification, e.g. superficial partial/full thickness

**Initial burn management**

**Action**
- Cool burn area
- Cover cooled area with appropriate dressing

**Avoid over cooling**

**All other burn presentations**

**Action**
- BLS/first aid

**Partial or full thickness burns > 10%**

**Action**
- Normal Saline IV fluid replacement
  - 2ml/kg x % burn over 8 hrs from time of injury

**Pre-notify and immediate transport**
Hypothermia/Cold Exposure (Paediatric)

**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 temperatures 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 temperatures below 30°C. VF may resolve spontaneously upon re-warming.
- 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.
- Gentle handling of these Pt is essential. Position flat or lateral and avoid head up positioning.

**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.

  The use of aural or oral thermometers may be limited in assessing a patient in a Hypothermic emergency
Hypothermia/Cold Exposure (Paediatric)

### 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 up to 10ml/kg IV
  - Repeat up to 10ml/kg IV (max. 40ml/kg) to maintain perfusion
- Avoid drug Mx of cardiac arrhythmia unless decompensated and until rewarming has commenced

### Cardiac arrest
- < 30°C
  - Withhold Sodium Bicarbonate₃ 8.4% IV

- > 32°C
  - Standard Cardiac Arrest Guidelines

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

- Action
  - Continue CPR and rewarbing until temperature > 30 °C
  - One defibrillation shock only
  - One dose of Adrenaline
  - One dose of Amiodarone
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. This is to avoid arrhythmias.
**Environmental Hyperthermia Heat Stress (Paediatric)**

**CPG P0902**

### 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 temperature 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 P0801 Inadequate Perfusion Associated with Hypovolaemia (Paediatric)**
  - Cooled fluid preferable if available
- Treat low BGL as per **CPG P0702 Glycaemic Emergencies (Paediatric)**

### Adequate response

**Action**
- BLS
- Transport

### Poor response after 10 mins

**Action**
- Severe cases - Temperature > 39.5°C
- GCS < 12
- Pt time critical, continue initial Mx
The drug section of these Guidelines has been specifically written to focus on the pharmacology relevant to selected medical emergencies. It is not intended that the pharmacology section of this booklet be seen as a standard text on pharmacology. Thus, the content has been restricted to Ambulance practice.

<p>| <strong>Presentation</strong> | In many instances, drugs may be available in presentations other than those listed. However, this booklet indicates only those presentations that are currently carried on Ambulance vehicles. Drug Presentations as written can only be varied by the Chief Executive Officer (CEO) on the statutory role as Director of Ambulance Service. This will only be done through the release of a Clinical Services Update authorised by the CEO. This is the only circumstance where drug variations are permitted in ambulance service practice. |
| <strong>Pharmacology</strong> | A statement is included as to the nature of the drug followed by a list of specific actions related to the Ambulance use of that drug. |
| <strong>Metabolism</strong> | A single statement has been included to indicate the fate of the particular drug within the body. |
| <strong>Primary Emergency Indication</strong> | The indications to those emergency situations for which the drug is primarily used within Ambulance practice. The drug however, may have other indications within health care. |
| <strong>Contraindications</strong> | If there are absolute contraindications to the use of a particular drug, these are indicated in this section. |
| <strong>Precautions</strong> | Where there are relative contraindications or precautions in the administration of a drug, these are included in this section. |
| <strong>Route of Administration</strong> | Most drugs can be administered through a variety of routes. However, this section includes only those routes of administration considered appropriate for use in Ambulance practice. As a general principle, drugs should not be mixed in the same syringe or solution before administration. |
| <strong>Side Effects</strong> | Common side effects attributed to the use of the drug are included in this section. |
| <strong>Special Notes</strong> | In this section a variety of additional information, in particular the time that the drug takes to have its effect, has been included as background information. |</p>
<table>
<thead>
<tr>
<th><strong>Presentation</strong></th>
<th>6mg in 2ml amp</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pharmacology</strong></td>
<td>AV nodal anti-arrhythmic</td>
</tr>
<tr>
<td><strong>Metabolism</strong></td>
<td>Adenosine is rapidly cleared from the circulation via cellular uptake</td>
</tr>
</tbody>
</table>
| **Primary Emergency Indication** | 1. Regular Supra-ventricular Tachycardia (SVT) ((narrow complex QRS <0.12s))  
2. Regular Supra-ventricular Tachycardia with ventricular aberrancy of conduction (SVT-A) |
| **Contraindications** | 1. History of second or third degree heart block or sick sinus syndrome (except for patients with a functioning artificial pacemaker)  
2. Sinus node disease, such as sick sinus syndrome  
3. Chronic obstructive lung disease eg. Asthma  
4. Known hypersensitivity to Adenosine. (Very rare) |
| **Precautions** | 1. Current dipyramole therapy (Asantin, Persantin)  
2. Pts on carbamazepine |
| **Route of Administration** | Intravenous (rapid push bolus) |
### Side Effects

Adenosine has an extremely short half-life: 6 to 10 seconds. Thus any adverse effects are self-rectifying.

- Facial flushing
- Dyspnoea
- Headache
- Anxiety
- Bronchospasm
- Hypotension

Explain procedure and possible discomfort to patient. Has been known to cause feeling of impending doom to some patients.

### Special Notes

Adenosine is not effective in converting atrial fibrillation, atrial flutter or ventricular tachycardia.

If adenosine is administered for atrial fibrillation in a patient with Wolf-Parkinson-White syndrome (perhaps previously undiagnosed) the blockade of the SA node may lead to increased conduction via AV accessory pathway(s) and initiate ventricular fibrillation. Thus the field indications for adenosine include regular SVT only.

**Interactions:**

- Caffeine, aminophylline and theophylline block the adenosine receptors and the full incremental dosage may be required.
- Carbamazepine (‘Tegretol’) can increase the level of atrioventricular block. Reduced dosage by half should be considered.
- Dipyramole (a platelet aggregation inhibitor) increases the plasma levels and cardiovascular effects of Adenosine. Reducing dose by half should be considered.

Heart Transplant recipients should receive half doses.
<table>
<thead>
<tr>
<th><strong>Presentation</strong></th>
<th>1mg in 1ml amp (1:1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pharmacology</strong></td>
<td>A naturally occurring Alpha and Beta-adrenergic stimulant</td>
</tr>
<tr>
<td></td>
<td><strong>Actions:</strong></td>
</tr>
<tr>
<td></td>
<td>- Increases pulse rate by increasing S.A. Node firing rate (Beta 1)</td>
</tr>
<tr>
<td></td>
<td>- Increases conduction velocity through the A.V. Node (Beta 1)</td>
</tr>
<tr>
<td></td>
<td>- Increases myocardial contractility (Beta 1)</td>
</tr>
<tr>
<td></td>
<td>- Increases the irritability of the ventricles (Beta 1)</td>
</tr>
<tr>
<td></td>
<td>- Causes bronchodilatation (Beta 2)</td>
</tr>
<tr>
<td></td>
<td>- Causes peripheral vasoconstriction (Alpha)</td>
</tr>
<tr>
<td><strong>Metabolism</strong></td>
<td>By monoamine oxidase and other enzymes in blood, liver and around nerve endings and excreted by the kidneys</td>
</tr>
<tr>
<td><strong>Primary Emergency Indications</strong></td>
<td>1. Persistent ventricular fibrillation or unconscious pulseless ventricular tachycardia</td>
</tr>
<tr>
<td></td>
<td>2. Asystole</td>
</tr>
<tr>
<td></td>
<td>3. Electro-mechanical dissociation/PEA</td>
</tr>
<tr>
<td></td>
<td>4. Inadequate perfusion (Cardiogenic)</td>
</tr>
<tr>
<td></td>
<td>5. Inadequate perfusion (Non Cardiogenic – Non Hypovolaemic)</td>
</tr>
<tr>
<td></td>
<td>6. Anaphylactic reactions</td>
</tr>
<tr>
<td></td>
<td>7. Severe asthma</td>
</tr>
<tr>
<td></td>
<td>8. Unconscious asthma with no blood pressure</td>
</tr>
<tr>
<td></td>
<td>9. Croup or suspected croup/ epiglottitis.</td>
</tr>
<tr>
<td></td>
<td>10. Bradycardia with poor perfusion</td>
</tr>
<tr>
<td><strong>Contraindication</strong></td>
<td>Hypovolaemic shock without adequate fluid replacement</td>
</tr>
</tbody>
</table>
### Precautions

1. Elderly Pts  
2. Pts with cardiovascular disease  
3. Pts on monoamine oxidase (MAO) inhibitors  
4. Pts on Beta blockers as higher doses may be required

### Route of Administration

- Intravenous  
- Intramuscular  
- Endotracheal  
- Nebuliser  
- Intravenous Infusion  
- Intraosseous

### Side Effects

- Sinus tachycardia  
- Supraventricular arrhythmias  
- Ventricular arrhythmias  
- Hypertension  
- Pupillary dilatation  
- May increase size of myocardial infarction  
- Feeling of “anxiety/palpitations” in the conscious Pt  
- Muscle tremor

### Special Notes

Intravenous Adrenaline should be reserved for life threatening situations.

