CLINICAL PRACTICE GUIDELINES
For Pre-Hospital Emergency Care
2012 Version

Pre-Hospital Emergency Care Council

ADVANCED PARAMEDIC AP
The Pre-Hospital Emergency Care Council (PHECC) is an independent statutory body with responsibility for standards, education and training in the field of pre-hospital emergency care in Ireland. PHECC’s primary role is to protect the public.

MISSION STATEMENT
The Pre-Hospital Emergency Care Council protects the public by independently specifying, reviewing, maintaining and monitoring standards of excellence for the delivery of quality pre-hospital emergency care for people in Ireland.

The Council was established as a body corporate by the Minister for Health and Children by Statutory Instrument Number 109 of 2000 (Establishment Order) which was amended by Statutory Instrument Number 575 of 2004 (Amendment Order). These Orders were made under the Health (Corporate Bodies) Act, 1961 as amended and the Health (Miscellaneous Provisions) Act 2007.
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**CLINICAL PRACTICE GUIDELINES**

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It is my pleasure to write the foreword to this PHECC Clinical Handbook comprising Clinical Practice Guidelines (CPGs) and Medication Formulary. There are now 236 CPGs in all, to guide integrated care across the six levels of Responder and Practitioner.

My understanding is that it is a world first to have a Cardiac First Responder using guidance from the same integrated set as all levels of Responders and Practitioners up to Advanced Paramedic. We have come a long way since the publication of the first set of guidelines numbering 35 in 2001, and applying to EMTs only at the time. I was appointed Chair in June 2008 to what is essentially the second Council since PHECC was established in 2000.

I pay great tribute to the hard work of the previous Medical Advisory Group chaired by Mark Doyle, in developing these CPGs with oversight from the Clinical Care Committee chaired by Sean Creamer, and guidance and authority of the first Council chaired by Paul Robinson.

The development and publication of CPGs is an important part of PHECC’s main functions which are:

1. To ensure training institutions and course content in First Response and Emergency Medical Technology reflect contemporary best practice.
2. To ensure pre-hospital emergency care Responders and Practitioners achieve and maintain competency at the appropriate performance standard.
3. To sponsor and promote the implementation of best practice guidelines in pre-hospital emergency care.
4. To source, sponsor and promote relevant research to guide Council in the development of pre-hospital emergency care in Ireland.
5. To recommend other pre-hospital emergency care standards as appropriate.
6. To establish and maintain a register of pre-hospital emergency care practitioners.
7. To recognise those pre-hospital emergency care providers which undertake to implement the clinical practice guidelines.

The CPGs, in conjunction with relevant ongoing training and review of practice, are fundamental to achieve best practice in pre-hospital emergency care. I welcome this revised Clinical Handbook and look forward to the contribution Responders and Practitioners will make with its guidance.

Mr Tom Mooney, Chair, Pre-Hospital Emergency Care Council
**ACCEPTED ABBREVIATIONS**

Advanced Paramedic ........................................... AP
Advanced Life Support ........................................... ALS
Airway, breathing & circulation ............................. ABC
All terrain vehicle .............................................. ATV
Altered level of consciousness ................................ ALoC
Automated External Defibrillator ............................ AED
Bag Valve Mask ................................................ BVM
Basic Life Support ............................................. BLS
Blood Glucose ................................................. BG
Blood Pressure ................................................ BP
Carbon dioxide ................................................ CO ₂
Cardiopulmonary Resuscitation ............................... CPR
Cervical spine .................................................... C-spine
Chronic obstructive pulmonary disease ..................... COPD
Clinical Practice Guideline ................................. CPG
Degree ........................................................... °
Degrees Centigrade ............................................. °C
Dextrose 10% in water ........................................... D ₁₀ W
Drop (gutta) ................................................... gtt
Electrocardiogram ............................................. ECG
Emergency Department ........................................ ED
Emergency Medical Technician ............................. EMT
Endotracheal tube ............................................. ETT
Foreign body airway obstruction ............................. FBAO
Fracture .......................................................... #
General Pratictioner ............................................. GP
Glasgow Coma Scale .......................................... GCS
Gram ........................................................... g
Greater than ..................................................... >
Greater than or equal to ...................................... ≥
Heart rate ....................................................... HR
History .......................................................... Hx
Impedance Threshold Device ................................. ITD
Inhalation ........................................................ Inh
Intramuscular ................................................... IM
Intranasal ........................................................ IN
Intraosseous ................................................... IO
Intravenous ...................................................... IV
Keep vein open ................................................ KVO
Kilogram ....................................................... Kg
ACCEPTED ABBREVIATIONS (Cont.)

Less than ..........................................................<
Less than or equal to ............................................≤
Litre ............................................................L
Maximum ........................................................Max
Microgram ....................................................mcg
Milligram .....................................................mg
Millilitre ........................................................mL
Millimole .....................................................mmol
Minute ..........................................................min
Modified Early Warning Score ................................MEWS
Motor vehicle collision ........................................MVC
Myocardial infarction ..........................................MI
Nasopharyngeal airway .......................................NPA
Milliequivalent ................................................mEq
Millimetres of mercury ....................................mmHg
Nebulised .....................................................NEB
Negative decadic logarithm of the H+ ion concentration  ...........pH
Orally (per os) ...................................................PO
Oropharyngeal airway ........................................OPA
Oxygen ..........................................................O2
Paramedic .......................................................P
Peak expiratory flow .........................................PEF
Per rectum .......................................................PR
Percutaneous coronary intervention ..........................PCI
Personal Protective Equipment ................................PPE
Pulseless electrical activity ....................................PEA
Respiration rate ................................................RR
Return of spontaneous circulation ............................ROSC
Revised Trauma Score .........................................RTS
Saturation of arterial oxygen ..................................SpO2
ST elevation myocardial infarction ............................STEMI
Subcutaneous ....................................................SC
Sublingual ........................................................SL
Systolic blood pressure ........................................SBP
Therefore ........................................................∴
Total body surface area .......................................TBSA
Ventricular Fibrillation .........................................VF
Ventricular Tachycardia .......................................VT
When necessary (pro re nata) ..................................prn
ACKNOWLEDGEMENTS

The process of developing CPGs has been long and detailed. The quality of the finished product is due to the painstaking work of many people, who through their expertise and review of the literature, ensured a world-class publication.

PROJECT LEADER & EDITOR
Mr Brian Power, Programme Development Officer, PHECC.

INITIAL CLINICAL REVIEW
Dr Geoff King, Director, PHECC.
Ms Pauline Dempsey, Programme Development Officer, PHECC.
Ms Jacqueline Egan, Programme Development Officer, PHECC.

MEDICAL ADVISORY GROUP
Dr Zelie Gaffney, (Chair) General Practitioner
Dr David Janes, (Vice Chair) General Practitioner
Prof Gerard Bury, Professor of General Practitioner University College Dublin
Dr Niamh Collins, Locum Consultant in Emergency Medicine, St James’s Hospital
Prof Stephen Cusack, Consultant in Emergency Medicine, Area Medical Advisor, National Ambulance Service South
Mr Mark Doyle, Consultant in Emergency Medicine, Deputy Medical Director HSE National Ambulance Service
Mr Conor Egleston, Consultant in Emergency Medicine, Our lady of Lourdes Hospital, Drogheda
Mr Michael Garry, Paramedic, Chair of Accreditation Committee
Mr Macartan Hughes, Advanced Paramedic, Head of Education & Competency Assurance, HSE National Ambulance Service
Mr Lawrence Kenna, Advanced Paramedic, Education & Competency Assurance Manager, HSE National Ambulance Service
Mr Paul Lambert, Advanced Paramedic, Station Officer Dublin Fire Brigade
Mr Declan Lonergan, Advanced Paramedic, Education & Competency Assurance Manager, HSE National Ambulance Service
Mr Paul Meehan, Regional Training Officer, Northern Ireland Ambulance Service
Dr David Menzies, Medical Director AP programme NASC/UCD
Dr David McManus, Medical Director, Northern Ireland Ambulance Service
Dr Peter O’Connor, Consultant in Emergency Medicine, Medical Advisor Dublin Fire Brigade
Mr Cathal O’Donnell, Consultant in Emergency Medicine, Medical Director HSE National Ambulance Service
Mr John O’Donnell, Consultant in Emergency Medicine, Area Medical Advisor, National Ambulance Service West
Mr Frank O’Malley, Paramedic, Chair of Clinical Care Committee
Mr Martin O’Reilly, Advanced Paramedic, District Officer Dublin Fire Brigade
Dr Sean O’Rourke, Consultant in Emergency Medicine, Area Medical Advisor, National Ambulance Service North Leinster
ACKNOWLEDGEMENTS

Ms Valerie Small, Nurse Practitioner, St James's Hospital, Vice Chair Council
Dr Sean Walsh, Consultant in Paediatric Emergency Medicine, Our Lady's Hospital for Sick Children Crumlin
Mr Brendan Whelan, Advanced Paramedic, Education & Competency Assurance Manager, HSE National Ambulance Service

EXTERNAL CONTRIBUTORS
Mr Fergal Hickey, Consultant in Emergency Medicine, Sligo General Hospital
Mr George Little, Consultant in Emergency Medicine, Naas Hospital
Mr Richard Lynch, Consultant in Emergency Medicine, Midlands Regional Hospital Mullingar
Ms Celena Barrett, Chief Fire Officer, Kildare County Fire Service.
Ms Diane Brady, CNM II, Delivery Suite, Castlebar Hospital.
Dr Donal Collins, Chief Medical Officer, An Garda Síochána.
Dr Ronan Collins, Director of Stroke Services, Age Related Health Care, Adelaide & Meath Hospital, Tallaght.
Dr Peter Crean, Consultant Cardiologist, St. James's Hospital.
Prof Kieran Daly, Consultant Cardiologist, University Hospital Galway
Dr Mark Delargy, Consultant in Rehabilitation, National Rehabilitation Centre.
Dr Joseph Harbison, Lead Consultant Stroke Physician and Senior Geriatrician St. James's, National Clinical Lead in Stroke Medicine.

Mr Tony Heffernan, Assistant Director of Nursing, HSE Mental Health Services.
Prof Peter Kelly, Consultant Neurologist, Mater University Hospital.
Dr Brian Maurer, Director of Cardiology St Vincent's University Hospital.
Dr Regina McQuillan, Palliative Medicine Consultant, St James's Hospital.
Dr Sean Murphy, Consultant Physician in Geriatric Medicine, Midland Regional Hospital, Mullingar.
Ms Annette Thompson, Clinical Nurse Specialist, Beaumont Hospital.
Dr Joe Tracey, Director, National Poisons Information Centre.
Mr Pat O'Riordan, Specialist in Emergency Management, HSE.
Prof Peter Weedle, Adjunct Prof of Clinical Pharmacy, National University of Ireland, Cork.
Dr John Dowling, General Practitioner, Donegal

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A special thanks to all the PHECC team who were involved in this project from time to time, in particular Marion O'Malley, Programme Development Support Officer and Marie Ni Mhurchu, Client Services Manager, for their commitment to ensure the success of the project.
The development of Clinical Practice Guidelines (CPGs) is a continuous process. The publication of the ILCOR Guidelines 2010 was the principle catalyst for updating these CPGs. As research leads to evidence, and as practice evolves, guidelines are updated to offer the best available advice to those who care for the ill and injured in our pre-hospital environment.

This 2012 Edition offers current best practice guidance. The guidelines have expanded in number and scope – with 73 CPGs in total for Advanced Paramedics, covering such topics as Post Resuscitation Care for Paediatric patients and End of Life – DNR for the first time. The CPGs continue to recognise the various levels of Practitioner (Emergency Medical Technician, Paramedic and Advanced Paramedic) and Responder (Cardiac First Response, Occupational First Aid and Emergency First Response) who offer care.

The CPGs cover these six levels, reflecting the fact that care is integrated. Each level of more advanced care is built on the care level preceding it, whether or not provided by the same person. For ease of reference, a version of the guidelines for each level of Responder and Practitioner is available on www.phecc.ie. Feedback on the experience of using the guidelines in practice is essential for their ongoing development and refinement, therefore, your comments and suggestions are welcomed by PHECC. The Medical Advisory Group believes these guidelines will assist Practitioners in delivering excellent pre-hospital care.

Mr Cathal O’Donnell
Chair, Medical Advisory Group (2008-2010)
Clinical Practice Guidelines (CPGs) and the Practitioner

CPGs are guidelines for best practice and are not intended as a substitute for good clinical judgment. Unusual patient presentations make it impossible to develop a CPG to match every possible clinical situation. The Practitioner decides if a CPG should be applied based on patient assessment and the clinical impression. The Practitioner must work in the best interest of the patient within the scope of practice for his/her clinical level on the PHECC Register. Consultation with fellow Practitioners and or medical practitioners in challenging clinical situations is strongly advised.

The CPGs herein may be implemented provided:

1. The Practitioner is in good standing on the PHECC Practitioner’s Register.
2. The Practitioner is acting on behalf of an organisation (paid or voluntary) that is approved by PHECC to implement the CPGs.
3. The Practitioner is authorised by the organisation on whose behalf he/she is acting to implement the specific CPG.
4. The Practitioner has received training on – and is competent in – the skills and medications specified in the CPG being utilised.

The medication dose specified on the relevant CPG shall be the definitive dose in relation to Practitioner administration of medications. The principle of titrating the dose to the desired effect shall be applied. The onus rests on the Practitioner to ensure that he/she is using the latest versions of CPGs which are available on the PHECC website www.phecc.ie

Definitions

<table>
<thead>
<tr>
<th>Adult</th>
<th>a patient of 14 years or greater, unless specified on the CPG.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child</td>
<td>a patient between 1 and less than or equal to (≤) 13 years old, unless specified on the CPG.</td>
</tr>
<tr>
<td>Infant</td>
<td>a patient between 4 weeks and less than 1 year old, unless specified on the CPG.</td>
</tr>
<tr>
<td>Neonate</td>
<td>a patient less than 4 weeks old, unless specified on the CPG.</td>
</tr>
<tr>
<td>Paediatric patient</td>
<td>any child, infant or neonate.</td>
</tr>
</tbody>
</table>

PHECC Clinical Practice Guidelines - Advanced Paramedic
PRE-HOSPITAL EMERGENCY CARE COUNCIL

PRE-HOSPITAL EMERGENCY CARE COUNCIL
**Care principles**

Care principles are goals of care that apply to all patients. Scene safety, standard precautions, patient assessment, primary and secondary surveys and the recording of interventions & medications on the Patient Care Report (PCR) are consistent principles throughout the guidelines and reflect the practice of Practitioners at work. Care principles are the foundations for risk management and the avoidance of error.

**Care Principles**

1. Ensure the safety of yourself, other emergency service personnel, your patients and the public:
   - review all Ambulance Control Centre dispatch information.
   - consider all environmental factors and approach a scene only when it is safe to do so.
   - identify potential and actual hazards and take the necessary precautions.
   - request assistance as required in a timely fashion, particularly for higher clinical levels.
   - ensure the scene is as safe as is practicable.
   - take standard infection control precautions.

2. Identify and manage life-threatening conditions:
   - locate all patients. If the number of patients is greater than resources, ensure additional resources are sought.
   - assess the patient’s condition appropriately.
   - prioritise and manage the most life-threatening conditions first.
   - provide a situation report to Ambulance Control Centre as soon as possible after arrival on the scene as appropriate.

3. Ensure adequate ventilation and oxygenation.

4. Monitor and record patient’s vital observations.

5. Optimise tissue perfusion.

6. Identify and manage other conditions.

7. Provide appropriate pain relief.

8. Place the patient in the appropriate posture according to the presenting condition.

9. Ensure the maintenance of normal body temperature (unless CPG indicates otherwise).

10. Maintain responsibility for patient care until handover to an appropriate.
Practitioner. Do not hand over responsibility for care of a patient to a Practitioner/Responder who is less qualified or experienced unless the care required is within the scope of their practice.

11 Arrange transport to an appropriate medical facility as necessary and in an appropriate time frame:
   • On-scene times for life-threatening conditions, other than cardiac arrest, should not exceed 10 minutes.
   • Following initial stabilisation other treatments should be commenced/continued en-route.

12 Provide reassurance at all times.

Completing a PCR for each patient is paramount in the risk management process and users of the CPGs must be committed to this process.

**CPGs and the pre-hospital emergency care team**

The aim of pre-hospital emergency care is to provide a comprehensive and coordinated approach to patient care management, thus providing each patient with the most appropriate care in the most efficient time frame.

In Ireland today, providers of emergency care are from a range of disciplines and include Responders (Cardiac First Response, Occupational First Aid and Emergency First Response) and Practitioners (Emergency Medical Technicians, Paramedics, Advanced Paramedics, Nurses and Doctors) from the statutory, private, auxiliary and voluntary services.

CPGs set a consistent standard of clinical practice within the field of pre-hospital emergency care. By reinforcing the role of the Practitioner, in the continuum of patient care, the chain of survival and the golden hour are supported in medical and trauma emergencies respectively.

CPGs guide the Practitioner in presenting to the acute hospital a patient who has been supported in the very early phase of injury/illness and in whom the danger of deterioration has lessened by early appropriate clinical care interventions.
CPGs presume no intervention has been applied, nor medication administered, prior to the arrival of the Practitioner. In the event of another Practitioner or Responder initiating care during an acute episode, the Practitioner must be cognisant of interventions applied and medication doses already administered and act accordingly.

In this care continuum, the duty of care is shared among all Responders/Practitioners of whom each is accountable for his/her own actions. The most qualified Responder/Practitioner on the scene shall take the role of clinical leader. Explicit handover between Responders/Practitioners is essential and will eliminate confusion regarding the responsibility for care.

In the absence of a more qualified Practitioner, the Practitioner providing care during transport shall be designated the clinical leader as soon as practical.

**Defibrillation policy**
The Medical Advisory Group has recommended the following pre-hospital defibrillation policy;
- Advanced Paramedics should use manual defibrillation for all age groups.
- Paramedics may consider use of manual defibrillation for all age groups.
- EMTs and Responders shall use AED mode for all age groups.

**Using the 2012 Edition CPGs**
The 2012 Edition CPGs continue to be published in sections.
- Appendix 1, the Medication Formulary, is an important adjunct supporting decision-making by the Practitioner.
- Appendix 2, lists the care management and medications matrix for the six levels of Practitioner and Responder.
- Appendix 3, outlines important guidance for critical incident stress management (CISM) from the Ambulance Service CISM committee.
- Appendix 4, outlines changes to medications and skills as a result of updating to version 2 and the introduction of new CPGs.
- Appendix 5, outlines the pre-hospital defibrillation position from PHECC.
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Clinical Practice Guidelines
for
Advanced Paramedic

Codes explanation

Emergency Medical Technician
(Level 4) for which the CPG pertains

A parallel process
Which may be carried out in parallel with other sequence steps

A mandatory sequence (skill) to be performed
A decision process
The Practitioner must follow one route

Consider treatment options
Given the clinical presentation consider the treatment option specified

Reassess the patient following intervention

A medication which may be administered by an EMT or higher clinical level
The medication name, dose and route is specified

A medication which may be administered by a Paramedic or higher clinical level
The medication name, dose and route is specified

A medication which may be administered by an Advanced Paramedic
The medication name, dose and route is specified

A direction to go to a specific CPG following a decision process
Note: only go to the CPGs that pertain to your clinical level

A clinical condition that may precipitate entry into the specific CPG

EMT

Paramedic
(Level 5) for which the CPG pertains

A cyclical process in which a number of sequence steps are completed

Special authorisation
This authorises the Practitioner to perform an intervention under specified conditions

Special instructions
Which the Practitioner must follow

Medical Practitioner
(Level 7) for which the CPG pertains

Paramedic or lower clinical levels not permitted this route

Emergency Medical Technician
(Level 4) for which the CPG pertains

A skill or sequence that only pertains to Advanced Paramedic

Advanced Paramedic
(Level 6) for which the CPG pertains

Transport to an appropriate medical facility and maintain treatment en-route

Consider treatment options
Given the clinical presentation consider the treatment option specified

Reassess the patient following intervention

A medication which may be administered by an Advanced Paramedic
The medication name, dose and route is specified

Go to xxx CPG

Start from

SECTION 2 - PATIENT ASSESSMENT
Primary Survey – Adult

PHECC Clinical Practice Guidelines - Advanced Paramedic
The primary survey is focused on establishing the patient’s clinical status and only applying interventions when they are essential to maintain life. It should be completed within one minute of arrival on scene.

**Primary Survey Medical – Adult**

**Medical issue**

- Take standard infection control precautions

**Scene safety**
- Scene survey
- Scene situation

**Assess responsiveness**

**A**
- Airway patent & protected
- Head tilt/ chin lift

**B**
- Adequate ventilation

**C**
- Adequate circulation

**AVPU assessment**

**Clinical status decision**

- Life threatening
- Non serious or life threat
- Serious not life threat

- Request ALS
- Go to appropriate CPG
- Consider ALS
- Go to Secondary Survey CPG

**Reference:** ILCOR Guidelines 2010
The primary survey is focused on establishing the patient’s clinical status and only applying interventions when they are essential to maintain life. It should be completed within one minute of arrival on scene.

