CLINICAL PRACTICE GUIDELINES – Published 2012

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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FOREWORD

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

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>AP</td>
<td>Advanced Paramedic</td>
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<tr>
<td>ALS</td>
<td>Advanced Life Support</td>
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<tr>
<td>ABC</td>
<td>Airway, breathing &amp; circulation</td>
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<tr>
<td>ATV</td>
<td>All terrain vehicle</td>
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<tr>
<td>ALoC</td>
<td>Altered level of consciousness</td>
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<tr>
<td>AED</td>
<td>Automated External Defibrillator</td>
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<tr>
<td>BVM</td>
<td>Bag Valve Mask</td>
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<tr>
<td>BLS</td>
<td>Basic Life Support</td>
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<tr>
<td>BG</td>
<td>Blood Glucose</td>
</tr>
<tr>
<td>BP</td>
<td>Blood Pressure</td>
</tr>
<tr>
<td>CO₂</td>
<td>Carbon dioxide</td>
</tr>
<tr>
<td>CPR</td>
<td>Cardiopulmonary Resuscitation</td>
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<tr>
<td>C-spine</td>
<td>Cervical spine</td>
</tr>
<tr>
<td>COPD</td>
<td>Chronic obstructive pulmonary disease</td>
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<tr>
<td>CPG</td>
<td>Clinical Practice Guideline</td>
</tr>
<tr>
<td>°C</td>
<td>Degree</td>
</tr>
<tr>
<td>D₁₀W</td>
<td>Dextrose 10% in water</td>
</tr>
<tr>
<td>gtt</td>
<td>Drop (gutta)</td>
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<tr>
<td>ECG</td>
<td>Electrocardiogram</td>
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<tr>
<td>ED</td>
<td>Emergency Department</td>
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<td>EMT</td>
<td>Emergency Medical Technician</td>
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<td>ETT</td>
<td>Endotracheal tube</td>
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<td>FBAO</td>
<td>Foreign body airway obstruction</td>
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<td>#</td>
<td>Fracture</td>
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<td>GP</td>
<td>General Practitioner</td>
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<td>GCS</td>
<td>Glasgow Coma Scale</td>
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<td>g</td>
<td>Gram</td>
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<td>&gt;</td>
<td>Greater than</td>
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<tr>
<td>≥</td>
<td>Greater than or equal to</td>
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<tr>
<td>HR</td>
<td>Heart rate</td>
</tr>
<tr>
<td>Hx</td>
<td>History</td>
</tr>
<tr>
<td>ITD</td>
<td>Impedance Threshold Device</td>
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<tr>
<td>Inh</td>
<td>Inhalation</td>
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<tr>
<td>IM</td>
<td>Intramuscular</td>
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<td>IN</td>
<td>Intranasal</td>
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<tr>
<td>IO</td>
<td>Intravascular</td>
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<tr>
<td>IV</td>
<td>Intravenous</td>
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<tr>
<td>KVO</td>
<td>Keep vein open</td>
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<tr>
<td>Kg</td>
<td>Kilogram</td>
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<tr>
<td>Abbreviation</td>
<td>Description</td>
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<td>&lt;</td>
<td>Less than</td>
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<td>Less than or equal to</td>
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<td>Litre</td>
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<td>Max</td>
<td>Maximum</td>
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<td>mcg</td>
<td>Microgram</td>
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<td>mg</td>
<td>Milligram</td>
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<td>mL</td>
<td>Millilitre</td>
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<td>mmol</td>
<td>Millimole</td>
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<tr>
<td>min</td>
<td>Minute</td>
</tr>
<tr>
<td>MEWS</td>
<td>Modified Early Warning Score</td>
</tr>
<tr>
<td>MVC</td>
<td>Motor vehicle collision</td>
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<tr>
<td>MI</td>
<td>Myocardial infarction</td>
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<tr>
<td>NPA</td>
<td>Nasopharyngeal airway</td>
</tr>
<tr>
<td>mEq</td>
<td>Milliequivalent</td>
</tr>
<tr>
<td>mmHg</td>
<td>Millimetres of mercury</td>
</tr>
<tr>
<td>NEB</td>
<td>Nebulised</td>
</tr>
<tr>
<td>pH</td>
<td>Negative decadic logarithm of the H+ ion concentration</td>
</tr>
<tr>
<td>PO</td>
<td>Orally (per os)</td>
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<tr>
<td>OPA</td>
<td>Oropharyngeal airway</td>
</tr>
<tr>
<td>O2</td>
<td>Oxygen</td>
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<tr>
<td>P</td>
<td>Paramedic</td>
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<tr>
<td>PEF</td>
<td>Peak expiratory flow</td>
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<tr>
<td>PR</td>
<td>Per rectum</td>
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<tr>
<td>PCI</td>
<td>Percutaneous coronary intervention</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>PEA</td>
<td>Pulseless electrical activity</td>
</tr>
<tr>
<td>RR</td>
<td>Respiration rate</td>
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<tr>
<td>ROSC</td>
<td>Return of spontaneous circulation</td>
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<tr>
<td>RTS</td>
<td>Revised Trauma Score</td>
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<tr>
<td>SpO2</td>
<td>Saturation of arterial oxygen</td>
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<tr>
<td>STEMI</td>
<td>ST elevation myocardial infarction</td>
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<tr>
<td>SC</td>
<td>Subcutaneous</td>
</tr>
<tr>
<td>SL</td>
<td>Sublingual</td>
</tr>
<tr>
<td>SBP</td>
<td>Systolic blood pressure</td>
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<tr>
<td>prn</td>
<td>When necessary (pro re nata)</td>
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</tbody>
</table>