**Intravenous effects:**
- Onset: 30sec  
- Peak: 3 – 5min  
- Duration: 5 – 10min

**Intramuscular effects:**
- Onset: 30 – 90sec  
- Peak: 4 – 10min  
- Duration: 5 – 10min
### Amiodarone

<table>
<thead>
<tr>
<th>Presentation</th>
<th>150mg in 3ml amp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology</td>
<td>A Class III anti-arrhythmic agent</td>
</tr>
<tr>
<td>Metabolism</td>
<td>By the liver</td>
</tr>
</tbody>
</table>
| **Primary Emergency Indications** | 1. Ventricular Fibrillation/Pulseless Ventricular Tachycardia refractory to cardioversion  
2. Sustained or recurrent Ventricular Tachycardia |
| **Contraindications** | 1. Ventricular Tachycardia  
   - Inadequate perfusion and deteriorating rapidly  
   - Pregnancy  
2. Known hypersensitivity to Amiodarone or Iodine.  
3. Tricyclic antidepressant medication Overdose |
| **Precautions**    | Nil of significance in above indications |
| **Route of Administration** | Intravenous |
| **Side Effects**   | • Hypotension     
• Bradycardia      |
| **Special Notes**  | *Intravenous effects (bolus):*  
Onset: 2min  
Peak: 20min  
Duration: 120min  
*Amiodarone is incompatible with saline. Glucose 5% must be used as diluant when administered to the conscious Pt.* |
### Aspirin (Acetylsalicylic Acid)

**Presentation**
- 300mg chewable tablets
- 300mg soluble or water dispersible tablets

**Pharmacology**
An analgesic, antipyretic, anti-inflammatory and antiplatelet aggregation agent.

*Actions:*
- Reduces platelet aggregation
- Inhibits synthesis of prostaglandins - anti-inflammatory actions

**Metabolism**
Converted to salicylate in the gut mucosa and liver, excreted mainly by the kidneys

**Primary Emergency Indication**
To minimize platelet aggregation and thrombus formation in order to retard the progression of coronary artery thrombosis in acute coronary syndrome

**Contraindications**
1. Hypersensitivity to aspirin/salicylates
2. Actively bleeding peptic ulcers
3. Bleeding disorders
4. Suspected dissecting aortic aneurysm
5. Chest pain associated with psychostimulant overdose if BP > 160

**Precautions**
1. Peptic ulcer
2. Asthma
3. Pts on anti-coagulants, e.g. Warfarin

**Route of Administration**
Oral

**Side Effects**
- Heartburn, nausea, gastrointestinal bleeding
- Increased bleeding time
- Hypersensitivity reactions

**Special Notes**
Aspirin is contra-indicated for use in acute febrile illness in pts less than 12 years of age as it may lead to renal function impairment and Reye’s syndrome.
The anti-platelet effects of Aspirin persists for the natural life of platelets.
Aspirin is absorbed from the stomach and duodenum to reach peak levels within 15 mins and has a half-life of approximately 30 mins. **It is therefore important to administer Aspirin for suspected AMI even if patient is on daily dose.**
### Presentation

| 1.2 mg in 1ml amp |

### Pharmacology

An anticholinergic agent

**Actions:**
- inhibits the actions of acetylcholine on post-ganglionic cholinergic nerves at the neuro-effector site, e.g. as a vagal blocker and allows sympathetic effect to:
  - increase pulse rate by increasing S.A. Node firing rate
  - increase the conduction velocity through the A.V. Node
- antidote to reverse the effects of cholinesterase inhibitors, e.g. organophosphate insecticides, at the post-ganglionic neuro-effector sites of cholinergic nerves, i.e. reduces the excessive salivary, sweat, gastrointestinal, and bronchial secretions, and relaxes smooth muscles.

### Metabolism

By the liver and excreted mainly by the kidneys

### Primary Emergency Indication

1. Bradycardia with less than adequate perfusion
2. Organophosphate poisoning with excessive cholinergic effects
3. Nerve agent poisoning

### Contraindication

Nil of significance in the above indications

### Precautions

1. Atrial flutter
2. Atrial fibrillation
3. Do not increase heart rate above 100/min except in children under 6 years
4. Glaucoma
<table>
<thead>
<tr>
<th>Route of Administration</th>
<th>Intravenous</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intramuscular</td>
</tr>
<tr>
<td></td>
<td>Intraosseous</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Side Effects</th>
<th>Tachycardia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Palpitations</td>
</tr>
<tr>
<td></td>
<td>Dry mouth</td>
</tr>
<tr>
<td></td>
<td>Dilated pupils</td>
</tr>
<tr>
<td></td>
<td>Visual blurring</td>
</tr>
<tr>
<td></td>
<td>Retention of urine</td>
</tr>
<tr>
<td></td>
<td>Confusion, restlessness (in large doses)</td>
</tr>
<tr>
<td></td>
<td>Hot, dry skin (in large doses)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special Notes</th>
<th><em>Intravenous effects:</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Onset: &lt; 2min</td>
</tr>
<tr>
<td></td>
<td>Peak: &lt; 5min</td>
</tr>
<tr>
<td></td>
<td>Duration: 2 – 6hrs</td>
</tr>
</tbody>
</table>
### Ceftriaxone

<table>
<thead>
<tr>
<th>Presentation</th>
<th>1g sterile powder in vial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology</td>
<td>Cephalosporin Antibiotic</td>
</tr>
<tr>
<td>Metabolism</td>
<td>Excreted unchanged in urine (33% - 67%) and in bile</td>
</tr>
</tbody>
</table>
| Primary Emergency Indication | 1. Suspected Meningococcal Septicaemia  
2. Severe Sepsis (Consult only) |
| Contraindication | Allergy to Cephalosporin Antibiotics |
| Precautions   | Allergy to Penicillin Antibiotics |
| Route of Administration | Intravenous route (preferred)  
Intramuscular route (if IV access unable to be obtained) |
| Side Effects  | Nausea and Vomiting  
Skin Rash |
| Special Notes | Usual dose: Adult 2g IV or IM  
Paediatric 100mg/kg IV or 50mg/kg IM (Max = 2g IV or IM) |

Ceftriaxone IV must be made up to 10ml using normal saline and administered over 2 minutes.  
Ceftriaxone IM must be made up to 4ml using 1% Lignocaine and administered in the lateral upper thigh. (Ceftriaxone without Lignocaine is extremely painful)  
Expect possible deterioration in a subgroup of patients following Ceftriaxone administration.
# Dexamethasone

<table>
<thead>
<tr>
<th><strong>Presentation</strong></th>
<th>8mg in 2ml Glass Vial</th>
</tr>
</thead>
</table>
| **Pharmacology** | A corticosteroid secreted by the adrenal cortex  
*Action:* Relieves inflammatory reactions and provides immunosuppression |
| **Metabolism**   | By the liver and other tissues, and excreted predominantly by the kidneys |
| **Primary Emergency Indication** | 1. Bronchospasm associated with acute respiratory distress not responsive to nebulised Salbutamol  
2. Anaphylaxis  
3. Acute Exacerbation of COPD  
4. Suspected Croup |
| **Contraindication** | Known hypersensitivity to Dexamethasone or other corticosteroids |
| **Precautions**  | Usually only relevant with prolonged use and high doses |
| **Route of Administration** | Intravenous and Intramuscular |
| **Side Effects** | Except for allergic reactions, adverse effects are usually only associated with prolonged use and high doses |
| **Special Notes** | Does not contain an antimicrobial agent, therefore use solution immediately and discard any residue  
*Intravenous effects:*  
Onset: 30 – 60min  
Peak: 2hrs  
Duration: 36 – 72hrs |
### Ergometrine CPG D009