Primary Survey Trauma – Adult

Trauma → Take standard infection control precautions

Consider pre-arrival information

Scene safety
Scene survey
Scene situation

Control catastrophic external haemorrhage

Mechanism of injury suggestive of spinal injury

C-spine control

Assess responsiveness

A
Airway patent & protected

Jaw thrust

Suction, OPA
NPA

B
Adequate ventilation

Yes

C
Adequate circulation

Yes

AVPU assessment

Treat life threatening injuries only at this point

Life threatening

Clinical status decision

Non serious or life threat

Serious not life threat

Request ALS
Go to appropriate CPG

Consider ALS
Go to Secondary Survey CPG

Reference: ILCOR Guidelines 2010
Secondary Survey Medical – Adult

Primary Survey

Record vital signs & GCS

Patient acutely unwell

Yes

Identify positive findings and initiate care management

No

Focused medical history of presenting complaint

SAMPLE history

Relevant family & social history

Check for medications carried or medical alert jewellery

Examine body systems as appropriate

Go to appropriate CPG

Markers identifying acutely unwell
Cardiac chest pain
Acute pain > 5

Gleadle, J. 2003, History and Examination at a glance, Blackwell Science
Rees, JE, 2003, Early Warning Scores, World Anaesthesia Issue 17, Article 10
SECTION 2 - PATIENT ASSESSMENT

**Markers for multi-system trauma**
- GCS < 13
- Systolic BP < 90
- Respiratory rate < 10 or > 29
- Heart rate > 120
- Revised Trauma Score < 12
- Mechanism of Injury

**Revised Trauma Score**

<table>
<thead>
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<th>Score</th>
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<tr>
<td>&gt; 29</td>
<td>4</td>
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<tr>
<td>1 – 5</td>
<td>3</td>
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<tr>
<td>0</td>
<td>2</td>
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<table>
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<tr>
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<th>Score</th>
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<tbody>
<tr>
<td>≥ 90</td>
<td>4</td>
</tr>
<tr>
<td>76 – 89</td>
<td>3</td>
</tr>
<tr>
<td>50 – 75</td>
<td>2</td>
</tr>
<tr>
<td>1 – 49</td>
<td>1</td>
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<tr>
<td>no BP</td>
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<table>
<thead>
<tr>
<th>GCS</th>
<th>Score</th>
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<tr>
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</tr>
<tr>
<td>9 – 12</td>
<td>3</td>
</tr>
<tr>
<td>6 – 8</td>
<td>2</td>
</tr>
<tr>
<td>4 – 5</td>
<td>1</td>
</tr>
<tr>
<td>&lt; 3</td>
<td>0</td>
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</table>

RTS = Total score

**SECTION 2 - PATIENT ASSESSMENT**

**Pain Management – Adult**

The general principle in pain management is to start at the bottom rung of the pain ladder, and then to climb the ladder if pain is still present. Practitioners, depending on his/her scope of practice, may make a clinical judgement and commence pain relief on a higher rung.

- **Pain assessment**
- Administer pain medication based on pain assessment and pain ladder recommendations

**Decisions to give analgesia must be based on clinical assessment and not directly on a linear scale.**

- Adequate relief of pain
- Yes or best achievable
- Reassess and move up the pain ladder if appropriate

**Analogue Pain Scale**
0 = no pain......10 = unbearable

- **Special Authorisation:**
  - Registered Medical Practitioners may authorise the use of IM Morphine by Paramedic or EMT practitioners for a specific patient in an inaccessible location
  - Advanced Paramedics are authorised to administer Morphine up to 10 mg IM if IV not accessible, the patient is cardio-vascularly stable and no cardiac chest pain present

**Reference:** World Health Organization, Pain Ladder

**PHECC Pain Ladder**

- **Severe pain (≥ 5 on pain scale)**
  - Morphine 2 mg IV
  - Nitrous Oxide & Oxygen, inh
  - Consider Ondansetron 4 mg IV slowly

- **Moderate pain (3 to 4 on pain scale)**
  - Paracetamol 1 g PO and / or Ibuprofen 400 mg PO
  - Nitrous Oxide & Oxygen, inh
  - Consider Cyclizine 50 mg IV slowly

- **Minor pain (2 to 3 on pain scale)**
  - Paracetamol 1 g PO

- **Consider other non pharmacological interventions**

- **Repeat Morphine at not < 2 min intervals if indicated. Max 10 mg**
  - For musculoskeletal pain Max 16 mg
Advanced Airway Management – Adult (≥ 8 years)

---

**Apnoea or special clinical considerations**

1. **Special clinical considerations**
   - GCS = 3
   - SpO2 < 92%
   - RR ≤ 9
   - BVM ineffective
   - (All of the above must be present)

2. If,**Ventilations maintained**
   - Yes
   - No

   **Consider** FBAO

3. If,**Ventilations maintained**
   - Yes

   **Successful**
   - Yes
   - No

   **2nd attempt at advanced airway insertion**
   - Yes
   - No

   **Endotracheal intubation**
   - or
   - Supraglottic airway insertion

   **Successful**
   - Yes
   - No

   **Revert to basic airway management**

   **Ensure CO2 detection device in ventilation circuit**

   **Check placement of advanced airway after each patient movement or if any patient deterioration**

   **Continue ventilation and oxygenation**

   **Go to appropriate CPG**

---

**Minimum interruptions of chest compressions.**

- Maximum hands off time 10 seconds.

---

**Following successful Advanced Airway management:**

1. Ventilate at 8 to 10 per minute.
2. Un synchronised chest compressions continuous at 100 to 120 per minute

---

Reference: ILCOR Guidelines 2010

---

5/6.3.1 Version 2, 03/11
SECTION 3 - RESPIRATORY EMERGENCIES

Inadequate Respirations – Adult

Respiratory difficulty

Request

ALS

Assess and maintain airway

Oxygen therapy

Respiratory assessment

Inadequate rate or depth

Asymmetrical movement

Possible Hx of Narcotic overdose

No

Yes

Naloxone 0.4 mg IM
Repeat x one pm

Naloxone 0.4 mg IV/IO/IM
Repeat pm to max 2 mg

Possible Hx of Pneumothorax suspected

Yes

No

AP Needle decompression

Inadequate Respirations – Adult

Congestion / crepitations

Pulmonary oedema

No

Yes

Glycopyrrolate 0.5 mg SL
Repeat x 1 pm

Furosemide, 40 mg, IV

Positive pressure ventilations
Max 10 per minute

GCS = 3
SpO2 < 92%
BVM ineffective
RR ≤ 8

No

Yes

Go to Advanced Airway CPG

Consider supporting ventilations if patient becomes exhausted

ECG & SpO2 monitoring

Life threatening asthma

Any one of the following in a patient with severe asthma;
PEF < 33% best or predicted
SpO2 < 92%
Silent chest
Cyanosis
Fueble respiratory effort
Bradycardia
Atrial fibrillation
Hypotension
Exhaustion
Confusion
Unresponsive

Yes

GTN, 0.8 mg, SL
Repeat x 1 prn

No

Furosemide, 40 mg, IV
Reassess

Bronchosplasm assessment

Severe

(1)

Mild / Moderate

(2)

Salbutamol, 5 mg, NEB
Repeat x 1 at 5 minutes pm

OR

Salbutamol, 4 puffs, (0.4 mg) metered aerosol
Repeat x 1 at 5 minutes pm

Silent chest,
< 2 words per breath or SpO2 < 92%

Yes

No

Consider

Ipratropium bromide 0.5 mg
NEB & salbutamol 5 mg NEB mixed

Consider

Magnesium Sulphate 1.5 g
IV infusion over 20 min

Exacerbation of COPD

Dyspnoea

History of COPD

Oxygen Therapy

1. If O₂ alert card issued follow directions.
2. If no O₂ alert card, commence therapy at 28%.
3. Administer O₂ titrated to SpO₂ 92%.

ECG & SpO₂ monitor

Salbutamol 5 mg NEB

Measure Peak Expiratory Flow

PEF < 50% predicted

Yes

Ipratropium bromide 0.5 mg NEB & salbutamol 5 mg NEB mixed

Deteriorates / no improvement

Hydrocortisone 200 mg IM or slow IV

Adequate respirations

Yes

No

Go to Inadequate Respirations CPG

S3

RESPIRATORY EMERGENCIES Exacerbation of COPD

SECTION 3 - RESPIRATORY EMERGENCIES

An exacerbation of COPD is defined as:
An event in the natural course of the disease characterised by a change in the patient’s baseline dyspnoea, cough and/or sputum beyond day-to-day variability sufficient to warrant a change in management. (European Respiratory Society)
SECTION 4 - MEDICAL EMERGENCIES

Basic Life Support – Adult

Cardiac Arrest

Request ALS

Attach defibrillation pads
Commence CPR while defibrillator is being prepared only if 2nd person available
30 Compressions : 2 ventilations.

Oxygen therapy

Chest compressions
Rate: 100 to 120/min
Depth: at least 5 cm

Ventilations
Rate: 10/min (1 every 6 sec)
Volume: 500 to 600 mL

Shockable VF or pulseless VT

Assess Rhythm

Give 1 shock

Non - Shockable Asystole or PEA

Immediately resume CPR x 2 minutes

Minimum interruptions of chest compressions.
Maximum hands off time 10 seconds.

Rhythm check *

Go to VF/ Pulseless VT CPG

Go to Asystole CPG

Go to Post Resuscitation Care CPG

VF/ VT-ROSC

Go to PEA CPG

If an Implantable Cardioverter Defibrillator (ICD) is fitted in the patient treat as per CPG. It is safe to touch a patient with an ICD fitted even if it is firing.

* +/- Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm

Reference: ILCOR Guidelines 2010

Pre-Hospital Emergency Care Council

PHECC Clinical Practice Guidelines – Advanced Paramedic
SECTION 4 - MEDICAL EMERGENCIES

Pulseless Electrical Activity - Adult

**Basic Life Support – Paediatric (≤ 13 Years)**

**Cardiac arrest**

**or**

pulse < 60 per minute with signs of poor perfusion

Give 5 rescue ventilations

Immediately resume CPR x 2 minutes

Request

Commence chest Compressions

Continue CPR (30:2) until defibrillator is attached

Assess Rhythm

Shockable VF or pulseless VT

Give 1 shock

Non-Shockable Asystole or PEA

Go to Post Resuscitation Care CPG

Asystole / PEA

Go to VF / Pulseless VT CPG

Initiate mobilisation of 3 to 4 practitioners / responders on site to assist with cardiac arrest management

One rescuer CPR 30 : 2

Two rescuer CPR 15 : 2

Compressions : Ventilations

Shockable

VF or pulseless VT

Non - Shockable

Asystole or PEA

Round 1: CPR

Compressions : Ventilations

Round 2: CPR

Compressions : Ventilations

Round 3: CPR

Compressions : Ventilations

Round 4: CPR

Compressions : Ventilations

Round 5: CPR

Compressions : Ventilations

Round 6: CPR

Compressions : Ventilations

Round 7: CPR

Compressions : Ventilations

Round 8: CPR

Compressions : Ventilations

Round 9: CPR

Compressions : Ventilations

Round 10: CPR

Compressions : Ventilations

Round 11: CPR

Compressions : Ventilations

Round 12: CPR

Compressions : Ventilations

Round 13: CPR

Compressions : Ventilations

Round 14: CPR

Compressions : Ventilations

Round 15: CPR

Compressions : Ventilations

Round 16: CPR

Compressions : Ventilations

Round 17: CPR

Compressions : Ventilations

Round 18: CPR

Compressions : Ventilations

Round 19: CPR

Compressions : Ventilations

Round 20: CPR

Compressions : Ventilations

Round 21: CPR

Compressions : Ventilations

Round 22: CPR

Compressions : Ventilations

Round 23: CPR

Compressions : Ventilations

Round 24: CPR

Compressions : Ventilations

Round 25: CPR

Compressions : Ventilations

Round 26: CPR

Compressions : Ventilations

Round 27: CPR

Compressions : Ventilations

Round 28: CPR

Compressions : Ventilations

Round 29: CPR

Compressions : Ventilations

Round 30: CPR

Compressions : Ventilations

Round 31: CPR

Compressions : Ventilations

Round 32: CPR

Compressions : Ventilations

Round 33: CPR

Compressions : Ventilations

Round 34: CPR

Compressions : Ventilations

Round 35: CPR

Compressions : Ventilations

Round 36: CPR

Compressions : Ventilations

Round 37: CPR

Compressions : Ventilations

Round 38: CPR

Compressions : Ventilations

Round 39: CPR

Compressions : Ventilations

Round 40: CPR

Compressions : Ventilations

Round 41: CPR

Compressions : Ventilations

Round 42: CPR

Compressions : Ventilations

Round 43: CPR

Compressions : Ventilations

Round 44: CPR

Compressions : Ventilations

Round 45: CPR

Compressions : Ventilations

Round 46: CPR

Compressions : Ventilations

Round 47: CPR

Compressions : Ventilations

Round 48: CPR

Compressions : Ventilations

Round 49: CPR

Compressions : Ventilations

Round 50: CPR

Compressions : Ventilations

Round 51: CPR

Compressions : Ventilations

Round 52: CPR

Compressions : Ventilations

Round 53: CPR

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Round 54: CPR

Compressions : Ventilations

Round 55: CPR

Compressions : Ventilations

Round 56: CPR

Compressions : Ventilations

Round 57: CPR

Compressions : Ventilations

Round 58: CPR

Compressions : Ventilations

Round 59: CPR

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Round 67: CPR

Compressions : Ventilations

Round 68: CPR

Compressions : Ventilations

Round 69: CPR

Compressions : Ventilations

Round 70: CPR

Compressions : Ventilations

Round 71: CPR

Compressions : Ventilations

Round 72: CPR

Compressions : Ventilations

Round 73: CPR

Compressions : Ventilations

Round 74: CPR

Compressions : Ventilations

Round 75: CPR

Compressions : Ventilations

Round 76: CPR

Compressions : Ventilations

Round 77: CPR

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Round 78: CPR

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Round 79: CPR

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Round 81: CPR

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Round 82: CPR

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Round 83: CPR

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Round 84: CPR

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Round 85: CPR

Compressions : Ventilations

Round 86: CPR

Compressions : Ventilations

Round 87: CPR

Compressions : Ventilations

Round 88: CPR

Compressions : Ventilations

Round 89: CPR

Compressions : Ventilations

Round 90: CPR

Compressions : Ventilations

Round 91: CPR

Compressions : Ventilations

Round 92: CPR

Compressions : Ventilations

Round 93: CPR

Compressions : Ventilations

Round 94: CPR

Compressions : Ventilations

Round 95: CPR

Compressions : Ventilations

Round 96: CPR

Compressions : Ventilations

Round 97: CPR

Compressions : Ventilations

Round 98: CPR

Compressions : Ventilations

Round 99: CPR

Compressions : Ventilations

Round 100: CPR

Compressions : Ventilations

< 8 years use paediatric defibrillation system

< 8 years

Yes

No

Apply paediatric system AED pads

Apply adult defibrillation pads

< 8 years use paediatric defibrillation system

< 8 years

Yes

No

With two rescuer CPR use

two thumb-encircling hand

chest compression for infants

Infant AED

It is extremely unlikely to ever have to defibrillate a child less than 1 year old. Nevertheless, if this were to occur the approach would be the same as for a child over the age of 1. The only likely difference being, the need to place the defibrillation pads anterior (front) and posterior (back), because of the infant’s small size.

Reference: ILCOR Guidelines 2010

* +/- Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm
Foreign Body Airway Obstruction – Adult

- Are you choking?
  - Yes: Encourage cough
  - No: 1 to 5 back blows followed by 1 to 5 abdominal thrusts as indicated

- FBAO Severity
  - Severe (ineffective cough)
    - No Conscious: One cycle of CPR
    - Yes: Inspect airway - Laryngoscopy
  - Mild (effective cough)
    - No: Encourage cough
    - Yes: Adequate ventilations

- One cycle of CPR
  - Effective: Consider Oxygen therapy
  - Ineffective: Attempt removal of foreign body with Magill forceps

- Foreign body removed
  - No: Attempt intubation
  - Yes: Effective ventilations

- Attempt intubation
  - Effective: Attempt needle cricothyrotomy
  - Ineffective: Positive pressure ventilations maximum 10 per minute

- After each cycle of CPR open mouth and look for object. If visible attempt once to remove it

PHECC Clinical Practice Guidelines - Advanced Paramedic

SECTION 4 - MEDICAL EMERGENCIES

6.4.5 05/08

Pre-Hospital Emergency Care Council
**Foreign Body Airway Obstruction – Paediatric (≤ 13 years)**

1. **Are you choking?**
   - **Yes:**
     - **FBAO Severity:**
       - **Severe (ineffective cough):**
         - No Conscious → Encourage cough
         - Yes Conscious → One cycle of CPR
       - **Mild (effective cough):**
         - Encourage cough

2. **One cycle of CPR**
   - Effective → Yes
     - Inspect airway - Laryngoscopy
       - Yes Visualise foreign body → Attempt removal of foreign body with Magill forceps
       - No → Attempt intubation
         - Effective ventilations → Attempt needle cricothyrotohy
           - Effective ventilations → Go to BLS Paediatric CPG
           - No → Paediatric CPG
         - No → Effective ventilations → Oxygen therapy
   - No Effective ventilations → Positive pressure ventilations (12 to 20/ min)

3. **After each cycle of CPR:**
   - Open mouth and look for object
   - If visible attempt once to remove it

---

**Medical Emergencies**

**Section 4:**

- **Pulseless Electrical Activity - Adult**
**VF or Pulseless VT – Adult**

**SECTION 4 - MEDICAL EMERGENCIES**

From BLS Adult CPG

- **Immediate IO access if IV not immediately accessible**

**VF or VT arrest**

**VF or Pulseless VT – Adult**

**Pulseless Electrical Activity - Adult**

**VF or VT**

**Rhythm check**

- **VF/VT**
- **Asystole**
- **PEA**

**Defibrillate**

- **EPINEPHRINE (1:10 000) 1 mg IV/IO**
- **Every 3 to 5 minutes prn**
- **With CPR ongoing maximum hands off time 10 seconds Continue CPR during charging**

**NaCl IV/IO 500 mL (use as flush)**

**Epinephrine (1:10 000) 1 mg IV/IO**

**Initial Epinephrine between 2nd and 4th shock**

**Consider causes and treat as appropriate:**
- Hydrogen ion acidosis
- Hyper/hypokalaemia
- Hypothermia
- Hypovolaemia
- Hypoxia
- Thrombosis – pulmonary
- Tension pneumothorax
- Thrombus – coronary
- Tamponade – cardiac
- Toxins
- Trauma

**Consider transport to ED if no change after 20 minutes resuscitation**

**If no ALS available Drive smoothly**

**Mechanical CPR device is the optimum care during transport**

**Clinical leader to monitor quality of CPR**

**Sodium Bicarbonate 8.4% 50 mL IV**

**If Tricyclic Antidepressant Toxicity consider**

**SPECIAL AUTHORISATION:**

- Advanced Paramedics are authorised to substitute Amiodarone with a one off bolus of Lidocaine (1-1.5 mg/Kg IV) if Amiodarone is not available

**Initiate mobilisation of 3 to 4 practitioners / responders on site to assist with cardiac arrest management**

**Consider use of waveform capnography**

**Reference:** ILCOR Guidelines 2010
VF or Pulseless VT – Paediatric (≤ 13 years)

From BLS Child CPG

VF or VT arrest

Immediate IO access if IV not immediately accessible

Go to Post Resuscitation Care CPG

ROSC

Shoulder check

Refibrillate (4 joules/Kg)

VF/VT

Epinephrine (1:10 000), 0.01 mg/kg IV/IO

Repeat every 3 to 5 minutes prn

Check blood glucose

Defibrillate (4 joules/Kg)

VF or Pulseless VT – Paediatric (≤ 13 years)

VF or Pulseless VT – Paediatric (≤ 13 years)

VF/VT

Epinephrine (1:10 000), 0.01 mg/kg IV/IO

Repeat every 3 to 5 minutes prn

VF or VT arrest

With CPR ongoing maximum hands off time 10 seconds Continue CPR during charging

Transport to ED if no change after 10 minutes resuscitation

If no ALS available

Initial Epinephrine between 2nd and 4th shock

Refractory VF/VT post Epinephrine

Amiodarone, 5 mg/kg, IV/IO

Clinical leader to monitor quality of CPR

Consider causes and treat as appropriate:

- Hydrogen ion acidosis
- Hyper/hypokalaemia
- Hypothermia
- Hypovolaemia
- Hypoxia
- Thrombosis – pulmonary
- Tension pneumothorax
- Thrombus – coronary
- Tamponade – cardiac
- Toxins
- Trauma

* +/- Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm

Reference: ILCOR Guidelines 2010

* 8 years use paediatric defibrillation system (if not available use adult pads)

+ 4 years use paediatric defibrillation system (if not available use adult pads)

From BLS Child CPG

VF or VT arrest

Immediate IO access if IV not immediately accessible

Go to Post Resuscitation Care CPG

ROSC

Defibrillate (4 joules/Kg)

VF or Pulseless VT – Paediatric (≤ 13 years)

VF or Pulseless VT – Paediatric (≤ 13 years)

VF/VT

Epinephrine (1:10 000), 0.01 mg/kg IV/IO

Repeat every 3 to 5 minutes prn

Check blood glucose

Defibrillate (4 joules/Kg)

VF or Pulseless VT – Paediatric (≤ 13 years)

VF or Pulseless VT – Paediatric (≤ 13 years)

VF/VT

Epinephrine (1:10 000), 0.01 mg/kg IV/IO

Repeat every 3 to 5 minutes prn

Check blood glucose

Defibrillate (4 joules/Kg)

VF or Pulseless VT – Paediatric (≤ 13 years)

VF or Pulseless VT – Paediatric (≤ 13 years)

VF/VT

Epinephrine (1:10 000), 0.01 mg/kg IV/IO

Repeat every 3 to 5 minutes prn

Check blood glucose

Defibrillate (4 joules/Kg)

VF or Pulseless VT – Paediatric (≤ 13 years)

VF or Pulseless VT – Paediatric (≤ 13 years)

VF/VT

Epinephrine (1:10 000), 0.01 mg/kg IV/IO

Repeat every 3 to 5 minutes prn

Check blood glucose

Defibrillate (4 joules/Kg)

VF or Pulseless VT – Paediatric (≤ 13 years)

VF or Pulseless VT – Paediatric (≤ 13 years)

VF/VT

Epinephrine (1:10 000), 0.01 mg/kg IV/IO

Repeat every 3 to 5 minutes prn

Check blood glucose

Defibrillate (4 joules/Kg)
**Symptomatic Bradycardia – Paediatric (≤ 13 years)**

**Signs of inadequate perfusion**
- Tachycardia
- Diminished/absent peripheral pulses
- Tachypnoea
- Irritability/ confusion / ALoC
- Cool extremities, mottling
- Delayed capillary refill