Therefore: ∴
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.

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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 71 CPGs in total for 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>
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</tbody>
</table>
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.
SECTION 2 - PATIENT ASSESSMENT

Primary Survey – Adult

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

**P**
Paramedic
(Level 5) for which the CPG pertains

**AP**
Advanced Paramedic
(Level 6) for which the CPG pertains

**MP**
Medical Practitioner
(Level 7) for which the CPG pertains

**CPG numbering system**
4/5/6 = clinical levels to which the CPG pertains
x = section in CPG manual, y = CPG number in sequence
mm/yy = month/year CPG published

**Clinical Practice Guidelines**
for Paramedic

**Codes explanation**

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

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

- **Paramedic or lower clinical levels not permitted this route**

**Consideration options**
Given the clinical presentation consider the treatment option specified

**Consider treatment options**

- **Reassess**
  Reassess the patient following intervention

- **Request ALS**
  Contact Ambulance Control and request Advanced Life Support (AP or doctor)

- **Consider ALS**
  Consider requesting an ALS response, based on the clinical findings

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

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

**Medication, dose & route**
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

**Go to xxx CPG**

**Start from**
A clinical condition that may precipitate entry into the specific CPG

**Special instructions**
Which the Practitioner must follow

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

**Consider treatment options**

**Decision process**
The Practitioner must follow one route

**Note:** only go to the CPGs that pertain to your clinical level

**Consider ALS**
Consider requesting an ALS response, based on the clinical findings

**Consider a Paramedic response, based on the clinical findings**

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

**Transport to an appropriate medical facility and maintain treatment en-route, if having contacted Ambulance Control there is no ALS available**

**Consider requesting a Paramedic response, based on the clinical findings**

**Contact Ambulance Control and request Advanced Life Support (AP or doctor)**

**Consider requesting an ALS response, based on the clinical findings**

**Medication, dose & route**
A medication which may be administered by an Advanced Paramedic
The medication name, dose and route is specified
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**Take standard infection control precautions**

**Consider pre-arrival information**

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

**Assess responsiveness**

A. **Airway patent & protected**
- Yes: Head tilt/chin lift
- No: Suction, OPA, NPA

B. **Adequate ventilation**
- Yes
- No

C. **Adequate circulation**
- Yes
- No

**AVPU assessment**

**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
SECTION 2 - PATIENT ASSESSMENT

Primary Survey Trauma – Adult

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.