| **Presentation**                     | 500 mcg in 1 ml  
|                                    | 250 mcg in 1 ml - amp |
| **Pharmacology**                   | Causes contraction of the uterus and vascular smooth muscle  
|                                    | General vasoconstriction |
| **Metabolism**                     | Principally by the liver |
| **Primary Emergency Indication**   | Post-partum and post-abortal haemorrhage greater than 600 mls, when it is certain that all foetuses have delivered |
| **Contraindication**               | 1. Known allergy  
|                                    | 2. Past Hx of pre-eclampsia (Pregnancy induced hypertension)  
|                                    | 3. Hypertension |
| **Precautions**                    | Nil of significance for this indication |
| **Route of Administration**        | Intravenous (given slowly) |
| **Side Effects**                   | Allergic reaction - anaphylaxis  
|                                    | Hypertension |
| **Special Notes**                  | The human uterus becomes more sensitive to oxytocics in the course of pregnancy and becomes most sensitive near the time of parturition.  
|                                    | Ergometrine produces a firm tonic contraction within 5 minutes lasting 90 mins.  
|                                    | **Storage:**  
|                                    | Refrigerated at below 8º  
|                                    | - Ampules should have an expiry date marked two months from time it is removed from refrigeration  
|                                    | **Intravenous effects:**  
<p>|                                    | Onset: immediate |</p>
<table>
<thead>
<tr>
<th><strong>Presentation</strong></th>
<th>100mcg in 2ml amp, 250mcg in 1ml (IN use only)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pharmacology</strong></td>
<td>A synthetic narcotic analgesic</td>
</tr>
<tr>
<td></td>
<td><strong>Actions:</strong></td>
</tr>
<tr>
<td></td>
<td>Central Nervous System effects:</td>
</tr>
<tr>
<td></td>
<td>- Depression – leading to analgesia</td>
</tr>
<tr>
<td></td>
<td>- Respiratory depression – leading to apnoea</td>
</tr>
<tr>
<td></td>
<td>- Dependence (addiction)</td>
</tr>
<tr>
<td></td>
<td><strong>Cardiovascular effects:</strong></td>
</tr>
<tr>
<td></td>
<td>- Decreases conduction velocity through the A.V. Node</td>
</tr>
<tr>
<td><strong>Metabolism</strong></td>
<td>By the liver and excreted by the kidneys</td>
</tr>
<tr>
<td><strong>Primary Emergency Indications</strong></td>
<td>1. Analgesia – IV/IN</td>
</tr>
<tr>
<td></td>
<td>2. Sedation to maintain intubation</td>
</tr>
<tr>
<td><strong>Contraindication</strong></td>
<td>1. Known hypersensitivity</td>
</tr>
<tr>
<td></td>
<td>2. Active labour</td>
</tr>
<tr>
<td></td>
<td>3. Epistaxis or occluded nasal passages (IN use)</td>
</tr>
<tr>
<td></td>
<td>4. Patients &lt; 1 year old</td>
</tr>
<tr>
<td><strong>Precautions</strong></td>
<td>1. Elderly Pts</td>
</tr>
<tr>
<td></td>
<td>2. Respiratory depression, e.g. COPD</td>
</tr>
<tr>
<td></td>
<td>3. Current asthma</td>
</tr>
<tr>
<td></td>
<td>4. Known addiction to narcotics</td>
</tr>
<tr>
<td></td>
<td>5. Monoamine Oxidase Inhibitors</td>
</tr>
</tbody>
</table>
### Route of Administration
- Intravenous
- Intranasal

### Side Effects
- Respiratory depression
- Apnoea
- Rigidity of the diaphragm and intercostal muscles
- Bradycardia

### Special Notes
Fentanyl is a Schedule 8 drug under the Poisons Act and its use must be carefully controlled with accountability and responsibility.

Respiratory depression can be reversed with Naloxone Hydrochloride.

Respiratory depression as a side effect will last longer than the analgesic effects.

100mcg Fentanyl is equivalent in analgesic activity to 10mg Morphine.

**Intravenous effects:**
- **Onset:** Immediate
- **Peak:** < 5min
- **Duration:** 30 – 60min
**Frusemide**

| Presentation | 20mg in 2ml amp
(Other presentations exist) |
| Pharmacology | A diuretic
*Actions:*
- Causes venous dilatation and reduces venous return
- Promotes diuresis |
| Metabolism | Excreted by the kidneys |
| **Primary Emergency Indication** | Acute left ventricular failure with evidence of fluid overload |
| **Contraindication** | Nil of significance in the above indication |
| **Precautions** | Hypotension |
| **Route of Administration** | Intravenous – administer slowly (2 -5min) |
| **Side Effects** | Hypotension
Dysrhythmia due to electrolyte inbalance |
| **Special Notes** | The effect of vasopressor drugs will often be reduced after treatment with Frusemide.
*Intravenous effects:*
Onset: 5min
Peak: 20 – 60min
Duration: 2 – 3hrs
Also known as Furosemide |
**Presentation**
1mg (IU) in 1ml Hypokit

**Pharmacology**
A hormone normally secreted by the pancreas

*Actions:*
Causes an increase in blood glucose concentration by converting stored liver glycogen to glucose
Has a weak chronotropic and inotropic action

**Metabolism**
Mainly by the liver, also by the kidneys and in the plasma

**Primary Emergency Indication**
Diabetic hypoglycaemia (Random Blood Glucose analysis < 4mmol/l) in Pts with an altered conscious state who are unable to self-administer oral glucose paste

**Contraindication**
Nil of significance in the above indication

**Precautions**
Nil of significance in the above indication

**Route of Administration**
Intramuscular

**Side Effects**
Nausea and vomiting (rare)

**Special Notes**
Not all Pts will respond to Glucagon, for example those with inadequate glycogen storage in the liver – alcoholics, malnourishment.

*Intramuscular effects:*
Onset: 3 – 5min
Peak:
Duration: 12 – 25min
## Presentation
100ml infusion soft pack

## Pharmacology
An isotonic crystalloid solution  
**Composition:**  
- Sugar – 5% dextrose  
- Water  
**Actions:**  
- Provides a small source of energy  
- Supplies body water

## Metabolism
**Dextrose:**  
- Broken down in most tissues  
- Stored in liver and muscle as glycogen  
**Water:**  
- Excreted by the kidneys  
- Distributed throughout total body water, mainly in the extracellular fluid compartment

## Primary Emergency Indication
Vehicle for dilution and administration of intravenous emergency drugs

## Contraindication
Nil of significance in the above indication

## Precautions
Nil of significance in the above indication

## Route of Administration
Intravenous infusion

## Side Effects
Nil of significance in the above indication

## Special Notes
*Intravascular half life:*  
Approximately 20 - 40min
Glucose 10%

<table>
<thead>
<tr>
<th>Presentation</th>
<th>50g in 500ml infusion soft pack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology</td>
<td>A slightly hypertonic crystalloid solution</td>
</tr>
<tr>
<td><strong>Composition:</strong></td>
<td><strong>Actions:</strong></td>
</tr>
<tr>
<td>- Sugar – 10% dextrose</td>
<td>- Provides a source of energy</td>
</tr>
<tr>
<td>- Water</td>
<td>- Supplies body water</td>
</tr>
<tr>
<td>Metabolism</td>
<td>Glucose:</td>
</tr>
<tr>
<td></td>
<td>- Broken down in most tissues</td>
</tr>
<tr>
<td></td>
<td>- Stored in liver and muscle as glycogen</td>
</tr>
<tr>
<td>Water:</td>
<td>- Excreted by the kidneys</td>
</tr>
<tr>
<td></td>
<td>- Distributed throughout total body water, mainly in the extracellular fluid compartment</td>
</tr>
<tr>
<td>Primary Emergency Indication</td>
<td>Diabetic hypoglycaemia (Random Blood Glucose analysis &lt; 4mmol/L) in Pts with an altered conscious state who are unable to self-administer oral glucose</td>
</tr>
<tr>
<td>Contraindication</td>
<td>Nil of significance in the above indication</td>
</tr>
<tr>
<td>Precautions</td>
<td>Nil of significance in the above indication</td>
</tr>
<tr>
<td>Route of Administration</td>
<td>Intravenous infusion</td>
</tr>
<tr>
<td>Side Effects</td>
<td>Nil of significance in the above indication</td>
</tr>
<tr>
<td>Special Notes</td>
<td>Intravenous effects:</td>
</tr>
<tr>
<td></td>
<td>Onset: 3 min</td>
</tr>
<tr>
<td></td>
<td>Peak:</td>
</tr>
<tr>
<td></td>
<td>Duration: Depends on severity of hypoglycaemic episode</td>
</tr>
</tbody>
</table>
## Glucose Paste

<table>
<thead>
<tr>
<th>Presentation</th>
<th>15g Glucose paste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology</td>
<td>A hypertonic sugar solution for oral use</td>
</tr>
<tr>
<td>Metabolism</td>
<td>Glucose:</td>
</tr>
<tr>
<td></td>
<td>- Broken down in most tissues</td>
</tr>
<tr>
<td></td>
<td>- Stored in liver and muscle as glycogen</td>
</tr>
<tr>
<td>Primary Emergency Indication</td>
<td>Diabetic hypoglycaemia (Random Blood Glucose analysis &lt; 4mmol/l) in Pts who are conscious and able to self-administer oral glucose</td>
</tr>
<tr>
<td>Contraindication</td>
<td>Nil of significance in the above indication</td>
</tr>
<tr>
<td>Precautions</td>
<td>Nil of significance in the above indication</td>
</tr>
<tr>
<td>Route of Administration</td>
<td>Oral</td>
</tr>
<tr>
<td>Side Effects</td>
<td>Nil of significance in the above indication</td>
</tr>
<tr>
<td>Special Notes</td>
<td></td>
</tr>
<tr>
<td>Presentation</td>
<td>0.4 mg sublingual spray</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td></td>
<td>50mg in 10ml glass ampoule</td>
</tr>
</tbody>
</table>

| Pharmacology            | Principally, a vascular smooth muscle relaxant |
|                        | *Actions*: |
|                        | - Venous dilatation promotes venous pooling and reduces venous return to the heart (reduces preload) |
|                        | - Arterial dilatation reduces systemic vascular resistance and arterial pressure (reduces after load) |
|                        | *The effects of the above are to*: |
|                        | - reduce myocardial oxygen demand |
|                        | - reduce systolic, diastolic and mean arterial blood pressure, whilst usually maintaining coronary perfusion pressure |
|                        | - Mild collateral coronary arterial dilatation may improve blood supply to ischemic areas of myocardium |
|                        | - Mild tachycardia secondary to slight fall in blood pressure |

| Metabolism              | Hepatic |

| Primary Emergency Indication | 1. Chest pain associated with Acute Coronary Syndrome |
|                            | 2. Acute left ventricular failure (Pulmonary Oedema) |
|                            | 3. Hypertension associated with Acute Coronary Syndrome |
|                            | 4. Autonomic Dysreflexia |

| Contraindication          | 1. Known hypersensitivity |
|                          | 2. Systolic blood pressure < 100 mmHg (Buccal/Sub-lingual) |
|                          | 3. Systolic blood pressure <120 mmHg (Intravenous) |
|                          | 4. Sildenafil Citrate “VIAGRA” or Vardenafil “LEVITRA” administration in the previous 24 hours or Tadalafil “CIALIS” administration in the previous 4 days (PDE5 inhibitors) |
|                          | 5. Heart rate > 150 per min |
|                          | 6. Heart rate < 50 per min (excluding Autonomic Dysreflexia) |
|                          | 7. Ventricular Tachycardia |
|                          | 8. Right Ventricular Infarct |
## Glyceryl Trinitrate (GTN)