**Pulseless Electrical Activity - Adult**

**ECG & SpO2 monitoring**

**Continue CPR**

Positive pressure ventilations (12 to 20/min)

**Request ALS**

**HR < 60 & signs of inadequate perfusion**

**Yes**

**CPR**

**ECG & SpO2 monitoring**

**NaCl (0.9%) 20 mL/Kg IV/IO**

**Rearsest**

Epinephrine (1:10 000) 0.01 mg/kg (10 mcg/kg) IV/ IO
Every 3 – 5 min as needed

**Persistent bradycardia**

**Yes**

**Continue CPR**

**No**

**If no ALS available**

- Request immediate IO access if IV not immediately accessible
- Immediate mobilisation of 3 to 4 practitioners / responders on site to assist with cardiac arrest management

**Consider advanced airway management if prolonged CPR**

**Check blood glucose**

**Symptomatic Bradycardia – Paediatric (≤ 13 years)**

Asystole – Adult

From BLS Adult CPG

Immediate IO access if IV not immediately accessible

Go to Post Resuscitation Care CPG

Go to PEA CPG

Go to VF / Pulseless VT CPG

Asystole

Rhythm check *

Epinephrine (1:10 000) 1 mg IV/IO
Every 3 to 5 minutes prn

NaCl IV/IO 500 mL
(use as flush)

With CPR ongoing maximum hands off time 10 seconds

Clinical leader to monitor quality of CPR

Consider causes and treat as appropriate:
- Hydrogen ion acidosis
- Hyper/ hypokalaemia
- Hypothermia
- Hypovolaemia
- Hypoxia
- Thrombosis – pulmonary
- Tension pneumothorax
- Thrombus – coronary
- Tamponade – cardiac
- Toxins
- Trauma

If Tricyclic Antidepressant Toxicity consider:
Sodium Bicarbonate 8.4% 50 mL IV

Consider use of waveform capnography

Advanced airway management

Consider mechanical CPR assist

Immediate IO access if IV not immediately accessible

Initiate mobilisation of 3 to 4 practitioners / responders on site to assist with cardiac arrest management

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Reference: ILCOR Guidelines 2010

* +/- Pulse check; pulse check after 2 minutes of CPR if potentially perfusing rhythm

P H E C C  Clinical Practice Guidelines – Advanced Paramedic

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Version 2, 03/11
**SECTION 4 - MEDICAL EMERGENCIES**

**Pulseless Electrical Activity – Adult**

- Go to Post Resuscitation Care CPG
- Go to VF / Pulseless VT CPG
- Consider causes and treat as appropriate:
  - Hydrogen ion acidosis
  - Hyper/hypokalaemia
  - Hypothermia
  - Hypovolaemia
  - Hypoxia
  - Thrombosis – pulmonary
  - Tension pneumothorax
  - Thrombus – coronary
  - Tamponade – cardiac
  - Toxins
  - Trauma
- If Tricyclic Antidepressant Toxicity consider Sodium Bicarbonate 8.4% 50 mL IV
- Consider fluid challenge NaCl 20 mL/Kg IV/Io
- With CPR ongoing maximum hands off time 10 seconds
- Drive smoothly
- Mechanical CPR device is the optimum care during transport
- Consider mobilisation of 3 to 4 practitioners / responders on site to assist with cardiac arrest management

**Rhythm check**

- Yes
  - VF/VT
  - ROSC
  - Asystole
- No
  - Go to Post Resuscitation Care CPG
- Reference: ILCOR Guidelines 2010

*+/− Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm

**Consider causes and treat as appropriate:**
- Hydrogen ion acidosis
- Hyper/hypokalaemia
- Hypothermia
- Hypovolaemia
- Hypoxia
- Thrombosis – pulmonary
- Tension pneumothorax
- Thrombus – coronary
- Tamponade – cardiac
- Toxins
- Trauma

**Clinical leader to monitor quality of CPR**

**Immediate IO access if IV not immediately accessible**

**EMT P**

**AP**
**Asystole/PEA – Paediatric (≤ 13 years)**

**From BLS Child CPG**

- **Immediate IO access if IV not immediately accessible**

- **Go to Post Resuscitation Care CPG**

- **Go to VF / Pulseless VT CPG**

- **Transport to ED if no change after 10 minutes resuscitation**

**Rhythm check**

- **Yes**
- **No**

**Drive smoothly**

**Clinical leader to monitor quality of CPR**

- **Consider causes and treat as appropriate:**
  - Hydrogen ion acidosis
  - Hyper/hypokalaemia
  - Hypothermia
  - Hypovolaemia
  - Hypoxia
  - Thrombosis – pulmonary
  - Tension pneumothorax
  - Thrombus – coronary
  - Tamponade – cardiac
  - Toxins
  - Trauma

**Consider fluid challenge**

- **NaCl 20 mL/Kg IV/IO**

**Epinephrine (1:10 000), 0.01 mg/kg IV/IO**

- Repeat every 3 to 5 minutes prn

**With CPR ongoing maximum hands off time 10 seconds**

**Reference:** ILCOR Guidelines 2010

**Followling successful Advanced Airway management:**

1. Ventilate at 12 to 20 per minute.
2. Unsynchronised chest compressions continuous at 100 to 120 per minute.

**Consider use of waveform capnography**
SECTION 4 - MEDICAL EMERGENCIES

Asystole - Decision Tree

Patient is:
- Hypothermic or
- Cold water drowning or
- Poisoning/Overdose or
- Pregnant or
- < 18 years

Yes

Witnessed arrest & CPR prior to arrival of EMS

Yes

Resuscitation continuous for at least 20 minutes in asystole

No

Confirm Asystolic Cardiac Arrest
- Unresponsive
- No signs of life; absence of central pulse and respiration

Confirm that (two minutes of CPR and no shock advised) x 3 are completed

Consider ceasing resuscitation efforts

Yes

Record two rhythm strips x 10 sec duration

No

Record on ECG strips
- PCR No
- Patient’s name
- Date and time

Inform Ambulance Control

If present, inform next of kin

Emotional support for relatives should be considered before leaving the scene

Complete PCR and flag for mandatory clinical audit

Follow local protocol for care of deceased

No

If no ALS available

Continue BLS & or ALS

From Asystole - Adult CPG

From Traumatic Cardiac Arrest CPG
Post-Resuscitation Care – Adult

Return of Spontaneous Circulation

Evaluate:
- Spontaneous circulation
- Adequate ventilation
- Return of Spontaneous Circulation

1. Positive pressure ventilation
   - Max 10 per minute
   - Commence active cooling
2. Unresponsive
   - Yes: Positive pressure ventilation
   - No: Adequate ventilation

Commence active cooling

Maintain patient at rest

ECG & SpO₂ monitoring

12 lead ECG

Monitor blood pressure and GCS

Atropine 0.5 mg IV/IO

Check blood glucose

Transport quietly and smoothly

Titrating O₂ to 94% - 98%

Equipment list
- Cold packs
- Equipment for cooling

Reference: ILCOR Guidelines 2010

Consider causes and treat as appropriate:
- Hydrogen ion acidosis
- Hyper/hypokalaemia
- Hypothermia
- Hypovolaemia
- Hypoxia
- Thrombosis – pulmonary
- Tension pneumothorax
- Thrombus – coronary
- Tamponade – cardiac
- Toxins
- Trauma

If persistent hypotensive consider maintaining Systolic BP > 90 mmHg

When ALS available consider transporting to primary PCI facility (follow local protocol)
**Recognition of Death – Resuscitation not Indicated**

**Apparent dead body**

- **Signs of Life**
  - Yes → Go to Primary survey CPG
  - No → Definitive indicators of Death

- **Definitive indicators of Death**
  - Yes → It is inappropriate to commence resuscitation → Inform Ambulance Control → Complete all appropriate documentation → Inform next of kin, if present → Follow local protocol for care of deceased
  - No → Definitive indicators of Death

**Definitive indicators of death:**

1. Decomposition
2. Obvious rigor mortis
3. Obvious pooling (hypostasis)
4. Incineration
5. Decapitation
6. Injuries totally incompatible with life
7. Unwitnessed traumatic cardiac arrest following blunt trauma (see CPG 5/6.4.13)
MEDICAL EMERGENCIES
Acute Coronary Syndrome

**Indication for Thrombolysis**
1. Patient conscious, coherent and understands therapy
2. Patient consent obtained
3. Less than 75 years old
   - (medical practitioner discretion if > 75 years)
4. MI Symptoms > 20 Min & ≤ 6 hours
5. Confirmed STEMI
6. Time to PCI centre > 90 minutes of STEMI confirmation on 12 lead ECG
7. No contraindications present

**Acute Coronary Syndrome**

**Acquire & interpret 12 lead ECG**

**Aspirin 300 mg PO**

**Chest Pain**
- Yes
- No

**STEMI**
- Yes
- No

**Time to PCI Centre**
- < 90 min of STEMI identification on 12 lead ECG

**STEMI**

**Oxygen therapy**
- Maintain SpO2 between 94% to 98% (lower range if COPD)

**Tenecteplase IV**
- Followed by
  - Enoxaparin 30 mg IV
  - Enoxaparin 30 mg IV (> 75 Yrs: Enoxaparin 0.75 mg/kg SC)

**Enoxaparin 30 mg IV**
- (> 75 Yrs: Enoxaparin 0.75 mg/kg SC)

**Notify & transport to Primary PCI facility**

**Patients age > 75 years do not give IV Enoxaparin but rather Enoxaparin 0.75mg/kg SC (max 75mg SC)**

**Special Authorisation:** Paramedics are authorised to administer Clopidogrel PO following identification of STEMI and medical practitioner instruction.

**Special Instruction:** If thrombolysis is clinically indicated and if anticipated time from STEMI recognition to handover to clinical staff in a hospital with thrombolysis capability is:
1. < 20 minutes – do not thrombolise; initiate transport and pre-alert receiving hospital.
2. > 30 minutes – thrombolise, then transport to nearest appropriate hospital.
3. 20 to 30 minutes – thrombolise if considered that local circumstances may delay transport (practitioner discretion), then transport to nearest appropriate hospital.

**Reference:** HSE ACS Programme, ILCOR Guidelines 2010, ECS Guidelines 2008
Symptomatic Bradycardia – Adult

Oxygen therapy

Request ALS

ECG & SpO₂ monitoring

Atropine, 0.5 mg IV
Repeat at 3 to 5 min intervals prn to max 3 mg

12 lead ECG

Reassess

Atropine, 0.5 mg IV
Repeat at 3 to 5 min intervals prn to max 3 mg

12 lead ECG

Reassess

Atropine, 0.5 mg IV
Repeat at 3 to 5 min intervals prn to max 3 mg

12 lead ECG

Reassess

Atropine, 0.5 mg IV
Repeat at 3 to 5 min intervals prn to max 3 mg

12 lead ECG

Reassess
**Allergic Reaction/Anaphylaxis – Adult**

- **Mild**
  - Urticaria and or angio oedema

- **Moderate**
  - Mild symptoms + simple bronchospasm

- **Severe/ anaphylaxis**
  - Moderate symptoms + haemodynamic and or respiratory compromise

**Flowchart: Allergic Reaction/Anaphylaxis – Adult**

1. **Mild**
   - Oxygen therapy
   - Monitor reaction
   - If bronchospasm consider nebulizer
   - Salbutamol 5 mg NEB
   - Reassess

2. **Moderate**
   - ECG & SpO₂ monitor
   - Deteriorates?
     - Yes
       - Epinephrine (1:1 000) 0.5 mg (500 mcg) IM
         - Repeat at 5 minute intervals if no improvement
       - Request ALS
     - No
       - Epinephrine administered pre arrival? (within 5 minutes)
         - Yes
           - Epinephrine (1:1 000) 0.5 mg (500 mcg) IM
             - Repeat at 5 minute intervals if no improvement
           - Request ALS
         - No
           - NaCl (0.9%) 1 L IV/IO infusion
             - Repeat by one prn
           - Reassess
           - Request ALS
           - ECG & SpO₂ monitor

3. **Severe/ Anaphylaxis**
   - Epinephrine administered pre arrival? (within 5 minutes)
     - Yes
       - Epinephrine (1:1 000) 0.5 mg (500 mcg) IM
         - Repeat at 5 minute intervals if no improvement
       - Request ALS
     - No
       - NaCl (0.9%) 1 L IV/IO infusion
         - Repeat by one prn
       - Reassess
       - Request ALS
       - ECG & SpO₂ monitor

4. **Special Authorisation:**
   - Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation

**Note:**
- **Recurs / deteriorates / no improvement**
- **Yes**
- **No**
- **ALS**
- **Repeat**

**Version:**
- 5/6/18
- Version 2, 07/11
**Glycaemic Emergency – Adult**

**Abnormal blood glucose level**

- **< 4 mmol/L**
  - Dextrose 10% 250 mL IV/IO infusion
  - Glucagon 1 mg IM
  - Glucose gel 10-20 g buccal
  - Sweetened drink

- **> 20 mmol/L**
  - Sodium Chloride 0.9% 1 L IV/IO infusion

- **11 to 20 mmol/L**
  - Consider ALS

- **5/6.4.19 05/08**
  - Repeat if indicated
  - Dextrose 10%, 250 mL IV/IO infusion
  - Glucose gel 10-20 g buccal

- Reassess

---

**Special Authorisation:**
Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation.
SECTION 4 - MEDICAL EMERGENCIES

Seizure/Convulsion – Adult

Seizure / convulsion

- Protect from harm
- Oxygen therapy

Seizing currently

- Seizure status
- Post seizure

Check blood glucose

- Blood glucose < 4 or > 20 mmol/L
  - Yes
  - No

Consider other causes of seizures
- Meningitis
- Head injury
- Hypoglycaemia
- eclampsia
- Fever
- Poisons
- Alcohol/drug withdrawal

Maximum two doses of anticonvulsant medication by Practitioner regardless of route

Request ALS

No

IV access

Midazolam 10 mg buccal
Repeat by one pm
Or
Midazolam 5 mg IN
Repeat by one pm
Or
Midazolam 5 mg IM
Repeat by one pm
Or
Diazepam, 10 mg PR
Repeat by one pm

Yes

Midazolam 2.5 mg IV/IO
Repeat by one pm
Or
Diazepam 5 mg IV/IO
Repeat by one pm

Go to Glycaemic Emergency CPG

Stay

PHECC Clinical Practice Guidelines - Advanced Paramedic

5/6.4.20
Version 2, 07/11
**Septic Shock – Adult**

**Clinical signs of shock**
- Oxygen therapy
  - Maintain SpO2 between 94% to 98%
  - (lower range if COPD)

**Request ALS**

- NaCl (0.9%), 500 mL IV/IO

**Meningococcal disease suspected**
- Yes
  - Benzylpenicillin, 1 200 mg IV/IM over 3 to 5 minutes
- No
  - NaCl (0.9%), 250 mL IV/IO aliquots to maintain SBP 100 mmHg

**Continue fluid therapy until handover at ED**

**Ensure appropriate PPE worn; Mask and goggles**

**Special Authorisation:**
Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation.
SECTION 4 - MEDICAL EMERGENCIES

**Stroke**

Acute neurological symptoms

1. **Obtain GCS**
   - Positive FAST assessment: Yes → **Maintain airway** → **Oxygen therapy** → **Check blood glucose** → **ECG & SpO2 monitoring** → **Transport patient to hospital with Specialised Stroke Unit (under local protocol)**
   - Positive FAST assessment: No → **Go to Glycaemic Emergency CPG**

2. **Oxygen therapy**
   - Maintain SpO2 between 94% to 98% (lower range if COPD)

3. **Obtain GCS**
   - BG < 4 or > 20 mmol/L: Yes → **Follow local protocol re notifying ED prior to arrival**
   - BG < 4 or > 20 mmol/L: No → **Check blood glucose**

4. **Check blood glucose**
   - Onset < 4.5 hours: Yes → **Specialised Stroke Unit available**
   - Onset < 4.5 hours: No → **Specialised Stroke Unit available**

5. **Specialised Stroke Unit available**
   - Yes → **Transport patient to hospital with Specialised Stroke Unit (under local protocol)**
   - No → **Follow local protocol re notifying ED prior to arrival**

**Reference**

- ILCOR Guidelines 2010
- Prof R Boyle, 2006, Mending hearts and brains, Clinical case for change: Report by Prof R Boyle, National Director for Heart Disease and Stroke, NHS AHA, 2005, Part 9 Adult Stroke, Circulation 2005; 112; 111-120
- A. Mohd Nor, et al, Agreement between ambulance paramedic- and physician- recorded neurological signs with Face Arm Speech Test (FAST) in acute stroke patients, Stroke 004; 35;1355-1359
- Jeffrey L Saver, et al, Prehospital neuroprotective therapy for acute stroke: results of the field administration of stroke therapy-Magnesium (FAST-MAG) pilot trial, Stroke 2004; 35; 106-108
SECTION 4 - MEDICAL EMERGENCIES

Poisons – Adult

Poison source

Ingestion

Yes

Inhalation

No

Injection

No

Absorption

Yes

Yes

Corrosive

Sips of water or milk

No

Site burns

Cool area

Caution with oral intake

Go to Inadequate Respiration CPG

Adequate ventilations

Yes

No

Consider decontamination prior to transportation

Poison type

Parquat

Tricyclic

Organophosphate

Absorption

Yes

No

Yes

No

No

Other

Psychostimulant (symptomatic 1)

Midazolam, 2.5 mg IV or 5 mg IM

Rousable drowsiness within 10 minutes.

Yes

No

Atropine, 1 mg IV Repeat at 5 min intervals prn to ensure secretions minimal

BG < 4 or > 20 mmol/L

No

Yes

Check blood glucose

Yes

No

Go to Glycaemic Emergency CPG

Patient still agitated and unmanageable

Yes

No

Go to Behavioural Emergency CPG

Oxygen therapy

Consider contacting National Poison Information Centre for advice 01-8092566

Sodium Bicarbonate, 1 mEq/kg IV

> 30 minutes from ED

For acute psychostimulant toxicity, urgent transport is indicated if the patient:

- has a temp of ≥ 38°C
- has an altered level of consciousness
- has severe headache
- is hypertensive
- has respiratory difficulties
- has had a seizure
- has chest pain
- is extremely agitated
- does not respond to verbal de-escalation strategies

Note:

Inadequate respiration CPG, authorises the administration of Naloxone for opiate overdose by Advanced Paramedics.

Reference:

Dr Joe Tracey, Director, National Poison Information Centre


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Hypothermia

- Consider advanced airway
- Remove patient horizontally from liquid (Provided it is safe to do so)
- Protect patient from wind chill
- Complete primary survey (Commence CPR if appropriate)
- Warm O2, if possible
- Remove wet clothing by cutting
- Place patient in dry blankets/sleeping bag with outer layer of insulation
- ECG & SpO2 monitoring
- Check and record core temperature

- Mild: > 34°C
- Moderate: 30 – 34°C
- Severe: < 30°C
- Give hot sweet drinks

- If Cardiac Arrest
  - Follow CPGs but: no active re-warming
  - If Bradycardic
    - Follow CPGs but: do not use Atropine until temperature > 34°C
    - NaCl warmed to 40°C approx
      - Adult: 250 mL IV, Repeat pm to max 1 L
      - Paediatric: 20 mL/Kg IV, Repeat pm x 1

- If Unresponsive
  - Consider advanced airway
  - Transport in head down position
    - Helicopter: head forward
    - Boat: head aft

Resuscitation (2005) 6751, S135-S170
SECTION 4 - MEDICAL EMERGENCIES

Epistaxis

Medical

Advise patient to sit forward

Apply digital pressure for 3 to 5 minutes

Advise patient to breath through mouth only and not to blow nose

Go to Shock CPG

Trauma

Primary Survey Medical

Primary Survey Trauma

Emergency Medical Technician

AP

P

Medical

Yes

No

Haemorrhage controlled

Yes

No

Hypovolaemic

Request ALS

Consider ALS

Yes

No

Primary Survey

Medical

No

Yes

Controlled

4/5/6.4.25
05/08
Decompression Illness (DCI)

SCUBA diving within 48 hours

- Consider diving buddy as possible patient also

- Complete primary survey (Commence CPR if appropriate)
- Treat in supine position
- Oxygen therapy 100% O₂
- Request ALS

- Conscious
  - Yes
    - Pain relief required
    - Yes
      - Entonox absolutely contraindicated
    - No
      - Nausea
        - Yes
          - Go to Nausea & Vomiting CPG
        - No
          - Monitor ECG & SpO₂
  - No
    - Maintain Airway, Breathing & Circulation

- NaCl (0.9%) 500 mL IV/IO
- Transport is completed at an altitude of < 300 metres above incident site or aircraft pressurised equivalent to sea level

- Notify control of query DCI & alert ED

Special Authorisation:
Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation

Altered Level of Consciousness – Adult

V, P or U on AVPU scale

Maintain airway

No

Consider recovery position

Consider Cervical Spine

Yes

Trauma

Obtain SAMPLE history from patient, relative or bystander

ECG & SpO2 monitoring

Calculate GCS

Check temperature

Check pupillary size & response

Check for skin rash

Check for medications carried or medical alert jewellery

Check blood glucose

Differential Diagnosis

Anaphylaxis

Symptomatic Bradycardia

Glycaemic emergency

Hypothermia

Poison

Seizures

Stroke

Shock from blood loss

Submersion incident

Head injury

Inadequate respirations

Post resuscitation care

Septic shock

Taser gun

Go to CPG

Go to CPG

Go to CPG

Go to CPG

Go to CPG

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Go to CPG

Go to CPG
**Behavioural Emergency**

- **Practitioners may not compel a patient to accompany them or prevent a patient from leaving an ambulance vehicle.**

**Obtain a history from patient and or bystanders present as appropriate.**

**Indications of medical cause of illness:**

- **Yes**
  - Go to appropriate CPG

- **No**
  - **Potential to harm self or others:**
    - **Yes**
      - Request control to inform Gardaí
      - Reassure patient
      - Explain what is happening at all times
      - Avoid confrontation
      - Attempt verbal de-escalation
    
    - **No**

- **Patient agrees to travel:**
  
  - **Yes**
  
  - **Offer to treat and or transport patient:**
    - **Yes**
      - Treatment only
    