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

Yes

Suction, OPA, NPA

No

B
Adequate ventilation

Yes

Consider
Oxygen therapy

No

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

Maximum time on scene for life threatening trauma: ≤ 10 minutes

Reference: ILCOR Guidelines 2010

PHECC Clinical Practice Guidelines - Paramedic
SECTION 2 - PATIENT ASSESSMENT

Secondary Survey Medical - Adult

Primary Survey

Record vital signs & GCS

Patient acutely unwell

Yes

Go to appropriate CPG

Identify positive findings and initiate care management

Markers identifying acutely unwell
Cardiac chest pain
Acute pain > 5

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

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

Secondary Survey Trauma – Adult

Primary Survey

Markers for multi-system trauma present

Yes

Examination of obvious injuries

Monitor and record vital signs & GCS

SAMPLE history

Complete a detailed physical exam (head to toe survey) as history dictates

Check for medications carried or medical alert jewellery

Request ALS

Go to appropriate CPG

Identify positive findings and initiate care management


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>
<tr>
<th>Respiratory Rate</th>
<th>Score</th>
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<tr>
<td>&gt; 29</td>
<td>4</td>
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<tr>
<td>6 – 9</td>
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<tr>
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<table>
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<th>Score</th>
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<table>
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<th>Score</th>
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</tr>
<tr>
<td>4 – 5</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

RTS = Total score


PHECC Clinical Practice Guidelines - Paramedic
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

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

Pain assessment

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

Pain

Pain Management – Adult

Pain relief

severity

PHECC Pain Ladder

Consider other non pharmacological interventions

Reference: World Health Organization, Pain Ladder

EMT

P

AP

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

AP

Special Authorisation:
Advanced Paramedics are authorised to administer Morphine up to 10 mg IM if IV not accessible, the patient is cardiovascularly stable and no cardiac chest pain present

Morphine 2 mg IV

and / or

Naloxone 0.4 mg

and / or

Nitrous Oxide & Oxygen, inh

Consider

Ondansetron 4 mg IV slowly

and / or

Cyclizine 50 mg IV slowly

Morphine 2 mg IV

and / or

Ondansetron 4 mg IV

and / or

Cyclizine 50 mg IV

Moderate pain

(3 to 4 on pain scale)

Paracetamol 1 g PO

and / or

Ibuprofen 400 mg PO

Paracetamol 1 g PO

Consider

Moderate pain

Minor pain

(2 to 3 on pain scale)

(2 to 3 on pain scale)

Paracetamol 1 g PO

Consider other non pharmacological interventions

PHECC Pain Ladder

Repeat Morphine at not < 2 min intervals if indicated.
Max 10 mg
For musculoskeletal pain Max 16 mg

Pain assessment

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

Pain

Pain relief

severity

PHECC Pain Ladder

Consider other non pharmacological interventions

Reference: World Health Organization, Pain Ladder

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Morphine 2 mg IV

and / or

Ondansetron 4 mg IV

and / or

Cyclizine 50 mg IV

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

Pain

Pain relief

severity

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Consider other non pharmacological interventions

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Nitrous Oxide & Oxygen, inh

Consider

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Morphine 2 mg IV

and / or

Ondansetron 4 mg IV

and / or

Cyclizine 50 mg IV

Pain assessment

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

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Pain relief

severity

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Consider other non pharmacological interventions

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Ondansetron 4 mg IV slowly

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Morphine 2 mg IV

and / or

Ondansetron 4 mg IV

and / or

Cyclizine 50 mg IV

Pain assessment

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

Pain

Pain relief

severity

PHECC Pain Ladder

Consider other non pharmacological interventions

Reference: World Health Organization, Pain Ladder

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PHECC Clinical Practice Guidelines - Paramedic