### Precautions
1. No previous administration
2. Elderly patients
3. Recent acute myocardial infarction
4. Inferior STEMI with systolic BP < 160 mmHg
5. Avoid skin contact with concentrated solution
6. Always reduce BP slowly rather than aggressively (IV GTN)

### Route of Administration
- Buccal, Sub-lingual or Intravenous, Topical (VAO only)

### Side Effects
- Tachycardia
- Hypotension
- Headache
- Skin flushing (uncommon)
- Bradycardia (occasionally)

### Special Notes
**Storage:**
Do not administer the patient’s own medication, as its storage may not have been in optimum conditions or may be old. Tablets should be discarded and replaced after 1 month.

Since both men and women can be prescribed Sildenafil Citrate “VIAGRA” or Vardenafil “LEVITRA” or Tadalafil “CIALIS” all patients should be asked if and when they last have had the drug to determine if Glyceryl Trinitrate is contraindicated.

Intravenous GTN is ONLY to be administered in incidents of Pulmonary Oedema.

**Buccal effects:**
- Onset: 30 sec – 2 min
- Peak: 5 – 10 min
- Duration: 15 – 30 min
<table>
<thead>
<tr>
<th><strong>Presentation</strong></th>
<th>500mcg in 1ml polyamp</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pharmacology</strong></td>
<td>Anticholinergic bronchodilator</td>
</tr>
<tr>
<td><strong>Actions:</strong></td>
<td>allows bronchodilatation by inhibiting cholinergic bronchomotor tone (i.e. blocks vagal reflexes which mediate bronchoconstriction)</td>
</tr>
<tr>
<td><strong>Metabolism</strong></td>
<td>Excreted by the kidneys</td>
</tr>
<tr>
<td><strong>Primary Emergency Indication</strong></td>
<td>Severe respiratory distress associated with bronchospasm</td>
</tr>
<tr>
<td><strong>Contraindication</strong></td>
<td>Known hypersensitivity to Atropine or its derivatives</td>
</tr>
<tr>
<td><strong>Precautions</strong></td>
<td>1. Glaucoma</td>
</tr>
<tr>
<td></td>
<td>2. Avoid contact with eyes</td>
</tr>
<tr>
<td><strong>Route of Administration</strong></td>
<td>Nebulised in combination with Salbutamol</td>
</tr>
<tr>
<td><strong>Side Effects</strong></td>
<td>Headache</td>
</tr>
<tr>
<td></td>
<td>Nausea</td>
</tr>
<tr>
<td></td>
<td>Dry mouth</td>
</tr>
<tr>
<td></td>
<td>Skin Rash</td>
</tr>
<tr>
<td></td>
<td>Tachycardia (rare)</td>
</tr>
<tr>
<td></td>
<td>Palpitations (rare)</td>
</tr>
<tr>
<td></td>
<td>Acute angle closure glaucoma secondary to direct eye contact (rare)</td>
</tr>
</tbody>
</table>
**Special Notes**

There have been isolated reports of ocular complications (mydriasis, increased intraocular pressure, acute angle glaucoma, eye pain) as a result of direct eye contact of Ipratropium Bromide formulations.

The nebuliser mask must therefore be fitted properly during inhalation and care taken to avoid Ipratropium Bromide solution entering the eyes.

Ipratropium Bromide must be nebulised in conjunction with Salbutamol and is to be administered as a single dose only.

<table>
<thead>
<tr>
<th>Onset:</th>
<th>3 – 5min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak:</td>
<td>1.5 – 2hrs</td>
</tr>
<tr>
<td>Duration:</td>
<td>6hrs</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>200 mg in 2 ml amp</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------</td>
</tr>
</tbody>
</table>
| **Pharmacology** | Ketamine is an intravenous anesthetic agent.  
At lower doses it is a significant analgesic whilst preserving airway reflexes and respiratory drive.  
There is minimal haemodynamic compromise as Ketamine acts as a sympathomimetic which may lead to transient tachycardia and hypertension.  
Ketamine produces a dissociative state that in a small number of patients may potentially cause them to have issues with perception resulting in disinhibition or emergence phenomenon. |
| **Metabolism** | Metabolized by the liver and excreted by the kidneys. |
| **Primary Emergency Indication** | Enhanced pain relief in patients with borderline or inadequate perfusion associated with  
- Uncontrolled Musculoskeletal Pain  
- Severe burns |
| **Contraindication** | 1. Known hypersensitivity  
2. Age <1 year  
3. Traumatic Head Injury  
4. Hypertension BP > 180mm Hg sys, 100mm Hg Dia  
5. Suspected Acute Coronary Syndrome  
6. Suspected Heart Failure  
7. Known Hydrocephalus or raised intraocular pressure |
| **Precautions** | 1. Age > 60yrs  
2. Prior administration of midazolam or other CNS depressant drugs  
3. Significant hypovolaemia  
4. Globe injury  
5. Complex facial injuries and fractures  
6. Impaired respiratory function  
7. Symptoms of psychosis |
## Route of Administration

<table>
<thead>
<tr>
<th>Route of Administration</th>
<th>Intravenous</th>
</tr>
</thead>
</table>

## Side Effects

<table>
<thead>
<tr>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissociation and trance like state</td>
</tr>
<tr>
<td>Potential transient hypertonicity and nystagmus</td>
</tr>
<tr>
<td>Disinhibition – disturbed perception</td>
</tr>
<tr>
<td>Emergence</td>
</tr>
<tr>
<td>Hypertension, Tachycardia</td>
</tr>
<tr>
<td>CNS and rarely respiratory depression</td>
</tr>
<tr>
<td>Hypersalivation</td>
</tr>
<tr>
<td>Vomiting</td>
</tr>
<tr>
<td>Laryngospasm</td>
</tr>
</tbody>
</table>

## Special Notes

- Hypertonicity and nystagmus are transient reactions which do not require intervention or treatment. These should not be confused with significant disinhibition.
- Disinhibition – disturbed perception during initial administration. If the pt does not respond to attempts at reassurance and calming, a small dose of Midazolam may be required as per Pain Relief CPG.
- Emergence issues with distorted perception as the drug wears off will generally settle with removal of significant stimulation however small doses of Midazolam 0.5mg IV may be required if this fails. (Refer to CPG A0501 - Pain Relief)

## Onset, Peak, and Duration

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset</td>
<td>30 sec</td>
</tr>
<tr>
<td>Peak</td>
<td>30 - 60 sec</td>
</tr>
<tr>
<td>Duration</td>
<td>5-20 mins</td>
</tr>
</tbody>
</table>
# Lignocaine Hydrochloride

## Presentation
100 mg in 5 ml amp (1%)

## Pharmacology
A local anaesthetic agent
- **Actions:**
  - Prevents initiation and transmission of nerve impulses causing local anaesthesia (1% solution)

## Metabolism
- Hepatic (90%)
- Excreted unchanged by the kidneys (10%)

## Primary Emergency Indication
1. Diluent for Ceftriaxone for IM administration in suspected meningococcal disease as a 1% solution

## Contraindication
1. Known hypersensitivity
2. Bradycardia with inadequate perfusion
3. Evidence of 2º or 3º heart block

## Precautions
1. When using Lignocaine 1% as diluent for IM Ceftriaxone it is important to rule out inadvertent IV administration due to potential CNS complications

## Route of Administration
Intravenous / Intramuscular (1% solution with Ceftriaxone only)

## Side Effects
Intramuscular administration (1% solution) Nil – unless inadvertent intravenous administration occurs.

## Special Notes
**Intramuscular effects (1% solution):**
- **Onset:** Rapid
- **Peak:**
- **Duration:** 60 - 90min

**Intravenous effects:**
- **Onset:** 1 - 4min
- **Peak:** 5 - 10min
- **Duration:** 20min

At therapeutic plasma concentrations lignocaine has little effect on atrioventricular (AV) node conduction and His-Purkinje conduction in the normal heart.

Elimination is reduced when hepatic blood flow is reduced, as occurs with reduced cardiac output following myocardial infarction.
### Presentation

<table>
<thead>
<tr>
<th>Magnesium Sulphate CPG D020</th>
</tr>
</thead>
<tbody>
<tr>
<td>10mmol (2.47 g in 5 ml amp)</td>
</tr>
</tbody>
</table>

### Pharmacology

Intravenous infusion of Magnesium produces a rapid and marked bronchodilation in severe asthma.
Plays an important role in neurochemical transmission essential for normal function.