    - **No**
      - **Inform patient of potential consequences of treatment refusal:**
        - **Yes**
          - Request control to inform Gardaí and or Doctor
        
        - **No**
          - **Is patient competent to make informed decision:**
            - **Yes**
              - **Inform patient of potential consequences of treatment refusal:**
                - **Yes**
                  - Request control to inform Gardaí and or Doctor
                
                - **No**
                  - **Await arrival of doctor or Gardaí or receive implied consent:**
                    - **Yes**
                      - **Advise alternative care options and to call ambulance again if there is a change of mind:**
                        - **Yes**
                          - **Document refusal of treatment and or transport to ED:**
                            - **Go to appropriate CPG**

- **Patient Incapacity:**
  
  - **Yes**
  
  - **Aid to Capacity Evaluation:**
    1. Patient verbalizes/communicates understanding of clinical situation?
    2. Patient verbalizes/communicates appreciation of applicable risk?
    3. Patient verbalizes/communicates ability to make alternative plan of care? If no to any of the above consider Patient Incapacity

**Potential to harm self or others:**

- **Yes**
  - Ensure minimum two people accompany patient in saloon of ambulance at all times

**Injury or illness potentially serious or likely to cause lasting disability:**

- **Yes**
  - Inform patient of potential consequences of treatment refusal

- **No**
  - **Await arrival of doctor or Gardaí or receive implied consent:**
    - **Yes**
      - **Advise alternative care options and to call ambulance again if there is a change of mind:**
        - **Yes**
          - **Document refusal of treatment and or transport to ED:**
            - **Go to appropriate CPG**

**Reference:** HSE Mental Health Services
**Mental Health Emergency**

**Behaviour abnormal with previous psychiatric history**

1. **Exclude medical caused of abnormal behaviour prior to implementing this CPG**
2. **Practitioners may not compel a patient to accompany them or prevent a patient from leaving an ambulance vehicle**
3. **If potential to harm self or others ensure minimum two people accompany patient in saloon of ambulance at all times**

**Obtain a history from patient and or bystanders present as appropriate**

1. **RMP or RPN in attendance or have made arrangements for voluntary/assisted admission**
2. **Potential to harm self or others**
3. **Reassure patient**

**Attempt verbal de-escalation**

1. **Patient agrees to travel**
2. **Combative with hallucinations or Paranoia & risk to self or others**
3. **Request as appropriate**

**Acute Psychostimulant toxicity**

1. **Yes**
2. **No**
3. **Oxygen therapy**

**For acute psychostimulant toxicity, urgent transport is indicated if the patient**

- has a temp of ≥38°C
- has an altered level of consciousness
- has severe headache
- is hypertensive
- has respiratory difficulties
- has had a seizure
- has chest pain
- is extremely agitated
- does not respond to verbal de-escalation strategies

**Go to Poisons CPG**

**References:**

- Clinical Practice Manual, Queensland Ambulance Service 2001
- Reference Guide to the Mental Health Act 2001, Mental Health Commission
- HSE Mental Health Services

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**Aid to Capacity Evaluation**

1. Patient verbalizes/communicates understanding of clinical situation?
2. Patient verbalizes/communicates appreciation of applicable risk?
3. Patient verbalizes/communicates ability to make alternative plan of care?
4. If no to any of the above consider Patient Incapacity

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References:

- Clinical Practice Manual, Queensland Ambulance Service 2001
- Reference Guide to the Mental Health Act 2001, Mental Health Commission
- HSE Mental Health Services

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**PHECC Clinical Practice Guidelines – Advanced Paramedic**

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**53**
**Significant Nausea & Vomiting – Adult**

- **Nausea & Vomiting**
  - Post Narcotic administration for pain relief
    - Yes: Go to Pain management – Adult CPG
    - No:
      - Consider Oxygen therapy
      - Consider Ondansetron 4 mg IV slowly or Cyclozzine 50 mg IV slowly
        - ECG & SpO₂ monitor
**End of Life – DNR**

**End stage terminal illness**

- Patient becomes acutely unwell
  - Respiratory distress
    - Yes: Basic airway maintenance
    - No: Oxygen therapy

- Planned ambulance transport
  - Recent & reliable evidence from a clinical source stating that the patient is not for resuscitation
    - Yes: Agreement between caregivers present and Practitioners not to resuscitate
    - No: Go to Primary Survey CPG
  - Recent & reliable evidence from a clinical source stating that the patient is not for resuscitation
    - Yes: Go to Primary Survey CPG
    - No: P

- The dying patient, along with his/her family, is viewed as a single unit of care

- A planned ambulance transport is a scheduled discharge to home or an interfacility patient transport

- Confirm and agree procedure with clinical staff in the event of a death in transit

- Go to Primary Survey CPG

- Keep next of kin informed, if present
  - Emotional support for relatives should be considered before leaving the scene

**Appropriate Practitioner**
- Registered Medical Practitioner
- Registered Nurse
- Registered Advanced Paramedic
- Registered Paramedic
- Registered EMT

**Recent & reliable written instruction from patient’s doctor stating that the patient is not for resuscitation**

**Recent & reliable evidence from a clinical source stating that the patient is not for resuscitation**

**Pulse present**

**Follow local protocol for care of deceased**
Pre-Hospital Emergency Childbirth

Query labour

Take SAMPLE history

Patient in labour

Yes

No

Birth imminent or travel time too long

Yes

No

Request Ambulance Control to contact GP / midwife / medical team as required by local policy to come to scene or meet en route

Position mother and prepare equipment for birth

Monitor vital signs and BP

Cord complication

Yes

No

Go to Umbilical Cord Complications CPG

Go to Breech Birth CPG

Support baby throughout delivery

No

Yes

Gestation < 28 weeks

Dry baby and check ABCs

Cover newborn in polythene wrap / bag up to neck without drying first

Go to BLS & ALS Neonate CPG

Baby stable

Yes

No

Clamp & cut cord

Wait at least one minute post birth then clamp cord at 10, 15 & 20 cm from baby

Cut cord between 15 and 20 cm clamps

Wrap baby and present to mother

If placenta delivers, bring to hospital with mother

Reference: ILCOR Guidelines 2010
SECTION 5 - OBSTETRIC EMERGENCIES

Basic & Advanced Life Support – Neonate (< 4 weeks)

From Childbirth CPG

Birth

Gestation < 28 weeks

Yes

Term gestation

Amniotic fluid clear

Breathing or crying

Good muscle tone

No

Assess

Breathing, HR > 100 & Pink

Provide warmth

Position; Clear airway (if necessary)

Stimulate, reposition

Assess

Heart Rate

Breathing well, HR > 100

Provide warmth

Position; Clear airway (if necessary)

Dry, stimulate, reposition

Dry baby

Provide warmth

< 4 Weeks old

Cover newborn in polythene wrap/bag up to neck without drying first

Provide warmth

Position; Clear airway (if necessary)

Stimulate, reposition

Yes

Request

ALS

Breathing, HR > 100 & Pink

Assess

respirations, heart rate & colour

Breathing, HR > 100 but Cyanotic

Give Supplementary O₂

Persistent Cyanosis

Yes

No

Provide positive pressure ventilation for 30 sec

HR < 100

CPR (ratio 3:1) for 30 sec

HR 60 to 100

Assess Heart Rate

HR 60 to 100

Breathing well, HR > 100

HR < 60

Assess Heart Rate

HR < 60

Continue CPR

Epinephrine (1:10 000) 0.01 mg/kg IV/IO

Every 3 to 5 minutes prn

Consider blood glucose check

Consider pulse oximetry

If mother is opiate user consider

Naloxone, 0.01 mg/kg IV/IO

Or

Naloxone, 0.01 mg/kg IM

NaCl 0.9%, 10 mL/kg IV/IO

Reference: ILCOR Guidelines 2010
Haemorrhage in Pregnancy Prior to Delivery

Query pregnant < 24 weeks
Early pregnancy haemorrhage

Pregnancy ≥ 24 weeks
Antepartum haemorrhage

Left lateral tilt
Do not examine abdomen or vagina
Apply absorbent pad to perineum area
Oxygen therapy

Patient is haemodynamically unstable

Request ALS

Go to Shock CPG

**Postpartum Haemorrhage**

2nd stage of labour complete

- Apply absorbent pad to perineum area
- Oxygen therapy
- Syntometrine, 1 mL IM (if not already administered)

**Mother is haemodynamically unstable**

- Yes
  - Request ALS
  - External massage of the uterus
  - Elevate lower limbs
  - Consider inserting a urinary catheter
  - Go to Shock CPG

- No
  - Reassess
  - Check: ask mother re multiple births prior to administration of Syntometrine

**Reference:** Sweet, BR, 2000, Mayes' Midwifery, 12th Edition, Bailliere Tindall
### Umbilical Cord Complications

**Cord complication**

- **Cord around baby's neck**
  - Attempt to slip the cord over the baby's head
  - Yes: Successful
  - No: Clamp cord in two places and cut between both clamps
  - Ease the cord from around the neck
  - Go to Childbirth CPG

- **Cord rupture**
  - Apply additional clamps to cord
  - Apply direct pressure with sterile dressing

- **Prolapsed cord**
  - Mother to adopt knee chest position
  - Maintain cord temperature and moisture
  - Consider inserting an indwelling catheter into the bladder and run 500 mL of NaCl into the bladder and clamp catheter

**Oxygen therapy**

- Request Ambulance Control to contact GP / midwife / medical team as required by local policy to come to scene or meet en route

**Reference:**
- Sweet, BR, 2000, Mayes' Midwifery, 12th Edition, Bailleire Tindall
- Duley, LMM, 2002, Clinical Guideline No 1(B), Tocolytic Drugs for women in preterm labour, Royal College of Obstetricians and gynaecologists

**For prolapsed cord pre-alert hospital as emergency caesarean section will be required**
Breech Birth Presentation

Request ALS

Oxygen therapy

Mother to adapt the lithotomy position

Support the baby as it emerges – avoid manipulation of the baby’s body

Successful delivery

Yes

Nape of neck anteriorly visible at vulva

Yes

Place one hand, palm up, onto baby’s face

Grasp both baby’s ankles in other hand

Rotate baby’s legs in an arc in an upward direction as contractions occur

Successful delivery after 5 contractions

Yes

No

No

Consider Entonox

Go to Childbirth CPG

Request Ambulance Control to contact GP / midwife/ medical team as required by local policy to come to scene or meet en route

Place hand in the vagina with palm towards baby’s face

Form a V with fingers on each side of baby’s nose and gently push baby’s head away from vaginal wall
External Haemorrhage – Adult

Open wound

Yes

Active bleeding

Posture
Elevation
Examination
Pressure

No

Apply sterile dressing

Consider
Oxygen therapy

Haemorrhage
controlled

No

Yes

Apply additional
dressing(s)

Haemorrhage
controlled

No

Yes

Depress proximal
pressure point

Haemorrhage
controlled

No

Yes

Apply tourniquet

Significant
blood loss

No

Go to Shock
CPG

Yes

Apply tourniquet

Haemorrhage
controlled

No

Yes

Depress proximal
pressure point

Haemorrhage
controlled

No
Clinical signs of shock

Control external haemorrhage

Oxygen therapy

Request ALS

Patient trapped

Yes

NaCl (0.9%), 500 mL IV/IO

Yes

Trauma

Yes

Head injury with GCS ≤ 8

NaCl (0.9%), 250 mL IV/IO aliquots to maintain SBP 120 mmHg

No

NaCl (0.9%), 250 mL IV/IO aliquots to maintain palpable radial pulse (SBP 90 - 100 mmHg)

Continue fluid therapy until handover at ED

Special Authorisation:
Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation.
Spinal Immobilisation – Adult

Initial indications for spinal immobilisation

Return head to neutral position unless on movement there is increase in Pain, Resistance or Neurological symptoms

Do not forcibly restrain a patient that is combatitive

Use clinical judgement if in doubt, immobilise

Dangerous mechanism include:
- Fall ≥1 meter/5 steps
- Axial load to head
- MVC > 100 km/hr, rollover or ejection
- ATV collision
- Bicycle collision
- Pedestrian v vehicle

Equipment list
- Extrication device
- Long board
- Vacuum mattress
- Orthopaedic stretcher
- Rigid cervical collar

Low risk factors
- Simple rear end MVC (excluding push into oncoming traffic or hit by bus or truck)

Remove helmet (if worn)

Neck or back pain or midline spinal tenderness

Dangerous mechanism of injury or significant distracting injury

Are all of the factors listed present:
- GCS = 15
- Communication effective (not intoxicated with alcohol or drugs)
- Absence of numbness, tingling or weakness in extremities
- Presence of low risk factors which allow safe assessment of range of motion
- Patient voluntarily able to rotate neck 45° left & right without pain
- Patient can walk without pain

Life Threatening

Immobilisation may not be indicated

Go to appropriate CPG

Rapid extrication with long board and cervical collar

Patient in sitting position

Use extrication device

Load onto vacuum mattress or long board

Consider Vacuum mattress

Equipment list
- Extrication device
- Long board
- Vacuum mattress
- Orthopaedic stretcher
- Rigid cervical collar
Burn or Scald

Cease contact with heat source

Inhalation and/or facial injury

Yes

No

Airway management

Respiratory distress

Yes

No

Go to Inadequate Respiration CPG

Yes

No

Consider humidified Oxygen therapy

Equipment list

Acceptable dressings
Burns gel (caution for > 10% TBSA)
Cling film
Sterile dressing
Clean sheet


Special Authorisation: Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation
Establish need for pain relief

Check CSMs distal to injury site

Limb Injury – Adult

Provide manual stabilisation for injured limb

Check CSMs distal to injury site

Injury type

Fracture mid shaft of femur

Fracture

Soft tissue injury

Dislocation

Contraindications for application of traction splint
1 # pelvis
2 # knee
3 Partial amputation
4 Injuries to lower third of lower leg
5 Hip injury that prohibits normal alignment

Head Injury – Adult

Head trauma

- Maintain Airway (Consider Advanced airway)
- Oxygen therapy
- Control external haemorrhage
- Maintain in-line immobilisation
- LoC history
  - No
  - Apply cervical collar
  - Secure to long board
  - SpO₂ & ECG monitoring

Equipment list
- Extrication device
- Long board
- Vacuum mattress
- Orthopaedic stretcher
- Rigid cervical collar

- GCS ≤ 12
  - Yes
  - Consider Vacuum mattress
  - No

- LoC history
  - Yes
  - Request ALS

- GCS ≤ 8
  - Yes
  - 10° upward head lift
  - Maintain SBP > 120 mmHg
  - Check blood glucose
  - Seizures
    - Yes
    - Go to Seizures / Convulsions CPG
  - No

- Consider cervical collar application and long board use

Reference:
Mc Swain, N, 2003, Pre Hospital Trauma Life Support 5th Edition, Mosby
Submersion Incident

Submerged in liquid

- Remove patient from liquid (Provided it is safe to do so)
- Remove horizontally if possible (consider C-spine injury)

Complete primary survey (Commence CPR if appropriate)

Inadequate respirations
- Yes: Go to Inadequate Respirations CPG
- No: Oxygen therapy

SpO2 & ECG monitoring

Indications of respiratory distress
- Yes: Monitor Pulse, Respirations & BP
- No: If bronchospasm consider Salbutamol

Salbutamol
- ≥ 5 years 5 mg NEB
- ≤ 5 years 2.5 mg NEB

Ventilations may be commenced while the patient is still in water by trained rescuers

Higher pressure may be required for ventilation because of poor compliance resulting from pulmonary oedema

Spinal injury indicators
- History of:
  - diving
  - trauma
  - water slide use
  - alcohol intoxication

Transport to ED for investigation of secondary drowning insult

Do not delay on site
Continue algorithm en route

Reference:
PHECC Clinical Practice Guidelines - Advanced Paramedic

SECTION 6 - TRAUMA

Crush Injury

- Maintain AcBC
- Oxygen therapy
- Significant compression force maintained: Yes
  - Consider Mobile Surgical Team (for amputation)
  - IV access: Large bore x 2
  - Consider pain relief
  - NaCl 0.9% 20 mL/kg IV/IO
  - ECG & SPO2 monitoring
- Go to appropriate CPG
- If possible commence IV fluids prior to release
- Apply standard trauma care during and post extrication

Special Authorisation: Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation

Reference:
Crush Injury Syndrome (# 7102) Patient Care Policy, Alameda County EMS Agency (CA)
Crush Injuries, Clinical Practice Manual, Queensland Ambulance Service
**Traumatic Cardiac Arrest – Adult**

**EMS Unwitnessed Traumatic Arrest**
- Go to appropriate CPG
- Apnoeic, Pulseless and Asystolic
  - Yes
  - Blunt trauma
    - No
    - Yes
    - <18 years
      - Hypothermia
      - Drowning
      - Lightning strike
      - Electrical injury
        - Yes to any
        - Consider ceasing resuscitation
        - Go to Recognition of Death CPG
        - Go to Asystole Decision Tree CPG
        - No to all
        - Low energy incident
          - Yes
          - Rapid transport towards ALS
          - Request ALS
          - Patient responds to BLS or ALS provision within 15 min
          - Consider ceasing resuscitation
          - Go to Recognition of Death CPG
          - Go to Asystole Decision Tree CPG
          - No

**EMS Witnessed Traumatic Arrest**
- Commence CPR and ALS
- Rapid transport towards ALS
- Consider ceasing resuscitation

Take standard infection control precautions

Consider pre-arrival information

Scene safety
Scene situation
Paediatric Assessment Triangle

Give 5 ventilations

Oxygen therapy

Adequate ventilation

Yes

Pulse < 60 & signs of poor perfusion

AVPU assessment

Life threatening

Clinical status decision

Non serious or life threat

Go to Secondary Survey CPG

Serious not life threat

Report findings as per Children First guidelines to ED staff and line manager in a confidential manner

If child protection concerns are present

Request ALS

Go to appropriate CPG

Normal ranges

<table>
<thead>
<tr>
<th>Age</th>
<th>Pulse</th>
<th>Respirations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant</td>
<td>100 – 160</td>
<td>30 – 60</td>
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<td>24 – 40</td>
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<td>Pre school</td>
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<td>22 – 34</td>
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<tr>
<td>School age</td>
<td>70 – 120</td>
<td>18 – 30</td>
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</table>

Reference:
ILCOR Guidelines 2010, American Academy of Pediatrics, 2000, Pediatric Education for Prehospital Professionals
Department of Children and Youth Affairs, 2011, Children First: National Guidance for the protection and Welfare of Children
The primary survey is focused on establishing the patient’s clinical status and only applying interventions when they are essential to maintain life. It should be completed within one minute of arrival on scene.

**Primary Survey Trauma – Paediatric (≤ 13 years)**

- **Trauma**
  - Take standard infection control precautions
  - Consider pre-arrival information
  - Scene safety
  - Scene survey
  - Scene situation
  - Paediatric Assessment Triangle
  - Control catastrophic external haemorrhage
  - Mechanism of injury suggestive of spinal injury
  - C-spine control

**Paediatric Assessment Triangle**

- Appearance
- Work & Breathing
- Circulation to skin

**Give 5 Ventilations**

- Oxygen therapy
- A - Airway patent & protected
- B - Adequate ventilation
- C - Pulse < 60 & signs of poor perfusion

**AVPU Assessment**

- Expose & check obvious injuries
- Treat life threatening injuries only

**Life threatening**

- Clinical status decision
- Non serious or life threat
- Go to Secondary Survey CPG
- Serious not life threat
- Go to appropriate CPG

**Suction, OPA**

- NPA (> 1 year)
- Jaw thrust (Head tilt/ chin lift)

**Normal ranges**

<table>
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Reference:
- ILCOR Guidelines 2010, American Academy of Pediatrics, 2000, Pediatric Education for Prehospital Professionals
- Department of Children and Youth Affairs, 2011, Children First: National Guidance for the protection and Welfare of Children
Secondary Survey – Paediatric (≤ 13 years)

Primary Survey

- Make appropriate contact with patient and or guardian if possible
- Use age appropriate language for patient
- Children and adolescents should always be examined with a chaperone (usually a parent) where possible

Identify presenting complaint and exact chronology from the time the patient was last well
- Check for normal patterns of:
  - feeding
  - toilet
  - sleeping
  - interaction with guardian

Identify patient’s weight

Head to toe examination
- Observing for:
  - pyrexia
  - rash
  - pain
  - tenderness
  - bruising
  - wounds
  - fractures
  - medical alert jewellery

Re-check vital signs

Check for current medications

If child protection concerns are present

Report findings as per Children First guidelines to ED staff and line manager in a confidential manner

Estimated weight (Age x 3) + 7 Kg

Normal ranges:

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Reference:
Miall, Lawrence et al, 2003, Paediatrics at a Glance, Blackwell Publishing
Department of Children and Youth Affairs, 2011, Children First: National Guidance for the protection and Welfare of Children
Luscombe, M et al 2010, BMJ, Weight estimation in paediatrics: a comparison of the APLS formula and the formula ‘Weight(3(age)+7’
Inadequate Respirations – Paediatric (≤ 13 years)

Respiratory distress

- Assess and maintain airway
- Oxygen therapy
- Chest Auscultation

Inadequate rate or depth

- Asymmetrical movement

Silent chest, < 2 words per breath, cannot feed or SpO2 < 92%

Yes

No

Possible Hx of Narcotic overdose

- Narcan 0.01 mg/Kg, IM Repeat x 1 pm
- Narcan 0.01 mg/Kg, IV/IO/IM Repeat pm to max 0.1 mg/kg

Tension Pneumothorax suspected

- Needle decompression

Yes

No

Positive pressure ventilations – 12 to 20 per minute

Reassess

S7

Special Authorisation: Advanced Paramedics are authorised to repeat Salbutamol x 3 pm


Acute severe asthma

- Any one of:
  - Inability to complete sentences in one breath or too breathless to talk or feed
  - Respiratory rate > 30/min for > 5 years old
  - > 50/min for 2 to 5 years old
  - Heart rate > 120/min for > 5 years old
  - > 130/min for 2 to 5 years old

Moderate asthma exacerbation (2)