### Primary Emergency Indication

1. Patients with severe asthma not responding to nebulised salbutamol and atrovent
2. Torsades de Pointes
3. Eclampsia
4. Severe pre-eclampsia (consult)

### Contraindication

1. Known Hypersensitivity
2. Heart Blocks
3. Impaired renal or hepatic function
4. Addison’s Disease

### Precautions

1. Dilute and administer as an infusion over 20min.
2. Dilute and administer as an infusion over 10mins in Torsade de Pointes
3. Pregnancy
4. Lactation

### Route of Administration

Intravenous infusion.

### Side Effects

- Hypotension
- Circulatory Collapse
- CNS and Respiratory Depression
- Cardiac Arrhythmias
- Loss of deep tendon reflexes

### Special Notes

Magnesium must be diluted and administered as an infusion over 20 min for eclampsia/asthma, over 10 min. for Torsades de Pointes with output and over 1-2 mins for Torsades de Points with no output.

Onset: Immediate  Peak: 30sec.  Duration: 30min.
<table>
<thead>
<tr>
<th>Presentation</th>
<th>3 ml glass bottle with plastic seal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology</td>
<td>Inhalational analgesic agent at low concentrations Central nervous system depressant</td>
</tr>
<tr>
<td>Metabolism</td>
<td>Excreted mainly by the lungs. By the liver</td>
</tr>
<tr>
<td>Primary Emergency Indication</td>
<td>Pre-hospital pain relief where narcotics are contraindicated or not appropriate</td>
</tr>
</tbody>
</table>
| Contraindication          | 1. Pre-existing renal disease / renal impairment  
                            2. Concurrent use of tetracycline antibiotics  
                            3. Exceeding a total dose of 6ml in a 24 hr period  
                            4. Exceeding a total dose of 15ml in any seven day period  
                            5. Family history of anaesthetic induced malignant Hyperthermia |
| Precautions               | 1. The “Penthrox”™ inhaler must be hand-held by the patient so that if unconsciousness occurs it will fall from the patient’s face. Occasionally the operator may need to assist but must continuously assess the level of consciousness  
                            2. Pre-eclampsia |
| Route of Administration   | Self-administration under supervision using the hand held “Penthrox”™ Inhaler. |
| Side Effects              | Drowsiness  
                            Decrease in blood pressure and bradycardia (rare)  
                            Exceeding the maximum total dose of 6ml in a 24 hr period, or 15ml in a seven day period may lead to renal toxicity |
### Special Notes

The maximum initial priming dose for Methoxyflurane is 3ml. This will provide approximately 25 min of analgesia and may be followed by one further 3ml dose if required once the initial dose has expired. Analgesia commences after 8-10 breaths and lasts for approximately 3-5 min once discontinued.

Methoxyflurane should not be administered in confined spaces (eg. In road and air ambulances) unless the ‘Pentrox Analgiser’ is fitted with a scavenging system.

Methoxyflurane should not be used on consecutive days.
### Metoclopramide CPG D022

<table>
<thead>
<tr>
<th>Presentation</th>
<th>10mg in 2ml amp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology</td>
<td>Antiemetic which accelerates gastric emptying and peristalsis</td>
</tr>
<tr>
<td>Metabolism</td>
<td>By the liver and excreted by the kidneys</td>
</tr>
<tr>
<td>Primary Emergency Indication</td>
<td>Nausea/vomiting associated with - Narcotic pain relief - Past Hx of migraine</td>
</tr>
<tr>
<td>Contraindication</td>
<td>1. GIT haemorrhage, obstruction or perforation 2. Known sensitivity or intolerance 3. &lt; 16 years of age.</td>
</tr>
<tr>
<td>Precautions</td>
<td>Undiagnosed abdominal pain</td>
</tr>
<tr>
<td>Route of Administration</td>
<td>Intravenous (<em>administer over 1 - 2 mins</em>) Intramuscular</td>
</tr>
<tr>
<td>Side Effects</td>
<td>Drowsiness Lethargy Dry mouth Muscle tremor Hypotension / hypertension Extrapyramidal reactions (usually the dystonic type) Lowers seizure threshold</td>
</tr>
<tr>
<td>Special Notes</td>
<td>Not effective for established motion sickness <em>Intravenous effects:</em> Onset: 1 – 3min Duration: 10 – 30min <em>Intramuscular effects:</em> Onset: 10 – 15min Duration: 1 – 2 hrs</td>
</tr>
</tbody>
</table>
## Midazolam

<table>
<thead>
<tr>
<th>Presentation</th>
<th>5mg in 1ml amp</th>
</tr>
</thead>
</table>
| Pharmacology | Short acting central nervous system depressant.  
*Actions:*  
- Anxiolytic – reduces anxiety  
- Sedative  
- Anti-convulsant |
| Metabolism | In the liver - excreted by the kidneys |
| Primary Emergency Indication | 1. Continuous/recurrent seizures  
2. Sedation to maintain intubation  
3. Sedation to enable synchronized cardioversion  
4. Sedation in the agitated Pt  
5. Sedation in psychostimulant overdose  
6. Severe Trauma Multiple Fractures or Severe Burns |
| Contraindications | Known hypersensitivity to benzodiazepines |
| Precautions | 1. Reduced doses may be required for the elderly, chronic renal failure, congestive cardiac failure or shock  
2. The CNS depressant effects of benzodiazepines are enhanced in the presence of narcotics and other tranquillisers including alcohol  
3. Can cause severe respiratory depression in Pts with COPD  
4. Pts with myasthenia gravis |
| Route of Administration | Intramuscular  
Intravenous |
<table>
<thead>
<tr>
<th><strong>Side Effects</strong></th>
<th><strong>Therapeutic Effects</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressed level of consciousness</td>
<td><strong>Intramuscular effects:</strong></td>
</tr>
<tr>
<td>Respiratory depression</td>
<td>Onset: 3 – 5min</td>
</tr>
<tr>
<td>Loss of airway control</td>
<td>Peak: 15min</td>
</tr>
<tr>
<td>Hypotension</td>
<td>Duration: 30min</td>
</tr>
</tbody>
</table>

**Intravenous effects:**
- Onset: 1 – 3min
- Peak: 10min
- Duration: 20min
## Morphine

### Presentation
- 10mg in 1ml amp

### Pharmacology
- A narcotic analgesic
  - **Actions:**
    - **Central Nervous System effects:**
      - Depression - leading to analgesia
      - Respiratory depression
      - Depression of cough reflex
      - Stimulation - changes of mood, euphoria or dysphoria, vomiting, pin-point pupils
      - Dependence (addiction)
    - **Cardiovascular effects:**
      - Vasodilatation
      - Decreased conduction velocity through the A.V. Node

### Metabolism
- By the liver and excreted by the kidneys

### Primary Emergency Indication
1. Pain Relief
2. Sedation to maintain intubation

### Contraindications
1. Known hypersensitivity
2. Labour

### Precautions
1. Elderly
2. Hypotension
3. Respiratory depression
4. Current asthma
5. Respiratory tract burns
6. Known addiction to narcotics
7. Acute alcoholism
8. Pts on monoamine oxidase inhibitors
# Morphine

| Route of Administration | Intravenous  
|-------------------------|-------------
|                         | Intramuscular |

<table>
<thead>
<tr>
<th>Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Central Nervous System effects:</strong></td>
</tr>
</tbody>
</table>
| - Drowsiness  
| - Respiratory depression  
| - Euphoria  
| - Nausea, vomiting  
| - Pin-point pupils  
| - Addiction  
| **Cardiovascular effects:** |
| - Hypotension  
| - Bradycardia  

<table>
<thead>
<tr>
<th>Special Notes</th>
</tr>
</thead>
</table>
| Morphine Sulphate is a Schedule 8 drug under the Poisons Act and its use must be carefully controlled with accountability and responsibility.  
Side effects of Morphine Sulphate can be reversed with Naloxone Hydrochloride.  
Occasional weals are seen in the line of the vein being used for IV injection. This is not an allergy, only a histamine release.  
**Intravenous effects:**  
Onset: 2 – 5min  
Peak: 10min  
Duration: 1 – 2hr  
**Intramuscular effects:**  
Onset: 10 – 30min  
Peak: 30 – 60min  
Duration: 1 – 2hrs |
# Naloxone CPG D025

<table>
<thead>
<tr>
<th><strong>Presentation</strong></th>
<th>0.4mg in 1ml amp</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pharmacology</strong></td>
<td>A narcotic antagonist</td>
</tr>
</tbody>
</table>
|                  | *Action:*  
|                  | - Prevents or reverses the effects of narcotics |
| **Metabolism**   | By the liver |
| **Primary Emergency Indication** | Altered Conscious State and respiratory depression secondary to administration of narcotics or related drugs |
| **Contraindications** | Nil for this indication. |
| **Precautions**  | 1. If Pt is physically dependent on narcotics, they may become combative after administration.  
|                  | 2. Neonates. |
| **Route of Administration** | Intramuscular  
|                  | Intravenous |
| **Side Effects** | Symptoms of narcotic withdrawal:  
|                  | Sweating, goose flesh, tremor  
|                  | Nausea and vomiting  
|                  | Agitation  
|                  | Dilatation of pupils, excessive lacrimation  
|                  | Convulsions |
**Special Notes**

Since the duration of action for Naloxone Hydrochloride is often less than that of a narcotic, repeated doses may be required.

Naloxone Hydrochloride reverses the effects of narcotics with none of the actions that other narcotic antagonists produce when there is no narcotic is present in the body. (For example, it does not depress respiration or cause pupillary constriction).

In the absence of narcotics, Naloxone Hydrochloride has no perceivable effect.

Following a narcotic associated cardiac arrest Naloxone Hydrochloride should not be administered. Maintain assisted ventilation.

Following head injury Naloxone Hydrochloride should not be administered. Maintain assisted ventilation if required.

In neonates if the mother has had a narcotic analgesic within one hr. prior to delivery, the baby may have narcotic related respiratory depression for which diluted Naloxone Hydrochloride may be advised on consultation.

**Intravenous effects:**

Onset: 1 – 3min  
Peak:  
Duration: 30 – 45min

**Intramuscular effects:**

Onset: 1 – 3min  
Peak:  
Duration: 30 – 45min
### Normal Saline

<table>
<thead>
<tr>
<th><strong>Presentation</strong></th>
<th>10ml polyamp, 500ml + 1000ml infusion soft pack</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pharmacology</strong></td>
<td>An isotonic crystalloid solution</td>
</tr>
<tr>
<td><strong>Composition:</strong></td>
<td></td>
</tr>
<tr>
<td>Electrolytes:</td>
<td>- sodium and chloride in a similar concentration to that of extracellular fluid</td>
</tr>
<tr>
<td>Water:</td>
<td>- Water</td>
</tr>
<tr>
<td><strong>Action:</strong></td>
<td>- A transient increase in the volume of the intravascular compartment</td>
</tr>
<tr>
<td><strong>Metabolism</strong></td>
<td></td>
</tr>
<tr>
<td>Electrolytes:</td>
<td>- Excreted by the kidneys</td>
</tr>
<tr>
<td>Water:</td>
<td>- Excreted by the kidneys</td>
</tr>
<tr>
<td>- Distributed throughout total body water, mainly in the extracellular fluid</td>
<td></td>
</tr>
<tr>
<td><strong>Primary Emergency Indication</strong></td>
<td>1. Intravenous fluid for fluid maintenance</td>
</tr>
<tr>
<td></td>
<td>2. Irrigation of burns/eyes/wounds</td>
</tr>
<tr>
<td></td>
<td>3. To keep the vein open (T.K.V.O.)</td>
</tr>
<tr>
<td></td>
<td>4. To ensure patency during administration of Glucose 10%</td>
</tr>
<tr>
<td></td>
<td>5. Cardiac arrest</td>
</tr>
<tr>
<td></td>
<td>6. Dilution of drugs</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Nil of significance in the above indication</td>
</tr>
<tr>
<td><strong>Precautions</strong></td>
<td>Nil of significance in the above indication</td>
</tr>
<tr>
<td><strong>Route of Administration</strong></td>
<td>Intravenous</td>
</tr>
<tr>
<td><strong>Side Effects</strong></td>
<td>Nil of significance in the above indication</td>
</tr>
<tr>
<td><strong>Special Notes</strong></td>
<td><em>Intravascular half life:</em> Approximately 30 – 60 min</td>
</tr>
</tbody>
</table>
# Ondansetron

<table>
<thead>
<tr>
<th><strong>Presentation</strong></th>
<th>4mg in 2 ml amp</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pharmacology</strong></td>
<td>Ondansetron is a Serotonin 5-HT3 receptor antagonist. Its effects are on both central and peripheral nerves. Ondansetron reduces the activity of the vagus nerve, therefore inhibits the vomiting centre in the medulla oblongata, and also blocks serotonin receptors in the chemoreceptor trigger zone.</td>
</tr>
<tr>
<td><strong>Metabolism</strong></td>
<td>By the liver, excreted by the kidneys</td>
</tr>
<tr>
<td><strong>Primary Emergency Indication</strong></td>
<td>Nausea and vomiting associated with:</td>
</tr>
<tr>
<td></td>
<td>- Cardiac chest pain</td>
</tr>
<tr>
<td></td>
<td>- Secondary to cytotoxic drugs or radiotherapy</td>
</tr>
<tr>
<td></td>
<td>- Severe gastroenteritis</td>
</tr>
<tr>
<td></td>
<td>- Previously diagnosed migraine</td>
</tr>
<tr>
<td><strong>Prophylaxis use</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Motion sickness</td>
</tr>
<tr>
<td></td>
<td>- Planned aeromedical evacuation</td>
</tr>
<tr>
<td></td>
<td>- Suspected spinal injury</td>
</tr>
<tr>
<td></td>
<td>- Eye trauma</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>1. Known hypersensitivity</td>
</tr>
<tr>
<td></td>
<td>2. Children &lt; 2 yo</td>
</tr>
<tr>
<td><strong>Precautions</strong></td>
<td>1. Impaired hepatic function</td>
</tr>
<tr>
<td></td>
<td>2. Elderly</td>
</tr>
<tr>
<td></td>
<td>3. Pregnancy</td>
</tr>
<tr>
<td></td>
<td>4. Lactation</td>
</tr>
<tr>
<td><strong>Route of Administration</strong></td>
<td>IV / IM</td>
</tr>
<tr>
<td><strong>Side Effects</strong></td>
<td>Headache</td>
</tr>
<tr>
<td></td>
<td>Skin flushing</td>
</tr>
<tr>
<td></td>
<td>Extra pyramidal effects</td>
</tr>
<tr>
<td></td>
<td>Arrhythmia</td>
</tr>
</tbody>
</table>
**Special Notes**

Ondansetron ampoule should be protected from light and should not be removed from packaging until use.

Ondansetron may be given in conjunction with, or independent of, metoclopramide administration.

*Intravenous effects:*
Onset: 2 min
Peak: 20 min
Duration: 2 hrs
### Oxygen

| Presentation | High pressure “Medical Oxygen”  
- “C” size cylinders 440 litres  
- “D” size cylinders 1500 litres |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology</td>
<td>A chemical element that is essential to tissues for sustaining life. It is necessary for the production of cellular energy.</td>
</tr>
<tr>
<td>Metabolism</td>
<td>N/A</td>
</tr>
</tbody>
</table>
| Primary Emergency Indication | 1. Treatment of hypoxaemia / hypoxia  
2. To assist organ perfusion in patients with poor perfusion |
| Contraindications | 1. Known paraquat poisoning  
2. Lung disease secondary to bleomycin therapy |
| Precautions  | 1. Prolonged administration to premature neonates  
2. High concentrations given to COPD patients  
3. Fire and / or Explosive hazard |
| Route of Administration | Inhalation via:  
- Nasal cannula  
- Non-rebreathing therapy mask  
- Bag-valve-mask  
- Endotracheal tube  
- LMA / ILMA |
| Side Effects | Hypoventilation in some COPD patients with hypoxic drive  
Drying of the mucous membranes of the airways |
| Special Notes | In acutely hypoxic patients supplemental oxygen must take precedence over the concern that in rare circumstances a patient’s hypoxic drive may be lost if high concentrations of oxygen are given.  
For COPD, oxygen therapy should be guided by pulse oximetry aiming to maintain $\text{SpO}_2$ readings of between 88% and 92%. |
## Paracetamol

| Presentation                          | Paracetamol 500mg  
120 mg in 5ml oral liquid (24mg/ml) |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology</td>
<td>An analgesic and antipyretic agent</td>
</tr>
<tr>
<td>Actions:</td>
<td>- Exact mechanism of action unclear; though to inhibit prostaglandin synthesis in the CNS</td>
</tr>
<tr>
<td>Metabolism</td>
<td>By the liver; excreted by the kidneys</td>
</tr>
<tr>
<td>Primary Emergency Indication</td>
<td>Mild Pain</td>
</tr>
</tbody>
</table>
| Contraindication                     | 1. Known Hypersensitivity  
2. Children < 1 month of age  
3. Paracetamol already administered within past 4hours  
4. Total paracetamol intake within past 24hours exceeds 4g (adult) or 60mg/kg (children)  
5. Chest pain in suspected acute coronary syndrome |
| Precautions                          | 1. Hepatic or renal dysfunction  
2. Elderly / frail  
3. Malnourished                       |
| Route of Administration              | Oral                                             |

**Paracetamol CPG D030**
| Side Effects                                      | 1. Hypersensitivity reactions including severe skin rashes (rare)  
|                                                | 2. Haematological reactions (rare) |
| Special Notes                                   | There are several brands of Paracetamol available in Australia. Paracetamol is also found in many combined medicines, both prescription and over-the-counter. Carefully determine previous paracetamol intake before dose administration. 
|                                                | The usual dose of Paracetamol for children is 15mg/kg per dose. The maximum total dose of 60mg/kg therefore equates to 4 doses within a 24 hours period. 
|                                                | Hepatic damage is very rare when Paracetamol is taken at recommended dosages. Paracetamol is not indicated for the treatment of fever in the emergency setting. | 
| Onset: 30 minutes  
| Peak:  
| Duration: 4 hours |
## Presentation
12.5mg in 1ml amp