- Increasing symptoms
- PEF 50-75% best or predicted
- No features of acute severe asthma

Life threatening asthma

- Any one of the following in a patient with severe asthma:
  - Silent chest
  - Cyanosis
  - Poor respiratory effort
  - Hypotension
  - Exhaustion
  - Confusion
  - Unresponsive
Stridor – Paediatric (≤ 13 years)

- Assess & maintain airway
- Humidified O₂ – as high a concentration as tolerated
- Do not distress
- Transport in position of comfort
- ECG & SpO₂ monitoring
- Stridor
  - Consider FBAO
  - Croup or epiglottitis suspected
    - Yes: Do not insert anything into the mouth
    - No: Do not distress, transport in position of comfort
  - Humidified O₂ – as high a concentration as tolerated
  - Oxygen therapy

- Stridor
  - Consider FBAO
  - Croup or epiglottitis suspected
    - Yes: Do not insert anything into the mouth
    - No: Do not distress, transport in position of comfort
  - Humidified O₂ – as high a concentration as tolerated
  - Oxygen therapy

- ECG & SpO₂ monitoring
Advanced Airway Management – Paediatric (< 8 years)

Prolonged CPR

Maintain adequate ventilation and oxygenation throughout procedures

Able to ventilate

Yes

Consider FBAO

No

Position for intubation restricted

Yes

Endotracheal intubation

No

Endotracheal intubation

Successful

Yes

Ensure CO₂ detection device in ventilation circuit

No

Check tube placement after each patient movement or if any patient deterioration

Revert to basic airway management

Successful

Yes

Supraglottic Airway insertion

No

Continue ventilation and oxygenation

For patients aged 8 years or greater follow Adult Advanced Airway Management CPG

Allergic Reaction/Anaphylaxis – Paediatric (≤ 13 years)

Mild
- Urticaria and or angioedema

Moderate
- Mild symptoms + simple bronchospasm

Severe
- Moderate symptoms + haemodynamic and or respiratory compromise

- Severe or recurrent reactions and or patients with asthma

Epinephrine (1:1 000) IM
- < 6 months: 0.05 mg (50 mcg) IM
- 6 months to 5 years: 0.125 mg (125 mcg) IM
- 6 to 8 years: 0.25 mg (250 mcg) IM
- > 8 years: 0.5 mg (500 mcg) IM

Repeat Epinephrine at 5 minute intervals if no improvement

Repeat Epinephrine at 5 minute intervals if no improvement

NaCl (0.9%), 20 mL/Kg IV/IO bolus
Repeat by one prn

Epinephrine (1:1 000) IM
- See age related doses above

ECG & SpO2 monitor

Hydrocortisone
- < 1 yr: 25 mg IM or slow IV
- 1-5 yrs: 50 mg IM or slow IV
- 6-12 yrs: 100 mg IM or slow IV
- > 12 yrs: 130 mg IM or slow IV

Special Authorisation:
Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation.
Glycaemic Emergency – Paediatric (≤ 13 years)

**Abnormal blood glucose level**

- **< 4 mmol/L**
  - **Blood Glucose**
  - **≤ 8 years** 1 mg IM Glucagon
  - **> 8 years** 0.5 mg IM Glucagon
  - **Dextrose 10% 5 mL/Kg IV/IO bolus**
  - **Reassess**
  - **Glucose gel**
    - ≤ 8 years 5-10 g Buccal
    - > 8 years 10-20 g Buccal
  - **Glucagon**
    - > 8 years 1 mg IM
    - ≤ 8 years 0.5 mg IM
  - **No**
  - **Reassess**
- **11 to 20 mmol/L**
  - **Blood Glucose**
  - **> 20 mmol/L**
  - **NaCl (0.9%) 20 mL/Kg IV/IO bolus**
  - **Dehydration**
    - **No**
    - **Yes**
  - **Request ALS**
  - **Yes**
  - **ALS**

**Special Authorisation:**
Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation.

Reference: Dehydration- Paramedic Textbook 2nd E p 1229
Seizure/Convulsion – Paediatric (≤ 13 years)

Seizure / convulsion

- Protect from harm
  - Oxygen therapy

Seizuring currently

- Seizure status
  - Post seizure

- Consider
  - Request ALS

No

- Midazolam 0.5 mg/Kg buccal
  - Repeat by one prn

Or

- Midazolam 0.2 mg/Kg IN
  - Repeat by one prn

- Diazepam PR
  - < 3 years: 2.5 mg PR
  - 3 to 7 years: 5 mg PR
  - ≥ 8 years: 10 mg PR
  - Repeat by one prn

Yes

- Midazolam 0.1 mg/Kg IV/IO
  - Repeat by one prn

Or

- Diazepam 0.1 mg/Kg IV/IO
  - Repeat by one prn

- If pyrexial – cool child

- Consider
  - Paracetamol PR
    - < 1 year: 60 mg PR
    - 1 – 3 years: 180 mg PR
    - 4 – 8 years: 360 mg PR
  - Or
    - Paracetamol, 20 mg/Kg, PO

- Check blood glucose

Go to Glycaemic Emergency CPG

Yes

- Blood glucose < 4 or > 20 mmol/L

No

- Reassess

Maximum two doses of anticonvulsant medication by Practitioner regardless of route
Do not exceed adult dose

Consider other causes of seizures
- Meningitis
- Head injury
- Hypoglycaemia
- Fever
- Poisons
- Alcohol/drug withdrawal

Special Authorisation:
Advanced Paramedics are authorised to administer Paracetamol, in the absence of a seizure during the current episode, to a pyrexial patient with a previous history of febrile convulsions

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  - Do not exceed adult dose

- Special Authorisation:
  - Advanced Paramedics are authorised to administer Paracetamol, in the absence of a seizure during the current episode, to a pyrexial patient with a previous history of febrile convulsions
Consider External Haemorrhage – Paediatric (≤ 13 years)

Open wound

Yes

Active bleeding

Posture
Elevation
Examination
Pressure

No

Apply sterile dressing

Consider Oxygen therapy

Haemorrhage controlled

No

Yes

Apply additional dressing(s)

Haemorrhage controlled

No

Depress proximal pressure point

Yes

Haemorrhage controlled

No

Apply tourniquet

Significant blood loss

Yes

Go to Shock CPG

No
Septic Shock – Paediatric (≤ 13 years)

Clinical signs of shock

Oxygen therapy

Request ALS

NaCl (0.9%), 20 mL/Kg IV/IO

Meningococcal disease suspected

Yes

No

Benzylpenicillin IV/IO over 3 to 5 minutes or IM

< 1 year 300 mg
1 – 8 years 600 mg
> 8 years 1 200 mg (1.2 g)

NaCl (0.9%), 20 mL/Kg IV/IO aliquots if signs of inadequate perfusion

ECG & SpO2 monitoring

Special Authorisation:
Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation

Ensure appropriate PPE worn: Mask and goggles

Signs of inadequate perfusion
Tachycardia
Diminished/absent peripheral pulses
Tachypnoea
Irritability/ confusion / ALoC
Cool extremities, mottling
Delayed capillary refill
**Clinical signs of shock**

- Control external haemorrhage

**Oxygen therapy**

**Request ALS**

**Patient trapped**

**Yes**

**No**

**NaCl (0.9%) 10 mL/kg IV/IO aliquots if signs of inadequate perfusion**

**Reassess**

**NaCl (0.9%) 10 mL/kg IV/IO if signs of inadequate perfusion**

**Continue fluid therapy until handover at ED**

**ECG & SpO2 monitoring**

**Special Authorisation:**
Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation.

**Reference:**
American Academy of Pediatrics, 2000, Pediatric Education for Prehospital Professionals, Jones and Bartlett.
SECTION 7 - PAEDIATRIC EMERGENCIES

Pain Management – Paediatric (≤ 13 years)

The general principle in pain management is to start at the bottom rung of the pain ladder, and then to climb the ladder if pain is still present. Practitioners, depending on his/her scope of practice, may make a clinical judgement and commence pain relief on a higher rung.

Pain assessment

Administer pain medication based on pain assessment and pain ladder recommendations

Adequate relief of pain

Yes or best achievable

Go back to originating CPG

No

Reassess and move up the pain ladder if appropriate

Analogue Pain Scale

0 = no pain …… 10 = unbearable

Decisions to give analgesia must be based on clinical assessment and not directly on a linear scale

Wong – Baker Faces for 3 years and older


Reference: World Health Organization, Pain Ladder
Spinal Immobilisation – Paediatric (≤ 13 years)

Return head to neutral position unless on movement there is increase in Pain, Resistance or Neurological symptoms

Do not forcibly restrain a paediatric patient that is combative

Dangerous mechanism include:
- Fall ≥ 1 meter/ 5 steps
- Axial load to head
- MVC > 100 km/hr, rollover or ejection
- ATV collision
- Bicycle collision
- Pedestrian v vehicle

Use clinical judgement
If in doubt, immobilise

Dangers mechanism include;
- Fall ≥ 1 meter/ 5 steps
- Axial load to head
- MVC > 100 km/hr, rollover or ejection
- ATV collision
- Bicycle collision
- Pedestrian v vehicle

Low risk factors
- Simple rear end MVC (excluding push into oncoming traffic or hit by bus or truck)
- GCS = 15
- Communication effective (not intoxicated with alcohol or drugs)
- Absence of numbness, tingling or weakness in extremities
- Presence of low risk factors which allow safe assessment of range of motion
- Patient voluntarily able to rotate neck 45° left & right without pain
- Patient can walk without pain

Spinal Immobilisation - Paediatric (≤ 13 years)

Use extrication device
Patient in undamaged child seat
Immobilise in child seat

Immobilisation may not be indicated

Go to appropriate CPG

Spinal Immobilisation – Paediatric (≤ 13 years)

Rapid extrication with long board/ paediatric board and cervical collar

Yes

Life Threatening

Apply cervical collar

Patient in sitting position

Yes

Consider Vacuum mattress

Load onto vacuum mattress, paediatric board or long board

Use extrication device

Immobilise in child seat

Equipment list
- Extrication device
- Long board
- Vacuum mattress
- Orthopaedic stretcher
- Rigid cervical collar

References:
- Slack, S. & Clancy, M, 2004, Clearing the cervical spine of paediatric trauma patients, EMJ 21; 189-193

Pre-Hospital Emergency Care Council

PHECC Clinical Practice Guidelines – Advanced Paramedic
Burns – Paediatric (≤ 13 years)

- **Burn or Scald**
  - **Cease contact with heat source**
  - **Inhalation and/or facial injury**
    - Yes → **Airway management**
    - No → **Isolated superficial injury (excluding FHFP)**
  - **Commence local cooling of burn area**
  - **Consider humidified Oxygen therapy**
  - **Equipment list**
    - Acceptable dressings
    - Burns gel (caution for > 10% TBSA)
    - Cling film
    - Sterile dressing
    - Clean sheet
  - **Request ALS**
  - **Go to Inadequate Respirations CPG**

- **Equipment list**
  - Caution with the very young, circumferential & electrical burns

- **Special Authorisation:**
  - Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation

- **Reference:**
Return of Spontaneous Circulation

- Maintain Oxygen therapy
- Request ALS
- Unresponsive
  - Yes
    - Adequate ventilation
    - Yes
      - Commence active cooling
      - Maintain patient at rest
      - ECG & SpO2 monitoring
      - Monitor blood pressure and GCS
      - Check blood glucose
      - Monitor vital signs
      - Transport quietly and smoothly
  - No
    - Positive pressure ventilations
      - Max 12 to 20 per minute

- No

Consider causes and treat as appropriate:
- Hydrogen ion acidosis
- Hyper/hypokalaemia
- Hypothermia
- Hypovolaemia
- Hypoxia
- Thrombosis – pulmonary
- Tension pneumothorax
- Thrombus – coronary
- Tamponade – cardiac
- Toxins
- Trauma

Post-Resuscitation Care – Paediatric (≤ 13 years)

Reference: ILCOR Guidelines 2010
Irish (Major Emergency) terminology in black
UK (Major Incident) terminology in blue

Major Emergency (Major Incident) – First Practitioners on site

Take standard infection control precautions
Consider pre-arrival information
PPE (high visibility jacket and helmet) must be worn

Park at the scene as safety permits and in liaison with Fire & Garda if present
Leave blue lights on as vehicle acts as Forward Control Point pending the arrival of the Mobile Control Vehicle
Confirm arrival at scene with Ambulance Control and provide an initial visual report stating Major Emergency (Major Incident) Standby or Declared
Maintain communication with Practitioner 2
Leave the ignition keys in place and remain with vehicle
Carry out Communications Officer role until relieved

Carry out scene survey
Give situation report to Ambulance Control using METHANE message
Carry out HSE Controller of Operations (Ambulance Incident Officer) role until relieved
Liaise with Garda Controller of Operations (Police Incident Officer) and Local Authority Controller of Operations (Fire Incident Officer)
Select location for Holding Area (Ambulance Parking Point)
Set up key areas in conjunction with other Principle Response Agencies on site;
- Site Control Point (Ambulance Control Point),
- Casualty Clearing Station

If single Practitioner is first on site combine both roles until additional Practitioners arrive

The first ambulance crew does not provide care or transport of patients as this interferes with their ability to liaise with other services, to assess the scene and to provide continuous information as the incident develops

The principles and terminology of Major Incident Medical management and Support (MIMMS) has been used with the kind permission of the Advanced Life Support Group, UK
Major Emergency (Major Incident) – Operational Control

Traffic Cordon

Outer Cordon

Inner Cordon

Danger Area

- If Danger Area identified entry to Danger Area is controlled by a Senior Fire Officer or an Garda Síochána

Entry to Outer Cordon (Silver area) is controlled by an Garda Síochána

Entry to Inner Cordon (Bronze Area) is limited to personnel providing emergency care and or rescue. Personal Protective Equipment required

One way ambulance circuit

Other management functions for:
- Major Emergency site
- Casualty Clearing Officer
- Triage Officer
- Ambulance Parking Point Officer
- Ambulance Loading Point Officer
- Communications Officer
- Safety Officer

Management structure for:
- Inner Cordon, Operational Area (Bronze Area)
  - Forward Ambulance Incident Officer (Forward Ambulance Incident Officer)
  - Forward Medical Incident Officer (Forward Medical Incident Officer)
  - Fire Service Incident Commander (Forward Fire Incident Officer)
  - Garda Cordon Control Officer (Forward Police Incident Officer)

Management structure for:
- Outer Cordon, Tactical Area (Silver Area)
  - On-Site Co-ordinator
  - HSE Controller of Operations (Ambulance Incident Officer)
  - Site Medical Officer (Medical Incident Officer)
  - Local Authority Controller of Operations (Fire Incident Officer)
  - Garda Controller of Operations (Police Incident Officer)


The principles and terminology of Major Incident Medical management and Support (MIMMS) has been used with the kind permission of the Advanced Life Support Group, UK.
Triage is a dynamic process.

The principles and terminology of Major Incident Medical management and Support (MIMMS) has been used with the kind permission of the Advanced Life Support Group, UK.
### Cardiopulmonary function

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<th>Score</th>
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<td></td>
</tr>
<tr>
<td>10 – 29 / min</td>
<td>4</td>
</tr>
<tr>
<td>&gt; 29 / min</td>
<td>3</td>
</tr>
<tr>
<td>6 – 9 / min</td>
<td>2</td>
</tr>
<tr>
<td>1 – 5 / min</td>
<td>1</td>
</tr>
<tr>
<td>None</td>
<td>0</td>
</tr>
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<td>≥ 90 mm Hg</td>
<td>4</td>
</tr>
<tr>
<td>76 – 89 mm Hg</td>
<td>3</td>
</tr>
<tr>
<td>50 – 75 mm Hg</td>
<td>2</td>
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<tr>
<td>1 – 49 mm Hg</td>
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<tr>
<td>No BP</td>
<td>0</td>
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<td>4</td>
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<tr>
<td>6 – 8</td>
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<tr>
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<tr>
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<td>0</td>
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### Triage Revised Trauma Score

\[ \text{A} + \text{B} + \text{C} \]

### Triage Sort

### Multiple casualty incident

Triage is a dynamic process.

#### Respiration Rate

- 4
- 3
- 2
- 1
- 0

#### Systolic Blood Pressure

- 4
- 3
- 2
- 1
- 0

#### Glasgow Coma Scale

- 4
- 3
- 2
- 1
- 5
- 4
- 3
- 2
- 1

### Triage Revised Trauma Score

- 1 – 10
- 11
- 12
- 0

### Priority Levels

- **RED** (Immediate)
- **YELLOW** (Urgent)
- **GREEN** (Delayed)
- **DEAD**

The principles and terminology of Major Incident Medical management and Support (MIMMS) has been used with the kind permission of the Advanced Life Support Group, UK.
Monitor ECG & SpO2 for minimum 15 minutes

Cut wire connection proximal to barbs

Monitor ECG & SpO2 for minimum 15 minutes

Behavioural emergency

Yes

Go to Behavioural emergency CPG

No

Remove barbs
Clean and dress wounds

Monitor GCS, temperature & vital signs

Monitor for signs of Excited Delirium

Consider Oxygen therapy

Ensure Garda accompany patient at all times

Note:

This CPG was developed in conjunction with the Chief Medical Officer, An Garda Síochána

Reference:
United States Government Accountability Office, 2005, The use of Taser by selected law enforcement agencies
Manitoba health Emergency Medical Services, 2007 Taser Dart Removal Protocol
The Medication Formulary is published by the Pre-Hospital Emergency Care Council (PHECC) to enable pre-hospital emergency care Practitioners to be competent in the use of medications permitted under SI 512 of 2008 schedule 7. This is a summary document only and Practitioners are advised to consult with official publications to obtain detailed information about the medications used.

The Medication Formulary is recommended by the Medical Advisory Group (MAG) and ratified by the Clinical Care Committee (CCC) prior to publication by Council.

The medications herein may be administered provided:
1 The Practitioner is in good standing on the PHECC Practitioner’s Register.
2 The Practitioner complies with the Clinical Practice Guidelines (CPGs) published by PHECC.
3 The Practitioner is acting on behalf of an organisation (paid or voluntary) that is approved by PHECC to implement the CPGs.
4 The Practitioner is authorised, by the organisation on whose behalf he/she is acting, to administer the medications.
5 The Practitioner has received training on, and is competent in, the administration of the medication.
6 The medications are listed on the Medicinal Products Schedule 7.

The context for administration of the medications listed here is outlined in the CPGs. Every effort has been made to ensure accuracy of the medication doses herein. The dose specified on the relevant CPG shall be the definitive dose in relation to Practitioner administration of medications. The principle of titrating the dose to the desired effect shall be applied. The onus rests on the Practitioner to ensure that he/she is using the latest versions of CPGs which are available on the PHECC website www.phecc.ie

Sodium Chloride 0.9% (NaCl) is the IV/IO fluid of choice for pre-hospital emergency care.

All medication doses for patients (≤ 13 years) shall be calculated on a weight basis unless an age related dose is specified for that medication.

THE DOSE FOR PAEDIATRIC PATIENTS MAY NEVER EXCEED THE ADULT DOSE.

Paediatric weight calculations acceptable to PHECC are;
• (age x 3) + 7 Kg
• Length based resuscitation tape (Broselow® or approved equivalent)

Reviewed on behalf of PHECC by Prof Peter Weedle, Adjunct Professor of Clinical Pharmacy, School of Pharmacy, University College Cork.
This version contains 36 medications.
### AMENDMENTS TO THE 2012 VERSION INCLUDE:

<table>
<thead>
<tr>
<th>Medication</th>
<th>Additional Information</th>
</tr>
</thead>
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<tr>
<td><strong>CLOPIDOGREL</strong></td>
<td>Special authorisation: Paramedics are authorised to administer Clopidogrel PO following identification of STEMI and medical practitioner instruction.</td>
</tr>
<tr>
<td><strong>DIAZEPAM INJECTION</strong></td>
<td>Shock. Depressed vital signs or alcohol related altered level of consciousness.</td>
</tr>
<tr>
<td><strong>DIAZEPAM RECTAL SOLUTION</strong></td>
<td>Shock. Depressed vital signs or alcohol related altered level of consciousness.</td>
</tr>
<tr>
<td><strong>MIDAZOLAM SOLUTION</strong></td>
<td>Respiratory depression.</td>
</tr>
<tr>
<td><strong>MORPHINE</strong></td>
<td>0.3 mg/Kg (300 mcg/Kg). 0.3 mg/Kg (100 mcg/Kg)</td>
</tr>
<tr>
<td><strong>TENECTEPLASE POWDER FOR INJECTION</strong></td>
<td>(medical practitioner discretion if &gt; 75 years). MI Symptoms &gt; 20 Min &amp; ≤ 6 hours.</td>
</tr>
</tbody>
</table>
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<td>Magnesium Sulphate injection</td>
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<td>Naloxone</td>
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<td>Nitrous Oxide 50% and Oxygen 50%</td>
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## APPENDIX 1 - MEDICATION FORMULARY

### AMIODARONE

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<th><strong>CLASS</strong></th>
<th><strong>Antiarrhythmic agent.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESCRIPTIONS</strong></td>
<td>Class III antiarrhythmic agent used to treat ventricular arrhythmias.</td>
</tr>
<tr>
<td><strong>PRESENTATION</strong></td>
<td>150 mg in 3 mL solution. Pre-filled syringes 10 mL (30 mg/mL).</td>
</tr>
<tr>
<td><strong>ADMINISTRATION</strong></td>
<td>Intravenously (IV). Intraosseous (IO). (CPG: 4/5/6.4.7, 4/5/6.4.8).</td>
</tr>
<tr>
<td><strong>INDICATIONS</strong></td>
<td>Ventricular Fibrillation (VF) and Pulseless Ventricular Tachycardia (VT).</td>
</tr>
<tr>
<td><strong>CONTRAINDICATIONS</strong></td>
<td>Known severe adverse reaction, Known hypersensitivity to Iodine.</td>
</tr>
<tr>
<td><strong>USUAL DOSAGES</strong></td>
<td><strong>Adult:</strong> VF/VT: 5 mg/Kg IV/IO. (loading dose for cardiac arrest; 300 mg and one supplemental dose 150 mg). <strong>Paediatric:</strong> 5 mg/Kg IV/IO.</td>
</tr>
<tr>
<td><strong>PHARMACOLOGY/ACTION</strong></td>
<td><strong>Antiarrhythmic</strong> Prolongs the action potential. Prolongs the refractory period. Prolongs atrioventricular conduction. Prolongs QT interval.</td>
</tr>
<tr>
<td><strong>SIDE EFFECTS</strong></td>
<td>Inflammation of peripheral veins. Bradycardia. AV conducting abnormalities.</td>
</tr>
<tr>
<td><strong>ADDITIONAL INFORMATION</strong></td>
<td>If diluted mix with Dextrose 5% May be flushed with NaCl</td>
</tr>
</tbody>
</table>
CLINICAL LEVEL: [CFR - A] [EFR] [EMT] [P] [AP]

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>ASPIRIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Platelet aggregator inhibitor.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>Anti-inflammatory agent and an inhibitor of platelet function. Useful agent in the treatment of various thromboembolic diseases such as acute myocardial infarction.</td>
</tr>
<tr>
<td>Presentation</td>
<td>300 mg soluble tablet.</td>
</tr>
<tr>
<td>Administration</td>
<td>Orally (PO) - If soluble, disperse in water. If not solublt, to be chewed. (CPG: 5/6.4.16, 4.4.16, 1/2/3.4.16).</td>
</tr>
<tr>
<td>Indications</td>
<td>Cardiac chest pain or suspected Myocardial Infarction.</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>Active symptomatic gastrointestinal (GI) ulcer. Bleeding disorder (e.g. haemophilia). Known severe adverse reaction. Patients &lt; 16 years old.</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td><strong>Adult:</strong> 300 mg tablet. <strong>Paediatric:</strong> Not indicated.</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>Antithrombotic. Inhibits the formation of thromboxane A2, which stimulates platelet aggregation and artery constriction. This reduces clot/thrombus formation in an MI.</td>
</tr>
<tr>
<td>Long term effects</td>
<td>Generally mild and infrequent but incidence of gastro-intestinal irritation with slight asymptomatic blood loss, increased bleeding time, bronchospasm and skin reaction in hypersensitive patients.</td>
</tr>
<tr>
<td>Additional information</td>
<td>Aspirin 300 mg is indicated for cardiac chest pain regardless if patient is on anti coagulants or is already on aspirin. If the patient has swallowed an aspirin (enteric coated) preparation without chewing it, the patient should be regarded as not having taken any aspirin; administer 300 mg PO.</td>
</tr>
</tbody>
</table>
### APPENDIX 1 - MEDICATION FORMULARY

**CLINICAL LEVEL:** AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>ATROPINE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Anticholinergic (parasympatholytic).</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Parasympatholytic (Anticholinergic) that is derived from parts of the <em>Atropa belladonna</em> plant.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Pre-filled disposable syringe 1 mg/10 mL. Ampoule 0.6 mg in 1 mL</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV). Intraosseous (IO). (CPG: 5/6.4.14, 4/5/6.4.17, 6.4.23).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td><strong>Adult:</strong> Symptomatic bradycardia. Organophosphate poison. <strong>Paediatric:</strong> (CPG not published) Organophosphate poison.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Known severe adverse reaction.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> Organophosphate poison -1 mg IV, Repeat at 3-5 min intervals to ensure minimal salivary secretions. Symptomatic Bradycardia – 0.5 mg (500 mcg) IV. Repeat at 3-5 min intervals to Max 3 mg. <strong>Paediatric:</strong> Not indicated.</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td><strong>Anticholinergic agent</strong> Blocks acetylcholine receptors. - enhances SA node automaticity - enhance AV node conduction - increases heart rate</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Tachycardia. Dry mouth. Dilated pupils.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Accidental exposure to the eye causes blurred vision.</td>
</tr>
</tbody>
</table>
### Benzylpenicillin

**Class:** Antibiotic, Antibacterial.

**Descriptions:** Benzylpenicillin is an antibiotic agent.

**Presentation:** 600 mg powder in vial for reconstitution.

**Administration:** Intravenous (IV) or Intraosseous (IO). May give by intramuscular (IM) injection if no IV access.

- **IV/IO:** Reconstitute each 600 mg vial with 4 mL of water for injection and give by slow IV injection (i.e. over 3-5 min).
- **IM:** Reconstitute each 600 mg vial with 2 mL of water for injection.

(CPG: 5/6.4.21, 5/6.7.12).

**Indications:** Suspected or confirmed meningococcal sepsis.

**Contra-Indications:** Known severe adverse reaction.

**Usual Dosages:**
- **Adult:** 1 200 mg IV, IO or IM.
- **Paediatric:**
  - >8 yrs: 1 200 mg IV, IO or IM.
  - 1-8 yrs: 600 mg IV, IO or IM.
  - <1 yr: 300 mg IV, IO or IM.

**Pharmacology/Action:** Antibacterial. Gram positive cocci antibiotic.

**Side effects:** Gastro intestinal disturbances. Hypersensitivity reactions.

**Additional information:** Also called Penicillin G.
## APPENDIX 1 - MEDICATION FORMULARY

### CLINICAL LEVEL:

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>CLOPIDOGREL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Platelet aggregation inhibitor.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>An inhibitor of platelet function.</td>
</tr>
</tbody>
</table>
| Presentation | 300 mg tablet.  
               | 75 mg tablet. |
| Administration| Orally (PO).  
               | (CPG: 5/6.4.16). |
| Indications  | Identification of ST Elevation Myocardial Infarction (STEMI). |
| Contra-Indications | Known severe adverse reaction.  
                     | Active pathological bleeding.  
                     | Severe liver impairment. |
| Usual Dosages| **Adult:** 600 mg PO.  
               | > 75 years: 75 mg PO.  
               | **Paediatric:** Not indicated. |
| Pharmacology/Action | Clopidogrel selectively inhibits the binding of adenosine diphosphate (ADP) to its platelet receptor, and the subsequent ADP-mediated activation of the GPIIb/IIIa complex, thereby inhibiting platelet aggregation. Biotransformation of Clopidogrel is necessary to produce inhibition of platelet aggregation. Clopidogrel acts by irreversibly modifying the platelet ADP receptor. |
| Side effects | Abdominal pain, Dyspepsia, Diarrhoea. |
| Additional information | Special authorisation: Paramedics are authorised to administer Clopidogrel PO following identification of STEMI and medical practitioner instruction. |
**APPENDIX 1 - MEDICATION FORMULARY**

**CLINICAL LEVEL:** AP

<table>
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<tr>
<th>MEDICATION</th>
<th>CYCLIZINE</th>
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<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Anti-emetic.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Used in management of nausea &amp; vomiting.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Ampoule 50 mg in 1 mL.</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV). Intraosseous (IO). (CPG: 4/5/6.2.6, 6.4.30).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Management, prevention and treatment of nausea &amp; vomiting.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Known severe adverse reaction.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 50 mg slow IV/IO. <strong>Paediatric:</strong> Not indicated</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Anti-emetic.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Tachycardia. Dry Mouth. Sedation.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>IM route should only be utilised where IV or IO access is not available.</td>
</tr>
<tr>
<td>MEDICATION</td>
<td>DEXTROSE 10% SOLUTION</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Class</td>
<td>Carbohydrate.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>Dextrose is used to describe the six-carbon sugar d-glucose, which is the principal form of carbohydrate used by the body. D&lt;sub&gt;10&lt;/sub&gt;W is a hypertonic solution.</td>
</tr>
<tr>
<td>Presentation</td>
<td>Soft pack for infusion 250 mL and 500 mL</td>
</tr>
<tr>
<td>Administration</td>
<td>Intravenous (IV) infusion/bolus. Intraosseous (IO). Paramedic: maintain infusion once commenced. (CPG: 5/6.4.19, 5/6.7.9)</td>
</tr>
<tr>
<td>Indications</td>
<td>Hypoglycaemic emergency. Blood glucose level &lt; 4 mmol/L.</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>Known severe adverse reaction.</td>
</tr>
</tbody>
</table>
| Usual Dosages | **Adult:** 250 mL IV/IO infusion. Repeat x 1 prn.  
**Paediatric:** 5 mL/Kg IV/IO. Repeat X 1 prn. |
| Pharmacology/Action | Hypertonic glucose solution. Dextrose is a readily utilisable energy source. |
| Side effects | Necrosis of tissue around IV access. |
| Additional information | Also called Glucose. Cannula patency will reduce the effect of tissue necrosis. |
## Diazepam Injection

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<tr>
<th>MEDICATION</th>
<th>DIAZEPAM INJECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Benzodiazepine.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>It is a benzodiazepine that is used to terminate seizures.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>10 mg in 2 mL ampoule.</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV). Intraosseous (IO). (CPG: 5/6.4.20, 5/6.7.10).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Seizure.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Known severe adverse reaction. Respiratory depression. Shock Depressed vital signs or alcohol related altered level of consciousness</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 5 mg IV/IO. Repeat prn to Max 10 mg. <strong>Paediatric:</strong> 0.1 mg/Kg IV/IO. Repeat prn to Max 0.4 mg/Kg or 10 mg which ever is least.</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Benzodiazepine sedative Inhibits the firing of hyperexcitable neurones through enhancement of the action of the inhibitory transmitter, GABA. This results in CNS depressant, anticonvulsant, sedative and skeletal muscle relaxant effects.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Hypotension. Respiratory depression. Drowsiness and light-headedness (the next day).</td>
</tr>
<tr>
<td><strong>Long term side effects</strong></td>
<td>Confusion and ataxia (especially in the elderly), amnesia, dependence, paradoxical increase in aggression and muscle weakness.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Diazepam IV should be titrated to effect. The maximum dose of Diazepam includes that administered by caregiver prior to arrival of Practitioner.</td>
</tr>
</tbody>
</table>
## APPENDIX 1 - MEDICATION FORMULARY

### CLINICAL LEVEL:  

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<tr>
<th>MEDICATION</th>
<th>DIAZEPAM RECTAL SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Benzodiazepine.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>It is a benzodiazepine that is used to terminate seizures.</td>
</tr>
</tbody>
</table>
| Presentation | Rectal tube.  
Available as:  
2.5 mg/1.25 mL (2 mg/mL)  
5 mg/ 2.5 mL (2 mg/mL)  
10 mg/ 2.5 mL (4 mg/mL) |
| Administration | Per Rectum (PR).  
(CPG: 5/6.4.20, 5/6.7.10). |
| Indications | Seizure. |
| Contra-Indications | Known severe adverse reaction.  
Respiratory depression.  
Shock  
Depressed vital signs or alcohol related altered level of consciousness |
| Usual Dosages | **Adult:**  
10 mg PR.  
Repeat X 1 after 5 minutes if indicated.  
Max 20 mg PR.  
**Paediatric:**  
< 3 years:  
2.5 mg PR.  
3 to 7 years:  
5 mg PR.  
≥ 8 years:  
10 mg PR.  
Repeat all x 1 after 5 mins if seizure persists or reoccurs. |
| Pharmacology/Action | Benzodiazepine sedative  
Inhibits the firing of hyperexcitable neurones through enhancement of the action of the inhibitory transmitter, GABA.  
This results in CNS depressant, anticonvulsant, sedative and skeletal muscle relaxant effects. |
| Side effects | Hypotension.  
Respiratory depression.  
Drowsiness and light-headedness (the next day).  
Confusion and ataxia (especially in the elderly), amnesia, dependence, paradoxical increase in aggression and muscle weakness. |
| Long term side effects | Be aware of modesty of patient.  
Should be administered in the presence of a 2nd person.  
Egg and soya proteins are used in the manufacture of diazepam rectal solution, allergies to these proteins may be encountered.  
The maximum dose of Diazepam includes that administered by caregiver prior to arrival of Practitioner |
| Additional information |  |
### MEDICATION

**ENOXAPARIN SODIUM SOLUTION**

<table>
<thead>
<tr>
<th>Class</th>
<th>Anticoagulant.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptions</td>
<td>Enoxaparin is a Low Molecular Weight Heparin used in conjunction with a thrombolytic agent for the treatment of STEMI.</td>
</tr>
<tr>
<td>Presentation</td>
<td>Pre filled Syringes (100 mg/mL).</td>
</tr>
<tr>
<td>Administration</td>
<td>Intravenous (IV). (CPG: 5/6.4.16).</td>
</tr>
<tr>
<td>Indications</td>
<td>Acute ST-segment Elevation Myocardial Infarction (STEMI) immediately following the administration of a thrombolytic agent.</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>Active major bleeding disorders and conditions with a high risk of uncontrolled haemorrhage, including recent hemorrhagic stroke or subdural haematoma; in jaundice; active gastric or duodenal ulceration; hiatal ulceration; threatened abortion, or retinopathy. Hypersensitivity to Enoxaparin or other Low Molecular Weight Heparins. Known severe adverse reaction.</td>
</tr>
</tbody>
</table>
| Usual Dosages  | **Adult:** 30 mg IV bolus.  
**Paediatric:** Not indicated. |
| Pharmacology/Action | It binds to the natural inhibitor of coagulation, antithrombin III and makes certain clotting factors inactive. This results in an increase in the clotting time. |
| Side effects   | Pain, haematoma and mild local irritation may follow the subcutaneous injection. |
| Additional information | Do not store above 25°C.  
Do not refrigerate or freeze.  
**Medical Practitioners:** Due to the significant increased risk of intra-cerebral bleed for patients aged > 75 years **do not** administer IV Enoxaparin. Enoxaparin 0.75 mg/kg SC (Max 75 mg SC) is the recommended dose and route. |
### APPENDIX 1 - MEDICATION FORMULARY

**CLINICAL LEVEL:** AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>EPINEPHRINE (1:10 000)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Sympathetic agonist.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Naturally occurring catecholamine. It is a potent alpha and beta adrenergic stimulant; however, its effect on beta-receptors is more profound.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Pre-filled syringe. 1 mg/10 mL (1:10 000) as 0.1 mg/mL.</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV). Intraosseous (IO). (CPG: 4/5/6.4.3, 4/5/6.4.7, 4/5/6.4.8, 4/5/6.4.9, 5/6.4.10, 4/5/6.4.11, 4/5/6.4.12, 5/6.5.2).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Cardiac arrest. Paediatric bradycardia unresponsive to other measures.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Known severe adverse reaction.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> Cardiac arrest: 1 mg (1:10 000) IV/IO. Repeat every 3-5 mins. <strong>Paediatric:</strong> Cardiac arrest: 0.01 mg/Kg (10 mcg/Kg) (0.1 mL/Kg of 1:10 000) IV/IO. Repeat every 3-5 mins. Bradycardia: 0.01 mg/Kg (10 mcg/Kg) (0.1 mL/Kg of 1:10 000) IV/IO. Repeat every 3-5 mins.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>In non cardiac arrest patients - Palpitations - Tachyarrhythmias - Hypertension</td>
</tr>
<tr>
<td><strong>Additional Information</strong></td>
<td>N.B. Double check concentrations on pack before use.</td>
</tr>
</tbody>
</table>
### CLINICAL LEVEL: EMT P AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>EPINEPHRINE (1:1 000)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Sympathetic agonist.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Naturally occurring catecholamine. It is a potent alpha and beta adrenergic stimulant; however, its effect on beta receptors is more profound.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Pre-filled syringe, ampoule or auto injector (for EMT use). 1 mg/1 mL (1:1 000).</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intramuscular (IM). (CPG: 5/6.4.18, 5/6.7.8, 4.4.18, 4.7.8).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Severe anaphylaxis.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>None known.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 0.5 mg (500 mcg) IM (0.5 mL of 1:1 000). EMT use auto injector (0.3 mg). Repeat every 5 minutes if indicated. <strong>Paediatric:</strong> 0.05 mg (50 mcg) IM (0.05 mL of 1:1 000). 6 months to 5 years: 0.125 mg (125 mcg) IM (0.13 mL of 1:1 000). 6 to 8 years: 0.25 mg (250 mcg) IM (0.25 mL of 1:1 000). &gt;8 years: 0.5 mg (500 mcg) IM (0.5 mL of 1:1 000). <strong>EMT:</strong> for 6 months &lt;10 years use EpiPen® Jr (0.15 mg). for ≥ 10 years use auto injector (0.3 mg). Repeat every 5 minutes if indicated.</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Alpha and beta adrenergic stimulant. Reversal of laryngeal oedema &amp; bronchospasm in anaphylaxis. Antagonises the effects of histamine.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Palpitations. Tachyarrhythmias. Hypertension. Angina like symptoms.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>N.B. Double check the concentration on pack before use.</td>
</tr>
</tbody>
</table>
### Medication Formulary

<table>
<thead>
<tr>
<th>Medication</th>
<th>Furosemide Injection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Diuretic.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>A loop diuretic.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>10 mg per mL. 2 mL, 5 mL and 25 mL per ampoule.</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV). (CPG: 5/6.3.2).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Pulmonary oedema.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Pregnancy, hypokalaemia. Known severe adverse reaction.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td>Adult: 40 mg IV. Paediatric: Not indicated.</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Acts on the ascending loop of Henle by inhibiting the reabsorption of chloride and sodium ions into the interstitial fluid. This results in a relative hypertonic state. Water is therefore retained in the loop and eliminated via the bladder. It also causes venodilation which reduces venous return to the heart.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Headache, dizziness, hypotension, arrhythmias, transient deafness, diarrhoea, nausea &amp; vomiting.</td>
</tr>
<tr>
<td><strong>Long term side effects</strong></td>
<td>Hyperuricaemia, gout, hypokalaemia and hyperglycaemia</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Furosemide should be protected from light.</td>
</tr>
</tbody>
</table>
**APPENDIX 1 - MEDICATION FORMULARY**

### MEDICATION: GLUCAGON

<table>
<thead>
<tr>
<th>Class</th>
<th>Hormone and Antihypoglycaemic.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptions</strong></td>
<td>Glucagon is a protein secreted by the alpha cells of the Islets of Langerhans in the pancreas. It is used to increase the blood glucose level in cases of hypoglycaemia in which an IV cannot be immediately placed.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>1 mg vial powder and solution for reconstitution (1 mL).</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intramuscular (IM). (CPG: 5/6.19, 5/6.7.9, 4.4.19, 4.7.9).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Hypoglycaemia in patients unable to take oral glucose or unable to gain IV access with a blood glucose level &lt; 4 mmol/L.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Known severe adverse reaction. Phaeochromocytoma.</td>
</tr>
</tbody>
</table>
| **Usual Dosages**   | **Adult:** 1 mg IM.  
**Paediatric:** ≤ 8 years: 0.5 mg (500 mcg) IM. >8 years: 1 mg IM. |
| **Pharmacology/Action** | Glycogenolysis. Increases plasma glucose by mobilising glycogen stored in the liver. |
| **Side effects**    | Rare, may cause hypotension, dizziness, headache, nausea & vomiting. |
| **Additional information** | May be ineffective in patients with low stored glycogen e.g. prior use in previous 24 hours, alcoholic patients with liver disease. Protect from light. |
## APPENDIX 1 - MEDICATION FORMULARY

**CLINICAL LEVEL:** EFR EMT P AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>GLUCOSE GEL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Antihypoglycaemic.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Synthetic glucose paste.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Glucose gel in a tube or sachet.</td>
</tr>
</tbody>
</table>
| **Administration** | Buccal administration:  
Administer gel to the inside of the patient's cheek and gently massage the outside of the cheek.  
(CPG: 5/6.4.19, 5/6.7.9, 4.4.19, 4.7.9, 2/3.4.19). |
| **Indications**  | Hypoglycaemia.  
Blood glucose < 4 mmol/L.  
EFR – Known diabetic with confusion or altered levels of consciousness. |
| **Contra-Indications** | Known severe adverse reaction.                                                                 |
| **Usual Dosages** | **Adult:** 10 – 20 g buccal.  
Repeat prn.  
**Paediatric:** ≤ 8 years: 5 – 10 g buccal.  
>8 years: 10 – 20 g buccal.  
Repeat prn. |
| **Pharmacology/Action** | Increases blood glucose levels.                                                                  |
| **Side effects** | May cause vomiting in patients under the age of five if administered too quickly.               |
| **Additional information** | Glucose gel will maintain glucose levels once raised but should be used secondary to Dextrose or Glucagon to reverse hypoglycaemia.  
Proceed with caution:  
- patients with airway compromise.  
- altered level of consciousness. |
# Glyceryl Trinitrate (GTN)

<table>
<thead>
<tr>
<th>CLASS</th>
<th>Nitrate.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESCRIPTIONS</td>
<td>Special preparation of Glyceryl trinitrate in an aerosol form that delivers precisely 0.4 mg of Glyceryl trinitrate per spray.</td>
</tr>
<tr>
<td>PRESENTATION</td>
<td>Aerosol spray: metered dose 0.4 mg (400 mcg).</td>
</tr>
<tr>
<td>ADMINISTRATION</td>
<td>Sublingual (SL): Hold the pump spray vertically with the valve head uppermost. Place as close to the mouth as possible and spray under the tongue. The mouth should be closed after each dose. (CPG: 5/6.3.2, 5/6.4.16, 4.4.16, 1/2/3.4.16).</td>
</tr>
<tr>
<td>INDICATIONS</td>
<td>Angina. Suspected Myocardial Infarction (MI). EFRs may assist with administration. Advanced Paramedic and Paramedic - Pulmonary oedema.</td>
</tr>
<tr>
<td>CONTRAINDICATIONS</td>
<td>SBP &lt; 90 mmHg. Viagra or other phosphodiesterase type 5 inhibitors (Sildenafil, Tadalafil and Vardenafil) used within previous 24 hours. Known severe adverse reaction.</td>
</tr>
<tr>
<td>USUAL DOSAGES</td>
<td><strong>ADULT:</strong> Angina or MI: 0.4 mg (400 mcg) Sublingual. Repeat at 3-5 min intervals, Max 1.2 mg. EFRs: 0.4 mg sublingual max. Pulmonary oedema: 0.8 mg (800 mcg) sublingual. Repeat x 1. <strong>PEDIATRIC:</strong> Not indicated.</td>
</tr>
<tr>
<td>PHARMACOLOGY/ACTION</td>
<td>Vasodilator. Releases nitric oxide which acts as a vasodilator. Dilates coronary arteries particularly if in spasm increasing blood flow to myocardium. Dilates systemic veins reducing venous return to the heart (pre load) and thus reduces the heart workload. Reduces BP.</td>
</tr>
<tr>
<td>ADDITIONAL INFORMATION</td>
<td>If the pump is new or it has not been used for a week or more the first spray should be released into the air.</td>
</tr>
</tbody>
</table>
## APPENDIX 1 - MEDICATION FORMULARY