## Pharmacology
An anti-emetic

**Action:**
- Acts on several central neurotransmitter systems

## Metabolism
Metabolised by the liver and excreted by the kidneys

## Primary Emergency Indication
1. Treatment or prophylaxis of nausea/vomiting for
   - Motion sickness
   - Penetrating eye injury
   - Planned aeromedical evacuation
2. Vertigo or nausea or vomiting associated with migraine, labyrinthitis or Meniere’s syndrome
3. Know allergy or contraindication to Metoclopramide administration

## Contraindications
1. Circulatory collapse
2. CNS depression
3. Previous hypersensitivity
4. Children < 2 years of age

## Precautions
1. Hypotension
2. Epilepsy
3. Pts affected by alcohol or on anti-depressants

## Route of Administration
Intramuscular
### Side Effects
- Drowsiness
- Blurred vision
- Hypotension
- Sinus tachycardia
- Skin rash
- Extrapyramidal reactions, usually the dystonic type

### Special Notes
Tardive dyskinesia may develop in patients on antipsychotic drugs. The disorder consists of repetitive involuntary movements of the tongue, face, mouth or jaw. It has been reported that fine vermicular movements of the tongue may be an early sign of the syndrome.

*Intramuscular Effect*
- Onset: 20min
- Peak: 40min
- Duration: 6hrs
**Salbutamol**

| Presentation       | 5mg in 2.5ml nebul/polyamp  
|                   | 500mcg in 1ml amp  
|                   | 100mcg in 5ml pMDI  |
| Pharmacology       | A synthetic Beta-adrenergic stimulant, with primarily Beta 2 effects  
| Action:            | Causes bronchodilatation  |
| Metabolism         | By the liver and excreted by the kidneys  |
| **Primary Emergency Indication** | Respiratory distress with suspected bronchospasm:  
|                   | - asthma  
|                   | - severe allergic reactions  
|                   | - COPD  
|                   | - smoke inhalation  |
| Contraindications  | Nil of significance in the above indications  |
| Precautions        | 1. Diabetes Mellitus  
|                   | 2. Cardiac disease  
|                   | 3. Pregnancy/lactating mothers  
|                   | 4. Between doses, oxygen must be administered continuously  
|                   | 5. Large doses of IV Salbutamol have been reported to cause intracellular metabolic acidosis  |
| Route of Administration | Nebulised  
|                       | Intravenous  
|                       | Pressurised Metered Dose Inhaler (pMDI)  |
## Side Effects
<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sinus tachycardia</td>
</tr>
<tr>
<td>Muscle tremor (common)</td>
</tr>
</tbody>
</table>

## Special Notes
- Tolerance to the bronchodilator effect may occur with prolonged or excessive use.
- Diabetes Mellitus is a precaution due to Salbutamol’s Beta 1 and Beta 2 effect that has been reported to have caused cases of hyperinsulinaemia and hyperglycaemia.
- Administration with pregnancy is a precaution due to there being no conclusive evidence of effects upon the foetus.
- Salbutamol administration with patients with a history of cardiac disease can lead to tachyarrhythmias and hypertension due to its Beta 1 and Beta 2 effects or by producing hypokalaemia.
- IV Salbutamol has no advantage over nebulised Salbutamol provided that adequate ventilation is occurring.
- Salbutamol Nebules/Polyamps should remain in the packaging after the wrapping is opened. The date of opening of the packaging should be recorded and the drug should be stored in an environment of < 30°C.
- Salbutamol by intravenous infusion may be required during interhospital transfers of some women in premature labour. The dose is to be prescribed and signed by the referring hospital medical officer.

### Nebulised effects:
- Onset: 5 – 15min
- Peak:
- Duration: 15 – 50min

### Intravenous effects:
- Onset: 1 – 2min
- Peak:
- Duration: 30 – 60min
### Sodium Bicarbonate 8.4%

<table>
<thead>
<tr>
<th>Presentation</th>
<th>50ml prepared syringe (Sodium Bicarbonate 8.4%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology</td>
<td>A hypertonic crystalloid solution</td>
</tr>
<tr>
<td>Composition:</td>
<td>- Contains sodium and bicarbonate ions in a solution of high pH</td>
</tr>
<tr>
<td>Action:</td>
<td>- Raises pH</td>
</tr>
<tr>
<td>Metabolism</td>
<td>Sodium: excreted by the kidneys</td>
</tr>
<tr>
<td></td>
<td>Bicarbonate: excreted by the kidneys as bicarbonate ion, and by the lungs as carbon dioxide</td>
</tr>
<tr>
<td>Primary Emergency Indication</td>
<td>1. Symptomatic Tricyclic Antidepressant (TCA) overdose or hyperkalaemia</td>
</tr>
<tr>
<td></td>
<td>2. Crush Syndrome with evidence of hyperkalaemia</td>
</tr>
<tr>
<td></td>
<td>3. Cardiac arrest with suspected hyperkalaemia or TCA overdose</td>
</tr>
<tr>
<td>Contraindications</td>
<td>Nil of significance in the above indication</td>
</tr>
<tr>
<td>Precautions</td>
<td>1. Administration of Sodium Bicarbonate 8.4% must be accompanied by effective ventilation and External Cardiac Compression if required</td>
</tr>
<tr>
<td></td>
<td>2. Since Sodium Bicarbonate 8.4% causes tissue necrosis, care must be taken to avoid leakage of the drug into the tissues</td>
</tr>
<tr>
<td></td>
<td>3. Because of the high pH of this solution do not mix or flush any other drug or solution with Sodium Bicarbonate 8.4%</td>
</tr>
<tr>
<td>Route of Administration</td>
<td>Intravenous</td>
</tr>
</tbody>
</table>
### Side Effects

Sodium overload may provoke pulmonary oedema.

Excessive dosage of Sodium Bicarbonate 8.4%, especially without adequate ventilation and circulation may cause an intracellular acidosis.

### Special Notes

Dilute to 4.2% for Neonates

*Intravenous effects:*

Onset: 1 – 2min

Peak:

Duration: Depends on cause and Pt’s perfusion
<table>
<thead>
<tr>
<th>Presentation</th>
<th>10ml in amp/polyamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology</td>
<td>Water for Injections is a clear, colourless, particle free, odourless and tasteless liquid. It is sterile, with a pH of 5.6 to 7.7 and contains no antimicrobial agents</td>
</tr>
<tr>
<td>Metabolism</td>
<td>Distributed throughout the body and excreted by the kidneys</td>
</tr>
<tr>
<td>Primary Emergency Indication</td>
<td>Used to dissolve Ceftriaxone in preparation for intravenous injection</td>
</tr>
<tr>
<td>Contraindications</td>
<td>Nil in the above indication</td>
</tr>
<tr>
<td>Precautions</td>
<td>Nil in the above indication</td>
</tr>
<tr>
<td>Route of Administration</td>
<td>Intravenous</td>
</tr>
<tr>
<td>Side Effects</td>
<td>Nil</td>
</tr>
<tr>
<td>Special Notes</td>
<td>Nil</td>
</tr>
</tbody>
</table>
Authority to Practice Matrix