### HARTMANN'S SOLUTION

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>HARTMANN'S SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Isotonic crystalloid solution.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Hartmann's solution is an isotonic crystalloid solution containing Sodium chloride 0.6%, Sodium lactate 0.25%, Potassium chloride 0.04%, Calcium chloride 0.027%.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>500 mL &amp; 1000 mL Soft pack for infusion.</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV) infusion. Intraosseous (IO) infusion. <strong>Paramedic</strong>: maintain infusion once commenced. (CPG: 5/6.4.18, 5/6.4.21, 4/5/6.4.26, 5/6.6.2, 5/6.7.8, 5/6.7.12, 5/6.7.13).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>When NaCl is unavailable it may be substituted with Hartmann’s Solution IV/IO, except for crush injuries, burns, renal failure and hyperglycaemia.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Known severe adverse reaction.</td>
</tr>
</tbody>
</table>
| **Usual Dosages** | **Adult:**
- **Anaphylaxis**: 1000 mL IV/IO infusion, repeat x one
- **Decompression illness**: 500 mL IV/IO infusion.
- **Shock**: 500 mL IV/IO infusion. Repeat in aliquots of 250 mL prn to maintain systolic BP of:
  - 100 mmHg (hypovolaemia or septic).
  - 90 – 100 mmHg (head injury GCS > 8)
  - 120 mmHg (head injury GCS ≤ 8)
**Paediatric:**
- **Anaphylaxis**: 20 mL/Kg IV/IO infusion, repeat x one
- **Haemorrhagic shock**: 10 mL/Kg IV/IO, repeat prn if signs of inadequate perfusion. |
| **Pharmacology/Action** | Increases extracellular volume. |
| **Side effects** | If administered in large amounts may cause oedema. |
| **Additional information** | Observe caution with patients with history of heart failure
Also called: Sodium Lactate Intravenous Solution or Compound Ringer Lactate Solution for Injection
Warm fluids prior to administration if possible. |
## Clinical Level: AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Hydrocortisone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Corticosteroid and anti-inflammatory</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Hydrocortisone is a potent corticosteroid with anti-inflammatory properties.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Powder and solvent for solution for injection or infusion. Vial containing off-white powder and vial containing water for injections. Prepare the solution aseptically by adding not more than 2 mL of Sterile Water for Injections to the contents of one 100 mg vial, shake and withdraw for use.</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV) infusion. Intramuscular (IM). The preferred route for initial emergency use is intravenous. (CPG: 5/6.3.3, 5/6.4.18, 5/6.7.8)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Severe or recurrent anaphylactic reactions. Patients with asthma following an anaphylactic reaction. Exacerbation of COPD.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>No major contraindications in acute management of anaphylaxis.</td>
</tr>
</tbody>
</table>
| **Usual Dosages** | Adult: 200 mg IM or slow IV (over 1 to 10 minutes)  
Paediatric:  
< 1 year: 25 mg IM or slow IV (over 1 to 10 minutes)  
1 to 5 years: 50 mg IM or slow IV (over 1 to 10 minutes)  
6 to 12 years: 100 mg IM or slow IV (over 1 to 10 minutes)  
>12 years: 130 mg IM or slow IV (over 1 to 10 minutes) |
| **Pharmacology/Action** | Potent anti-inflammatory properties and inhibit many substances that cause inflammation. The half life is 90 minutes. |
| **Side effects** | CCF, hypertension, abdominal distension, vertigo, headache, nausea, malaise and hiccups. |
| **Long term side effects** | Adrenal cortical atrophy develops during prolonged therapy and may persist for months after stopping treatment. |
| **Additional information** | Intramuscular injection should avoid the deltoid area because of the possibility of tissue atrophy. Dosage should not be less than 25 mg. |
**APPENDIX 1 - MEDICATION FORMULARY**

**CLINICAL LEVEL:** P AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>IBUPROFEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Non-Steroidal Anti-Inflammatory Drugs (NSAIDs).</td>
</tr>
<tr>
<td>Descriptions</td>
<td>It is used to reduce mild to moderate pain.</td>
</tr>
<tr>
<td>Presentation</td>
<td>Suspension 100 mg in 5 mL. 200 mg tablet.</td>
</tr>
<tr>
<td>Administration</td>
<td>Orally (PO). (CPG: 4/5/6.2.6, 4/5/6.7.14).</td>
</tr>
<tr>
<td>Indications</td>
<td>Mild to moderate pain.</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td>Adult: 400 mg PO. Paediatric: 10 mg/Kg PO.</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>Suppresses prostaglandins, which cause pain via its inhibition of cyclooxygenase (COX). Prostaglandins are released by cell damage and inflammation.</td>
</tr>
<tr>
<td>Side effects Long term side effects</td>
<td>Skin rashes, gastrointestinal intolerance and bleeding. Occasionally gastrointestinal bleeding and ulceration occurs. May also cause acute renal failure, interstitial nephritis and nephritic syndrome.</td>
</tr>
<tr>
<td>Additional information</td>
<td>If Ibuprofen administered in previous 6 hours, adjust the dose downward by the amount given by other sources resulting in a maximum of 10 mg/Kg.</td>
</tr>
</tbody>
</table>
### Appendix 1 - Medication Formulary

**Clinical Level:** AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Ipratropium Bromide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Anticholinergic.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>It is a parasympatholytic bronchodilator that is chemically related to atropine.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>0.25 mg (250 micrograms) in 1 mL Nebuliser Solution.</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Nebulised (NEB) mixed with age specific dose of Salbutamol. (CPG: 5/6.3.2, 5/6.7.5).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Acute severe asthma not responding to initial Salbutamol dose.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Known severe adverse reaction.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 0.5 mg NEB. <strong>Paediatric:</strong> 0.25 mg NEB.</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>It blocks muscarinic receptors associated with parasympathetic stimulation of the bronchial air passageways. This results in bronchial dilation and reduced bronchial secretions.</td>
</tr>
<tr>
<td><strong>Side Effects</strong></td>
<td>Transient dry mouth, blurred vision, tachycardia and headache.</td>
</tr>
<tr>
<td><strong>Additional Information</strong></td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX 1 - MEDICATION FORMULARY

#### CLINICAL LEVEL: AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>LIDOCAINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Antiarrhythmic.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>Ventricular antiarrhythmic agent.</td>
</tr>
<tr>
<td>Presentation</td>
<td>Lidocaine Injection Mini jet 1% w/v 100 mg per 10 mL.</td>
</tr>
<tr>
<td>Indications</td>
<td>When Amiodarone is unavailable it may be substituted with Lidocaine.</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>No contraindications for cardiac arrest.</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td><strong>Adult:</strong> 1 – 1.5 mg/Kg IV. Max 3 mg/Kg. <strong>Paediatric:</strong> Not indicated.</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>Reduces automaticity by decreasing the rate of diastolic depolarisation. Stabilises the neuronal membrane and prevents the initiation and transmission of nerve impulses, action is rapid and blockade may last up to 2 hours.</td>
</tr>
<tr>
<td>Side effects</td>
<td>Drowsiness, dizziness, twitching, paraesthesia, convulsions, Bradycardia. Respiratory depression.</td>
</tr>
<tr>
<td>Additional information</td>
<td>Lidocaine may not be administered if Amiodarone has been administered.</td>
</tr>
</tbody>
</table>
CLINICAL LEVEL: AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>LORAZEPAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Benzodiazepine.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>It is an anxiolytic used as a sedative.</td>
</tr>
<tr>
<td>Presentation</td>
<td>1 mg tablet.</td>
</tr>
<tr>
<td>Administration</td>
<td>Orally (PO). (CPG: 6.4.29)</td>
</tr>
<tr>
<td>Indications</td>
<td>Combative with hallucinations or paranoia &amp; risk to self or others.</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>History of sensitivity to benzodiazepines. Severe hepatic or pulmonary insufficiency. Suspected significant alcohol and or sedatives ingested. Known severe adverse reaction.</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td><strong>Adults:</strong> 2 mg PO. <strong>Paediatric:</strong> Not indicated.</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>Acts on CNS receptors to potentiate the inhibitory action of GABA.</td>
</tr>
<tr>
<td>Side effects</td>
<td>Drowsiness, confusion headache, dizziness, blurred vision &amp; nausea/vomiting. On rare occasions – hypotension, hypertension.</td>
</tr>
</tbody>
</table>
| Additional information | }
### MEDICATION FORMULARY

**CLINICAL LEVEL:** AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>MAGNESIUM SULPHATE INJECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Electrolyte and Tocolytic agent.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>It is a salt that is an essential element in numerous biochemical reactions that occur within the body.</td>
</tr>
<tr>
<td>Presentation</td>
<td>5 g in 10 mL ampoule.</td>
</tr>
<tr>
<td>Administration</td>
<td>Intravenous (IV). Intraosseous (IO). (CPG: 5/6.3.2, 4/5/6.4.7).</td>
</tr>
<tr>
<td>Indications</td>
<td>Torsades de pointes. Persistent bronchospasm.</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>None in cardiac arrest. Known severe adverse reaction.</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td><strong>Adults:</strong> Torsades de pointes: 2 g IV/IO infusion over 15 minutes. Persistent bronchospasm: 1.5 g IV/IO infusion over 20 minutes. <strong>Paediatric:</strong> Not indicated.</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>It acts as a physiological calcium channel blocker and blocks neuromuscular transmission.</td>
</tr>
<tr>
<td>Side effects</td>
<td>Decreased deep tendon reflexes, respiratory depression, bradycardia and hypothermia</td>
</tr>
<tr>
<td>Additional information</td>
<td>Dilute in 100 mL NaCl for infusion.</td>
</tr>
</tbody>
</table>
APPENDIX 1 - MEDICATION FORMULARY

CLINICAL LEVEL: P AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>MIDAZOLAM SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Benzodiazepine.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>It is a potent sedative agent. Clinical experience has shown Midazolam to be 3 to 4 times more potent per mg as Diazepam.</td>
</tr>
<tr>
<td>Presentation</td>
<td>10 mg in 2 mL ampoule or 10 mg in 5 mL ampoule. Buccal liquid 50 mg in 5 mL or 10 mg in 1 mL pre-filled syringe.</td>
</tr>
<tr>
<td>Indications</td>
<td>Seizures. Psychostimulant overdose. Hallucinations or paranoia.</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>Shock. Depressed vital signs or alcohol related altered level of consciousness. Known severe adverse reaction. Respiratory depression.</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td><strong>Adults:</strong> Seizure: 2.5 mg IV or 5 mg IM or 10 mg buccal or 5 mg intranasal (Repeat x 1 prn). Paramedic: IM, buccal or IN only. Psychostimulant overdose: 2.5 mg IV or 5 mg IM (Repeat x 2 prn). (AP only) Hallucinations or paranoia: 5 mg IV/IM. (AP only) <strong>Paediatric:</strong> Seizure: 0.5 mg/Kg buccal or 0.2 mg/Kg intranasal or 0.1 mg/Kg IV/IO (Repeat x 1 prn). Paramedic: buccal or IN only</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>It affects the activity of a chemical that transmits impulses across nerve synapses called Gamma-AminoButyric Acid (GABA). GABA is an inhibitory neurotransmitter. Midazolam works by increasing the effects of GABA at these receptors.</td>
</tr>
<tr>
<td>Side effects</td>
<td>Respiratory depression, headache, hypotension &amp; drowsiness.</td>
</tr>
<tr>
<td>Additional information</td>
<td>Midazolam IV should be titrated to effect. Ensure oxygen and resuscitation equipment are available prior to administration. The maximum dose of Midazolam includes that administered by caregiver prior to arrival of Practitioner.</td>
</tr>
</tbody>
</table>
### MORPHINE

<table>
<thead>
<tr>
<th>CLINICAL LEVEL:</th>
<th>AP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEDICATION</strong></td>
<td>MORPHINE</td>
</tr>
<tr>
<td><strong>Class</strong></td>
<td>Narcotic analgesic.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>CNS depressant and a potent analgesic with haemodynamic properties that make it extremely useful in emergency medicine.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Ampoule 10 mg in 1 mL (dilute in 9 mL of NaCl). Suspension (10 mg/5 ml).</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV). Intraosseous (IO). Orally (PO). Intramuscular (IM). (CPG: 4/5/6.2.6, 4/5/6.7.14)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td><strong>Adult:</strong> Severe pain (≥ 5 on pain scale). <strong>Paediatric:</strong> Severe pain (≥ 6 on pain scale).</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 2 mg IV/IO. Repeat at not &lt; 2 minute intervals if indicated to Max 10 mg. For musculoskeletal pain Max 16 mg. Up to 10 mg IM (if not cardiac chest pain and no IV access). <strong>Paediatric:</strong> 0.3 mg/Kg (300 mcg/Kg) PO (Max 10 mg). 0.05 mg/Kg (50 mcg/Kg) IV/IO. Repeat at not &lt; 2 min prn to Max of 0.1 mg/Kg IV/IO</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Opiate Analgesic Acts on Central Nervous System to reduce pain &amp; anxiety Vasodilatation resulting in reduced pre-load to myocardium.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Respiratory depression, Drowsiness, Nausea &amp; vomiting, Constipation.</td>
</tr>
<tr>
<td><strong>Long term side effects</strong></td>
<td>Long term use may lead to dependence.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Use with extreme caution particularly with elderly/young. Caution with acute respiratory distress. N.B. Controlled under Misuse of Drugs Act (1977, 1984)</td>
</tr>
</tbody>
</table>
**APPENDIX 1 - MEDICATION FORMULARY**

## CLINICAL LEVEL: P AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>NALOXONE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Narcotic antagonist.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Effective in management and reversal of overdoses caused by narcotics or synthetic narcotic agents.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Ampoules 0.4 mg in 1 mL (400 mcg /1 mL) or pre-loaded syringe.</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Respiratory rate &lt; 10 secondary to known or suspected narcotic overdose.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Known severe adverse reaction.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 0.4 mg (400 mcg) IV/IO/IM or SC. Repeat after 3 min if indicated to a Max 2 mg. (Paramedic repeat by one prn). <strong>Paediatric:</strong> 0.01 mg/Kg (10 mcg/Kg) IV/IO/IM or SC. Repeat dose prn to maintain opioid reversal to Max 0.1 mg/Kg or 2 mg. (Paramedic repeat by one prn).</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Narcotic antagonist. Reverse the respiratory depression and analgesic effect of narcotics.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Acute reversal of narcotic effect ranging from nausea &amp; vomiting to agitation and seizures.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Use with caution in pregnancy. Administer with caution to patients who have taken large dose of narcotics or are physically dependent. Rapid reversal will precipitate acute withdrawal syndrome. Prepare to deal with aggressive patients.</td>
</tr>
<tr>
<td>MEDICATION</td>
<td>NIFEDIPINE</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Class</td>
<td>Tocolytic agent and calcium channel blocker</td>
</tr>
<tr>
<td>Descriptions</td>
<td>Dihydropyridine calcium channel blocker</td>
</tr>
<tr>
<td>Presentation</td>
<td>20 mg tablet.</td>
</tr>
<tr>
<td>Administration</td>
<td>Orally (PO). (CPG: 5/6.5.5).</td>
</tr>
<tr>
<td>Indications</td>
<td>Prolapsed cord.</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>Hypotension. Known severe adverse reaction.</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td><strong>Adults:</strong> 20 mg PO. <strong>Paediatric:</strong> Not indicated.</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>Inhibits muscle contraction by interfering with the movement of calcium ions through the slow channels of active cell membrane.</td>
</tr>
<tr>
<td>Additional information</td>
<td>Close monitoring of maternal pulse &amp; BP is required and continuous foetal monitoring should be carried out if possible.</td>
</tr>
</tbody>
</table>
## AppenId 1 - Medication Formulary

### Clinical Level: EMT - P - AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Nitrous Oxide 50% and Oxygen 50% (Entonox®)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Analgesic.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>Potent analgesic gas contains a mixture of both nitrous oxide and oxygen.</td>
</tr>
<tr>
<td>Presentation</td>
<td>Cylinder, coloured blue with white and blue triangles on cylinder shoulders. Medical gas: 50% Nitrous Oxide &amp; 50% Oxygen.</td>
</tr>
<tr>
<td>Administration</td>
<td>Self administered. Inhalation by demand valve with face-mask or mouthpiece. (CPG: 4/5/6.2.6, 4/5/6.7.14, 5/6.5.1, 5/6.5.6, 4.5.1).</td>
</tr>
<tr>
<td>Indications</td>
<td>Pain relief.</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td><strong>Adult:</strong> Self-administered until pain relieved. <strong>Paediatric:</strong> Self-administered until pain relieved.</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>Analgesic agent gas: - CNS depressant. - pain relief.</td>
</tr>
<tr>
<td>Side effects</td>
<td>Disinhibition. Decreased level of consciousness. Light headedness.</td>
</tr>
<tr>
<td>Additional information</td>
<td>Do not use if patient unable to understand instructions. In cold temperatures warm cylinder and invert to ensure mix of gases. Advanced Paramedics may use discretion with minor chest injuries. Brand name: Entonox®. Has an addictive property.</td>
</tr>
</tbody>
</table>
# APPENDIX 1 - MEDICATION FORMULARY

## CLINICAL LEVEL: AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>ONDANSETRON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Anti-emetic.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>Used in management of nausea &amp; vomiting. Potent, highly selective 5 HT3 receptor-antagonists.</td>
</tr>
<tr>
<td>Presentation</td>
<td>Ampoule 2 mL (4 mg in 2 mL).</td>
</tr>
<tr>
<td>Administration</td>
<td>Intravenous (IV). (CPG: 4/5/6.2.6, 6.4.30, 4/5/6.7.14).</td>
</tr>
<tr>
<td>Indications</td>
<td>Management, prevention and treatment of nausea &amp; vomiting</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>Known severe adverse reaction.</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td><strong>Adult:</strong> 4 mg slow IV. <strong>Paediatric:</strong> 0.1 mg/Kg IV slowly to a Max of 4 mg.</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>Precise mode of action in the control of nausea &amp; vomiting is not known.</td>
</tr>
<tr>
<td>Additional information</td>
<td></td>
</tr>
</tbody>
</table>
## APPENDIX 1 - MEDICATION FORMULARY

### CLINICAL LEVEL:

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>OXYGEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Gas.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>Odourless, tasteless, colourless gas necessary for life.</td>
</tr>
<tr>
<td>Presentation</td>
<td>D, E or F cylinders, coloured black with white shoulders. CD cylinder; white cylinder. Medical gas.</td>
</tr>
</tbody>
</table>
| Administration | Inhalation via:  
  - high concentration reservoir (non-rebreather) mask  
  - simple face mask  
  - venturi mask  
  - tracheostomy mask  
  - nasal cannulae  
  - Bag Valve Mask  
  (CPG: Oxygen is used extensively throughout the CPGs) |
| Indications | Absent/inadequate ventilation following an acute medical or traumatic event.  
  SpO₂ < 94% adults and < 96% paediatrics.  
  SpO₂ < 92% for patients with acute exacerbation of COPD. |
| Contra-Indications | Paraquat poisoning & Bleomycin lung injury. |
| Usual Dosages | **Adult:**  
  Cardiac and respiratory arrest: 100%.  
  Life threats identified during primary survey: 100% until a reliable SpO₂ measurement obtained then titrate O₂ to achieve SpO₂ of 94% - 98%.  
  For patients with acute exacerbation of COPD, administer O₂ titrate to achieve SpO₂ 92% or as specified on COPD Oxygen Alert Card.  
  All other acute medical and trauma titrate O₂ to achieve SpO₂ 94% -98%.  
  **Paediatric:**  
  Cardiac and respiratory arrest: 100%.  
  Life threats identified during primary survey: 100% until a reliable SpO₂ measurement obtained then titrate O₂ to achieve SpO₂ of 96% - 98%.  
  All other acute medical and trauma titrate O₂ to achieve SpO₂ of 96% - 98%. |
| Pharmacology/Action | Oxygenation of tissue/organs. |
| Side effects | Prolonged use of O₂ with chronic COPD patients may lead to reduction in ventilation stimulus. |
| Additional information | A written record must be made of what oxygen therapy is given to every patient. Documentation recording oximetry measurements should state whether the patient is breathing air or a specified dose of supplemental oxygen. Consider humidifier if oxygen therapy for paediatric patients is >30 minute duration. Avoid naked flames, powerful oxidising agent. |
## APPENDIX 1 - MEDICATION FORMULARY