- Not all Ambulance Paramedics and Intensive Care Paramedics are authorised to practice at the levels defined within this matrix
- Clinicians are responsible for ensuring they operate within their individually approved scope of practice
- Student Paramedic and Student Intensive Care Paramedics will be progressively authorised by the Director of Ambulance Services to practice under either direct or indirect supervision in accordance with Clinical Practice Guidelines as they progress through their academic programs
- Ambulance Tasmania may alter Authority to Practice Skills and Pharmacology Matrix at any time based on best evidence, patient safety and operational requirements
<table>
<thead>
<tr>
<th>Ambulance Paramedic</th>
<th>Intensive Care Paramedic</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-lead interpretations</td>
<td>12-lead interpretations</td>
</tr>
<tr>
<td>Application of aseptic dressing</td>
<td>Chest Decompression</td>
</tr>
<tr>
<td>BVM Ventilation</td>
<td>CPAP*</td>
</tr>
<tr>
<td>Cardiac Monitoring</td>
<td>Endotracheal intubation</td>
</tr>
<tr>
<td>Cardio Pulmonary Resuscitation</td>
<td>External Jugular venous cannulation</td>
</tr>
<tr>
<td>Defibrilliation</td>
<td>Insertion of naso/orogastric tube*</td>
</tr>
<tr>
<td>Glucometry</td>
<td>Intraosseous access</td>
</tr>
<tr>
<td>Intramuscular Injections</td>
<td>Intravenous infusions*</td>
</tr>
<tr>
<td>Intravenous Injections</td>
<td>Synchronised cardioversion</td>
</tr>
<tr>
<td>Intranasal drug administration*</td>
<td>Transcutaneous cardiac pacing*</td>
</tr>
<tr>
<td>Laryngeal mask airway insertion</td>
<td></td>
</tr>
<tr>
<td>Nasopharyngeal airway</td>
<td></td>
</tr>
<tr>
<td>Nebulised Medications</td>
<td></td>
</tr>
<tr>
<td>Oropharyngeal airway</td>
<td></td>
</tr>
<tr>
<td>Use of cervical collar</td>
<td></td>
</tr>
<tr>
<td>Use of pelvic binder*</td>
<td></td>
</tr>
<tr>
<td>Use of spinal immobilisation</td>
<td>* On completion of AT approved training</td>
</tr>
<tr>
<td>Use of traction splints</td>
<td></td>
</tr>
<tr>
<td>Valsalva</td>
<td></td>
</tr>
<tr>
<td>CPG (Adults)</td>
<td>Ambulance Paramedic</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>A0201 Cardiac Arrest</td>
<td>Normal Saline</td>
</tr>
<tr>
<td></td>
<td>Adrenaline</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>A0302 Endotracheal Intubation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>A0401 Acute Coronary Syndrome</td>
<td>Glyceryl Trinitrate (GTN)</td>
</tr>
<tr>
<td></td>
<td>Aspirin</td>
</tr>
<tr>
<td>A0402 Bradycardia</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>A0403 Tachyarrhythmias inc. (SVT &amp; VT)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>A0405 Accelerated Idioventricular Rhythm (AIVR)</td>
<td></td>
</tr>
<tr>
<td>A0406 Pulmonary Oedema</td>
<td>Glyceryl Trinitrate (GTN)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>A0407 Inadequate Perfusion</td>
<td></td>
</tr>
<tr>
<td>(Cardiogenic Causes)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>CPG (Adults)</td>
<td>Ambulance Paramedic</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>A0501 Pain Relief</td>
<td>Fentanyl IM/ IN / IV</td>
</tr>
<tr>
<td></td>
<td>Methoxyflurane</td>
</tr>
<tr>
<td></td>
<td>Morphine IM / SC / IV</td>
</tr>
<tr>
<td></td>
<td>Midazolam</td>
</tr>
<tr>
<td>A0601 Acute Bronchoconstriction (Asthma, COPD)</td>
<td>Salbutamol pMDI, neb</td>
</tr>
<tr>
<td></td>
<td>Ipratropium Bromide</td>
</tr>
<tr>
<td></td>
<td>Adrenaline IM</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>A0701 Nausea and Vomiting</td>
<td>Metoclopramide</td>
</tr>
<tr>
<td></td>
<td>Prochlorperazine</td>
</tr>
<tr>
<td></td>
<td>Ondansetron IV/IM</td>
</tr>
<tr>
<td>A0702 Glycaemic Emergencies</td>
<td>Glucose Paste Oral</td>
</tr>
<tr>
<td></td>
<td>Glucose IV</td>
</tr>
<tr>
<td></td>
<td>Glucagon IM</td>
</tr>
<tr>
<td>A0703 Continuous or Recurrent Seizures</td>
<td>Midazolam IM</td>
</tr>
<tr>
<td>CPG (Adults)</td>
<td>Ambulance Paramedic</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>A0704</td>
<td>Adrenaline IM</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>A0705</td>
<td>Normal Saline</td>
</tr>
<tr>
<td>Inadequate Perfusion (Non-cardiogenic / Non-hypovolaemic)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>A0706</td>
<td>Ceftriaxone</td>
</tr>
<tr>
<td>Meningococcal Septicaemia</td>
<td>Lignocaine IM</td>
</tr>
<tr>
<td>A0707</td>
<td>Naloxone</td>
</tr>
<tr>
<td>Management of Overdose</td>
<td></td>
</tr>
<tr>
<td>A0708</td>
<td>Midazolam IM</td>
</tr>
<tr>
<td>Agitated Patient</td>
<td></td>
</tr>
<tr>
<td>A0709</td>
<td></td>
</tr>
<tr>
<td>Organophosphate Poisoning</td>
<td></td>
</tr>
<tr>
<td>A0710</td>
<td>Glyceryl Trinitrate (GTN)</td>
</tr>
<tr>
<td>Autonomic Dysreflexia</td>
<td></td>
</tr>
<tr>
<td>A0801</td>
<td>Normal Saline</td>
</tr>
<tr>
<td>Inadequate Perfusion Associated with Hypovolaemia</td>
<td></td>
</tr>
<tr>
<td>A0805</td>
<td>Normal Saline</td>
</tr>
<tr>
<td>Burns</td>
<td></td>
</tr>
<tr>
<td>A0807</td>
<td>Normal Saline</td>
</tr>
<tr>
<td>Crush Syndrome</td>
<td></td>
</tr>
<tr>
<td>CPG (Adults)</td>
<td>Ambulance Paramedic</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>A0808 Diving Emergency</td>
<td>Normal Saline</td>
</tr>
</tbody>
</table>
| A0901 Hypothermia / Cold Exposure | Normal Saline   | Normal Saline  
|                               |                     | Adrenaline  
|                               |                     | Amiodarone   |
| A0903 Post Partum Haemorrhage |                     | Ergometrine             |
| A0904 Eclampsia              |                     | Magnesium Sulphate Infusion |
## Ambulance Tasmania Scope of Practice Levels - Paediatrics

<table>
<thead>
<tr>
<th>CPG (Paediatrics)</th>
<th>Ambulance Paramedic</th>
<th>Intensive Care Paramedic</th>
</tr>
</thead>
<tbody>
<tr>
<td>P0201 Cardiac Arrest</td>
<td></td>
<td>Normal Saline</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adrenaline</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Amiodarone</td>
</tr>
<tr>
<td>P0302 Endotracheal Intubation</td>
<td></td>
<td>Morphine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Midazolam</td>
</tr>
<tr>
<td>P0402 Bradycardia</td>
<td></td>
<td>Normal Saline</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adrenaline IV</td>
</tr>
<tr>
<td>P0403 Tachyarrhythmias</td>
<td></td>
<td>Adenosine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Midazolam</td>
</tr>
<tr>
<td>P0501 Pain Relief</td>
<td>Fentanyl IN</td>
<td>Fentanyl IN</td>
</tr>
<tr>
<td></td>
<td>Methoxyflurane</td>
<td>Methoxyflurane</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Morphine</td>
</tr>
<tr>
<td>P0601 Upper Airway Obstruction</td>
<td>Adrenaline Neb</td>
<td>Adrenaline Neb</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dexamethasone IV, IM</td>
</tr>
<tr>
<td>P0602 Asthma</td>
<td>Salbutamol pMDI, Neb</td>
<td>Salbutamol pMDI, Neb</td>
</tr>
<tr>
<td></td>
<td>Ipratropium Bromide</td>
<td>Ipratropium Bromide</td>
</tr>
<tr>
<td></td>
<td>Adrenaline IM</td>
<td>Magnesium Infusion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dexamethasone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adrenaline IM, IV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Normal Saline</td>
</tr>
<tr>
<td>P0701 Nausea and Vomiting</td>
<td></td>
<td>Ondansetron IM, IV</td>
</tr>
</tbody>
</table>

---

**Authority to Practice Matrix - Pharmacology (Paed.)**
<table>
<thead>
<tr>
<th>CPG (Paediatrics)</th>
<th>Ambulance Paramedic</th>
<th>Intensive Care Paramedic</th>
</tr>
</thead>
<tbody>
<tr>
<td>P0702 Glycaemic Emergencies</td>
<td>Glucose Paste Oral</td>
<td>Glucose Paste Oral</td>
</tr>
<tr>
<td></td>
<td>Glucose IV</td>
<td>Glucose IV</td>
</tr>
<tr>
<td></td>
<td>Glucagon IM</td>
<td>Glucagon IM</td>
</tr>
<tr>
<td></td>
<td>Normal Saline</td>
<td>Normal Saline</td>
</tr>
<tr>
<td>P0703 Continuous or Recurrent Seizures</td>
<td>Midazolam IM</td>
<td>Midazolam IM, IV</td>
</tr>
<tr>
<td>P0704 Anaphylaxis</td>
<td>Adrenaline IM</td>
<td>Adrenaline IM, IV, Neb</td>
</tr>
<tr>
<td></td>
<td>Dexamethasone</td>
<td></td>
</tr>
<tr>
<td>P0706 Meningococcal Septicaemia</td>
<td>Ceftriaxone IM</td>
<td>Ceftriaxone IM, IV</td>
</tr>
<tr>
<td></td>
<td>Lignocaine IM</td>
<td>Lignocaine IM</td>
</tr>
<tr>
<td>P0707 Management of Overdose</td>
<td>Naloxone IM</td>
<td>Sodium Bicarbonate IV</td>
</tr>
<tr>
<td>P0709 Organophosphate Poisoning</td>
<td></td>
<td>Atropine</td>
</tr>
<tr>
<td>P0801 Inadequate Perfusion Associated</td>
<td>Normal Saline</td>
<td>Normal Saline</td>
</tr>
<tr>
<td>with Hypovolaemia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P0803 Burns</td>
<td>Normal Saline</td>
<td>Normal Saline</td>
</tr>
<tr>
<td>P0901 Hypothermia / Cold Exposure</td>
<td></td>
<td>Normal Saline</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adrenaline</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Amiodarone</td>
</tr>
</tbody>
</table>