### CLINICAL LEVEL: EMT P AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>PARACETAMOL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Analgesic and antipyretic.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Paracetamol is used to reduce pain and body temperature.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Rectal suppository 180 mg and 60 mg. Suspension 120 mg in 5 mL. 500 mg tablet.</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Per Rectum (PR). Orally (PO). (CPG: 4/5/6.2.6, 5/6.7.10, 4/5/6.7.14, 4.7.10).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Pyrexia following seizure for paediatric patients. Advanced Paramedics may administer Paracetamol, in the absence of a seizure for the current episode, provided the paediatric patient is pyrexial and has a previous history of febrile convulsions. Minor or moderate pain for adult and paediatric patients.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Known severe adverse reaction. Chronic liver disease.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 1 g PO. <strong>Paediatric:</strong> PR (AP Only) PO &lt; 1 year - 60 mg PR. 1-3 years - 180 mg PR. 4-8 years - 360 mg PR.</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Analgesic – central prostaglandin inhibitor. Antipyretic – prevents the hypothalamus from synthesising prostaglandin E, inhibiting the body temperature from rising further.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>None.</td>
</tr>
<tr>
<td><strong>Long term side effects</strong></td>
<td>Long term use at high dosage or over dosage can cause liver damage and less frequently renal damage.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Note: Paracetamol is contained in Paracetamol Suspension and other over the counter drugs. Consult with parent/guardian in relation to medication prior to arrival on scene. For PR use be aware of modesty of patient, should be administered in presence of a 2nd person. If Paracetamol administered in previous 4 hours, adjust the dose downward by the amount given by other sources resulting in a maximum of 20 mg/Kg.</td>
</tr>
</tbody>
</table>
### CLINICAL LEVEL: EFR EMT P AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>SALBUTAMOL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Sympathetic agonist.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Sympathomimetic that is selective for beta-2 adrenergic receptors.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Nebule 2.5 mg in 2.5 mL. Nebule 5 mg in 2.5 mL. Aerosol inhaler: metered dose 0.1 mg (100 mcg).</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Nebuliser (NEB). Inhalation via aerosol inhaler. Advanced Paramedics may repeat Salbutamol x 3. (CPG: 5/6.3.2, 5/6.3.3, 5/6.4.18, 4/5/6.6.7, 5/6.7.5, 5/6.7.8, 4.3.2, 4.4.18, 4.7.5, 4.7.8, 3.3.2, 3.7.5).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Bronchospasm. Exacerbation of COPD. Respiratory distress following submersion incident.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Known severe adverse reaction.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 5 mg NEB. Repeat at 5 min prn (APs x 3 and Ps x 1). (EMTs &amp; EFRs: 0.1 mg metered aerosol spray x 2). <strong>Paediatric:</strong> &lt; 5 yrs - 2.5 mg NEB. ≥ 5 yrs - 5 mg NEB. Repeat at 5 min prn (APs x 3 and Ps x 1). (EMTs &amp; EFRs: 0.1 mg metered aerosol spray x 2).</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Beta 2 agonist. Bronchodilation. Relaxation of smooth muscle.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Tachycardia. Tremors. Tachyarrhythmias.</td>
</tr>
<tr>
<td><strong>Long term side effects</strong></td>
<td>High doses may cause hypokalaemia.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>It is more efficient to use a volumizer in conjunction with an aerosol inhaler when administering Salbutamol. If an oxygen driven nebuliser is used to administer Salbutamol for a patient with acute exacerbation of COPD it should be limited to 6 minutes maximum.</td>
</tr>
</tbody>
</table>
## CLINICAL LEVEL: AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>SODIUM BICARBONATE INJECTION BP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Alkalinizing agent.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>A salt that is an alkalinizing agent and electrolyte supplement.</td>
</tr>
<tr>
<td>Presentation</td>
<td>Glass vial 8.4% in 50 mL.</td>
</tr>
<tr>
<td>Administration</td>
<td>Intravenous (IV). (CPG: 4/5/6.4.7, 5/6.4.10, 4/5/6.4.11, 6.4.23).</td>
</tr>
<tr>
<td>Indications</td>
<td>Wide complex QRS arrhythmias and or seizures following Tricyclic (TCA) overdose. Cardiac arrest following Tricyclic overdose.</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>Known severe adverse reaction.</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td>Adult: 1 mEq/Kg (1mL/Kg 8.4% solution). Paediatric: Not indicated.</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>TCA excretion from the body is enhanced by making the urine more alkaline (raising the pH).</td>
</tr>
<tr>
<td>Side effects</td>
<td>Nil when used for emergencies.</td>
</tr>
<tr>
<td>Additional information</td>
<td></td>
</tr>
</tbody>
</table>
### CLINICAL LEVEL:

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>SODIUM CHLORIDE 0.9% (NaCl)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Isotonic crystalloid solution.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Solution of sodium and chloride, also known as normal saline (NaCl).</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>100 mL, 500 mL &amp; 1000 mL soft pack for infusion. 10 mL ampoules.</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>IV/IO fluid for pre-hospital emergency care.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Known severe adverse reaction.</td>
</tr>
</tbody>
</table>
| **Usual Dosages** | **Adult:**  
- Anaphylaxis: 1000 mL IV/IO infusion, repeat x one.  
- Burns > 10% TBSA consider 500 mL IV/IO infusion.  
- > 25% TBSA and or 1 hour from time of injury to ED, 1000 mL IV/IO infusion.  
- Crush injury: 20 mL/Kg IV/IO infusion.  
- Decompression illness: 500 mL IV/IO infusion.  
- Glycaemic emergency: 1000 mL IV/IO infusion.  
- Hypothermia: 250 mL IV/IO infusion (warmed to 40°C approx) max 1 L.  
- Keep vein open (KVO) or medication flush for cardiac arrest prn.  
- Post-resuscitation care: 500 mL IV/IO infusion (at 4°C approx). If persistent hypotensive maintain Sys BP > 90 mmHg.  
- Shock: 500 mL IV/IO infusion. Repeat in aliquots of 250 mL prn to maintain systolic BP of:  
  - 100 mmHg (hypovolaemia or septic).  
  - 90 – 100 mmHg (head injury GCS > 8).  
  - 120 mmHg (head injury GCS ≤ 8).  
- Cardiac Arrest: 20 mg/Kg IV  
**Paediatric:**  
- Anaphylaxis: 20 mL/Kg IV/IO bolus, repeat x one.  
- Burns > 10% TBSA and or 1 hour from time of injury to ED:  
  - 5 ≤ 10 years: 250 mL IV/IO, > 10 years: 500 mL IV/IO.  
- Crush injury: 20 mL/Kg IV/IO bolus.  
- Glycaemic emergency: 20 mL/Kg IV/IO bolus.  
- Haemorrhagic shock: 10 mL/Kg IV/IO, repeat prn if signs of inadequate perfusion.  
- Hypothermia: 20 mL/Kg IV/IO infusion (warmed to 40°C approx).  
- Keep vein open (KVO) or medication flush for cardiac arrest prn.  
- Neonatal resuscitation: 10 mL/Kg IV/IO.  
- Post-resuscitation care: 20 mL/Kg IV/IO infusion if persistent poor perfusion.  
- Shock: 20 mL/Kg IV/IO infusion.  
- Cardiac Arrest: 20 mg/Kg IV |
| **Pharmacology/Action** | Isotonic crystalloid solution. Fluid replacement. |
| **Side effects** | Excessive volume replacement may lead to heart failure. |
| **Additional information** | NaCl is the IV/IO fluid of choice for pre-hospital emergency care. For KVO use 500 mL pack only. |
## APPENDIX 1 - MEDICATION FORMULARY

### CLINICAL LEVEL: AP

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>SYNOTOMETRINE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Synthetic hormone.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Ergometrine maleate 0.5 mg and synthetic oxytocin 5 units per mL.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>1 mL ampoule.</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intramuscular (IM). (CPG: 5/6.5.4).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Control of post-partum haemorrhage.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Severe kidney, liver or cardiac dysfunction. Sepsis. Known severe adverse reaction.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 1 mL IM. <strong>Paediatric:</strong> Not indicated.</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Causes rhythmic contraction of uterine smooth muscle, thereby constricting uterine blood vessels.</td>
</tr>
<tr>
<td><strong>Additional Information</strong></td>
<td>Ensure that a second foetus is not in the uterus prior to administration.</td>
</tr>
</tbody>
</table>
## MEDICATION FORMULARY

### TENECTEPLASE POWDER FOR INJECTION

<table>
<thead>
<tr>
<th>Class</th>
<th>Thrombolytic agent.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptions</strong></td>
<td>A recombinant fibrin-specific plasminogen activator.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Powder and solvent for solution.</td>
</tr>
<tr>
<td>1 vial contains 10,000 units (50 mg) tenecteplase.</td>
<td></td>
</tr>
<tr>
<td>1 prefilled syringe contains 10 ml water for injections.</td>
<td></td>
</tr>
<tr>
<td>The reconstituted solution contains 1,000 units (5 mg) tenecteplase per mL.</td>
<td></td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV).</td>
</tr>
<tr>
<td>(CPG: 5/6.4.16).</td>
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<tr>
<td><strong>Indications</strong></td>
<td>Patient conscious, coherent and understands therapy.</td>
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<tr>
<td>Patient consent obtained.</td>
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<tr>
<td>Less than 75 years old (medical practitioner discretion if &gt; 75 years).</td>
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<tr>
<td>Confirmed STEMI.</td>
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<tr>
<td>MI Symptoms &gt; 20 Min &amp; ≤ 6 hours.</td>
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<tr>
<td>Time to PPCI centre &gt; 90 minutes of STEMI confirmation on 12 lead ECG.</td>
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<td><strong>Contra-Indications</strong></td>
<td>Haemorrhagic stroke or stroke of unknown origin at any time.</td>
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<tr>
<td>Ischemic stroke in previous 6 months.</td>
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<tr>
<td>Central nervous system damage or neoplasms.</td>
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<tr>
<td>Recent major trauma/ surgery/ head injury (within 3 weeks).</td>
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<tr>
<td>Gastro-intestinal bleeding within the last month.</td>
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<tr>
<td>Active peptic ulcer.</td>
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<tr>
<td>Known bleeding disorder.</td>
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<td>Oral anticoagulant therapy.</td>
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<td>Aortic dissection.</td>
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<tr>
<td>Transient ischaemic attack in preceding 6 months.</td>
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<tr>
<td>Pregnancy and within one week post partum.</td>
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<td>Non-compressible punctures.</td>
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<tr>
<td>Traumatic resuscitation.</td>
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<tr>
<td>Refractory hypertension (Sys BP &gt; 180 mmHg).</td>
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<tr>
<td>Advanced liver disease.</td>
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<tr>
<td>Infective endocarditis.</td>
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<td><strong>Usual Dosages</strong></td>
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<tr>
<td>Kg</td>
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<tr>
<td>&lt; 60</td>
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<tr>
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<tr>
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<td>≥ 80 &lt; 90</td>
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<tr>
<td>≥ 90</td>
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<td><strong>Paediatric:</strong></td>
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See over for more details
### MEDICATION FORMULARY

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<th>TENECTEPLASE POWDER FOR INJECTION</th>
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<td><strong>Pharmacology/Action</strong></td>
<td>Tenecteplase is a recombinant fibrin-specific plasminogen activator that is derived from native t-PA by modifications at three sites of the protein structure. It binds to the fibrin component of the thrombus (blood clot) and selectively converts thrombus-bound plasminogen to plasmin, which degrades the fibrin matrix of the thrombus.</td>
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<tr>
<td><strong>Side effects</strong></td>
<td>Haemorrhage predominantly superficial at the injection site. Ecchymoses are observed commonly but usually do not require any specific action. Stroke (including intracranial bleeding) and other serious bleeding episodes.</td>
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<tr>
<td><strong>Additional information</strong></td>
<td>Enoxaparin should be used as antithrombotic adjunctive therapy</td>
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**APPENDIX 2 - MEDICATION & SKILLS MATRIX**

**NEW FOR 2012:**

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<tr>
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<th>CFR – A</th>
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<th>EFR</th>
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<td>(Entonox ®)</td>
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*Care management including the administration of medications as per level of training and division on the PHECC Register and Responder levels.*

*Pre-Hospital Responders and Practitioners shall only provide care management including medication administration for which they have received specific training.*

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## APPENDIX 2 - MEDICATION & SKILLS MATRIX

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## APPENDIX 2 - MEDICATION & SKILLS MATRIX

### Medication

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### Airway & Breathing Management

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## APPENDIX 2 - MEDICATION & SKILLS MATRIX

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### Cardiac

- AED adult & paediatric
- CPR adult, child & infant
- Emotional support
- Recognise death and resuscitation not indicated
- 2-rescuer CPR
- Active cooling
- CPR newly born
- ECG monitoring (lead II)
- Mechanical assist CPR device
- 12 lead ECG
- Cease resuscitation
- Manual defibrillation

### Haemorrhage control

- Direct pressure
- Nose bleed
- Pressure points
- Tourniquet use

### Medication administration

- Oral
- Buccal route
- Per aerosol
### CLINICAL LEVEL

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### APPENDIX 2 - MEDICATION & SKILLS MATRIX

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### APPENDIX 2 - MEDICATION & SKILLS MATRIX

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CRITICAL INCIDENT STRESS AWARENESS

Your psychological well being
As a Practitioner/Responder it is extremely important for your psychological well being that you do not expect to save every critically ill or injured patient that you treat. For a patient who is not in hospital, whether they survive a cardiac arrest or multiple trauma depends on a number of factors including any other medical condition the patient has. Your aim should be to perform your interventions well and to administer the appropriate medications within your scope of practice. You are successful as a Practitioner/Responder if you follow your CPGs well. However sometimes you may encounter a situation which is highly stressful for you, giving rise to Critical Incident Stress (CIS).

A critical incident is an incident or event which may overwhelm or threaten to overwhelm our normal coping responses. As a result of this we can experience CIS. Symptoms of CIS include some or all of the following:

Examples of physical symptoms:
- Feeling hot and flushed, sweating a lot
- Dry mouth, churning stomach
- Diarrhoea and digestive problems
- Needing to urinate often
- Muscle tension
- Restlessness, tiredness, sleep difficulties, headaches
- Increased drinking or smoking
- Overeating, or loss of appetite
- Loss of interest in sex
- Racing heart, breathlessness and rapid breathing

Examples of psychological symptoms:
- Feeling overwhelmed
- Loss of motivation
- Dreading going to work
- Becoming withdrawn
- Racing thoughts
- Confusion
- Not looking after yourself properly
- Difficulty making decisions
- Poor concentration
- Poor memory
- Anger
- Anxiety
- Depression
POST-TRAUMATIC STRESS REACTIONS

Normally the symptoms listed above subside within a few weeks or less. Sometimes, however, they may persist and develop into a post-traumatic stress reaction and you may also experience the following emotional reactions:

**Anger** at the injustice and senselessness of it all.

**Sadness and depression** caused by an awareness of how little can be done for people who are severely injured and dying, sense of a shortened future, poor concentration, not being able to remember things as well as before.

**Guilt** caused by believing that you should have been able to do more or that you could have acted differently.

**Fear** of ‘breaking down’ or ‘losing control’, not having done all you could have done, being blamed for something or a similar event happening to you or your loved ones.

**Avoiding** the scene of the trauma or anything that reminds you of it.

**Intrusive thoughts** in the form of memories or flashbacks which cause distress and the same emotions as you felt at the time.

**Irritability** outbursts of anger, being easily startled and constantly being on guard for threats.

**Feeling numb** leading to a loss of your normal range of feelings, for example, being unable to show affection, feeling detached from others.

**Experiencing signs of excessive stress**

If the range of physical, emotional and behavioural signs and symptoms already mentioned do not reduce over time (for example, after two weeks), it is important that you get support and help.
APPENDIX 3 - CRITICAL INCIDENT STRESS MANAGEMENT

WHERE TO FIND HELP?

- Your own **CPG approved organisation** will have a support network or system. We recommend that you contact them for help and advice.

- Speak to your **GP**.

- See a **private counsellor** who has specialised in traumatic stress. (You can get names and contact numbers for these counsellors from your local co-ordinator or from the www.cism.ie).

- For a self-help guide, please go to the website: **www.cism.ie**

- The National Ambulance Service CISM committee has recently published a booklet called ‘Critical Incident Stress Management for Emergency Personnel’ and you can buy it by emailing info@cismnetworkireland.ie.

We would like to thank the National Ambulance Service CISM Committee for their help in preparing this section.
CPG UPDATES FOR ADVANCED PARAMEDICS 2012 VERSION

A policy decision has been made to publish new and updated clinical practice guidelines in April and October each year.

UPDATED CPGS FROM THE PREVIOUS VERSION.

<table>
<thead>
<tr>
<th>CPGS</th>
<th>THE PRINCIPAL DIFFERENCES ARE</th>
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| CPG 5/6.4.16 Acute Coronary Syndrome | • Cardiac Chest Pain – Acute Coronary Syndrome CPG has been renamed.  
• Medical practitioner discretion for thrombolysis has been clarified to apply to patients over 75 years old.  
• Paramedics have been given special authorisation to administer Clopidogrel PO following identification of STEMI and medical practitioner instruction.  
• The definitive care for patients with STEMI is primary PCI. The window of opportunity however is to present the patient at a primary PCI centre within 90 minutes of identification of STEMI. This procedure will be rolled out across the country over the next 12 to 18 months (please follow Medical Director/Advisor directives for implementation).  
• Pre-Hospital Thrombolysis is limited therefore to patients with STEMI who cannot be presented to a primary PCI centre within the required time frame. The ‘less than three hour symptoms’ rule no longer applies. |
| CPG 5/6.4.22 Stroke | • A typographical error indicated to go to ‘Hypoglycaemia’ CPG, which has been corrected to ‘Glycaemic Emergency’ CPG. |
| CPG 6.4.29 Mental Health Emergency | • A typographical error on the dose of Midazolam has been corrected. Now reads: 2.5 mg IV or 5 mg IM |
### APPENDIX 4 - CPG UPDATES FOR ADVANCED PARAMEDICS

<table>
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<tr>
<th>CPGS</th>
<th>THE PRINCIPAL DIFFERENCES ARE</th>
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| CPG 4/5/6.6.5 Limb Injury – Adult | • CPG 5/6.6.5 Limb Fractures – Adult has been renamed Limb Injury – Adult to broaden the scope of the CPG.  
• The CPG now deals with fractures, soft tissue injuries and dislocations.  
• Pain relief has been changed from ‘consider’ to ‘establish need for’.  
• There is now a requirement to pre-alert the Emergency Department for limb threatening injuries.  
• A pelvic splinting device is now authorised for use by advanced paramedics. |
| CPG 4/5/6.7.1 Primary Survey Medical – Paediatric | • Children First Guidelines requirements have been added to this CPG. |
| CPG 4/5/6.7.2 Primary Survey Trauma – Paediatric | • Children First Guidelines requirements have been added to this CPG. |
| CPG 4/5/6.7.4 Secondary Survey – Paediatric | • This CPG outlines the progress through the secondary survey for a paediatric patient, some of the text boxes have been amalgamated to simplify the CPG.  
• Children First Guidelines requirements have been added to this CPG.  
• A typographical error with the weight based calculations has been corrected to ‘(Age x 3) + 7 Kg’. |
| CPD 5/6.7.9 Glycaemic Emergency – Paediatric | • Glucose gel dose has been divided into ≤ 8 and > 8 years. |
PRE-HOSPITAL DEFIBRILLATION POSITION PAPER

Defibrillation is a lifesaving intervention for victims of sudden cardiac arrest (SCA). Defibrillation in isolation is unlikely to reverse SCA unless it is integrated into the chain of survival. The chain of survival should not be regarded as a linear process with each link as a separate entity but once commenced with ‘early access’ the other links, other than ‘post return of spontaneous circulation (ROSC) care’, should be operated in parallel subject to the number of people and clinical skills available.

Cardiac arrest management process

ILCOR guidelines 2010 identified that without ongoing CPR, survival with good neurological function from SCA is highly unlikely. Defibrillators in AED mode can take up to 30 seconds between analysing and charging during which time no CPR is typically being performed. The position below is outlined to ensure maximum resuscitation efficiency and safety.
APPENDIX 5 - PRE-HOSPITAL DEFIBRILLATION

POSITION

1. **Defibrillation mode**
   1.1 Advanced Paramedics, and health care professionals whose scope of practice permits, should use defibrillators in manual mode for all age groups.
   1.2 Paramedics may consider using defibrillators in manual mode for all age groups.
   1.3 EMTs and Responders shall use defibrillators in AED mode for all age groups.

2. **Hands off time (time when chest compressions are stopped)**
   2.1 Minimise hands off time, absolute maximum 10 seconds.
   2.2 Rhythm and/or pulse checks in manual mode should take no more than 5 to 10 seconds and CPR should be recommenced immediately.
   2.3 When defibrillators are charging CPR should be ongoing and only stopped for the time it takes to press the defibrillation button and recommenced immediately without reference to rhythm or pulse checks.
   2.4 It is necessary to stop CPR to enable some AEDs to analyse the rhythm. Unfortunately this time frame is not standard with all AEDs. As soon as the analysing phase is completed and the charging phase has begun CPR should be recommenced.

3. **Energy**
   3.1 Biphasic defibrillation is the method of choice.
   3.2 Biphasic truncated exponential (BTE) waveform energy commencing at 150 to 200 joules shall be used.
   3.3 If unsuccessful the energy on second and subsequent shocks shall be as per manufacturer of defibrillator instructions.
   3.4 Monophasic defibrillators currently in use, although not as effective as biphasic defibrillators, may continue to be used until they reach the end of their lifespan.

4. **Safety**
   4.1 For the short number of seconds while a patient is being defibrillated no person should be in contact with the patient.
   4.2 The person pressing the defibrillation button is responsible for defibrillation safety.
   4.3 Defibrillation pads should be used as opposed to defibrillation paddles for pre-hospital defibrillation.
5 Defibrillation pad placement
5.1 The right defibrillation pad should be placed mid clavicular directly under the right clavicle.
5.2 The left defibrillation pad should be placed mid-axillary with the top border directly under the left nipple.
5.3 If a pacemaker or Implantable Cardioverter Defibrillator (ICD) is fitted, defibrillator pads should be placed at least 8 cm away from these devices. This may result in anterior and posterior pad placement which is acceptable.

6 Paediatric defibrillation
6.1 Paediatric defibrillation refers to patients less than 8 years of age.
6.2 Manual defibrillator energy shall commence and continue with 4 joules/Kg.
6.3 AEDs should use paediatric energy attenuator systems.
6.4 If a paediatric energy attenuator system is not available an adult AED may be used.
6.5 It is extremely unlikely to ever have to defibrillate a child less than 1 year old. Nevertheless, if this were to occur the approach would be the same as for a child over the age of 1. The only likely difference being, the need to place the defibrillation pads anterior and posterior, because of the infant's small size.

7 Implantable Cardioverter Defibrillator (ICD)
7.1 If an Implantable Cardioverter Defibrillator (ICD) is fitted in the patient, treat as per CPG. It is safe to touch a patient with an ICD fitted even if it is firing.