23
**Advanced Airway Management – Adult (≥ 8 years)**

**Apnoea or special clinical considerations**

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

- Ventilations maintained
  - Yes
  - No
  - Consider FBAO

- Successful
  - Yes
  - Consider waveform capnography
  - No
  - 2nd attempt at advanced airway insertion

- Successful
  - Yes
  - Ensure CO₂ detection device in ventilation circuit
  - No
  - Revert to basic airway management

- After each patient movement or if any patient deterioration

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

- Maintain adequate ventilation and oxygenation throughout procedures

**Following successful Advanced Airway management:**
- i) Ventilate at 8 to 10 per minute
- ii) Un synchronous chest compressions continuous at 100 to 120 per minute

**Reference:** ILCOR Guidelines 2010
Inadequate Respirations – Adult

Respiratory difficulty

Request ALS

Assess and maintain airway

Oxygen therapy

Respiratory assessment

Inadequate rate or depth

Asymmetrical movement

Possible Hx of Narcoxic overdose

No

Yes

Naioxone 0.4 mg IM Repeat x 1 prn

Niosone 0.4 mg IV/IO/MM Repeat prn to max 2 mg

Tension Pneumothorax suspected

Yes

No

AP Needle decompression

Rescues

Positive pressure ventilations Max 10 per minute

GCS = 3 SpO2 < 92% BVM ineffective RR ≤ 5

Yes

Go to Advanced Airway CPG

No

Consider Ipratropium bromide 0.5 mg NEB & salbutamol 5 mg NEB mixed

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

OR

Salsbutamol, 4 puffs, (0.4 mg) metered aerosol Repeat x 1 at 5 minutes prn

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

Yes

No

Consider Magnesium Sulphate 1.5 g IV infusion over 20 min

EEG & SpO2 monitoring

Consider supporting ventilations if patient becomes exhausted

Acute severe asthma (1)

Any one of:

- PEF 33-50% best or predicted
- Respiratory rate ≥ 25/ min
- Heart rate ≥ 110/ min
- Inability to complete sentences in one breath

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

Life threatening asthma

Any one of the following in a patient with severe asthma:

- PEF < 33% best or predicted
- SpO2 < 92%
- Silent chest
- Cyanosis
- Feeble respiratory effort
- Bradycardia
- Atrhymia
- Hypotension
- Exhaustion
- Confusion
- Unresponsive

Exacerbation of COPD

5/6.3.3 05:09

Dyspnœa

History of COPD

Yes

Oxygen therapy

ECG & SpO₂ monitor

Salbutamol 5 mg NEB

Measure Peak Expiratory Flow

PEF < 50% predicted

Yes

Hydrocortisone 200 mg IM or slow IV

No

Request ALS

Ipratropium bromide 0.5 mg NEB & salbutamol 5 mg NEB mixed

Deteriorates / no improvement

Hydrocortisone 200 mg IM or slow IV

Adequate respirations

Yes

Go to Inadequate Respirations CPG

No

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%.

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 dyspnœa, cough and/or sputum beyond day-to-day variability sufficient to warrant a change in management. (European Respiratory Society)
Cardiac Arrest

- Assess Rhythm
- Give 1 shock
- Immediately resume CPR x 2 minutes
- Rhythm check *

Shockable
VF or pulseless VT

Non-Shockable
Asystole or PEA

Immediately resume CPR x 2 minutes

- Go to VF/VT CPG
- Go to Asystole CPG
- Go to PEA CPG

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

Reference: ILCOR Guidelines 2010
Basic Life Support – Paediatric (≤ 13 Years)

Cardiac arrest or pulse < 60 per minute with signs of poor perfusion

Give 1 shock

Immediately resume CPR x 2 minutes

Rhythm check *

Go to VF / Pulseless VT CPG

Go to Asystole / PEA CPG

Assess Rhythm

Shockable VF or pulseless VT

Non - Shockable Asystole or PEA

Compressions

Commence chest Compressions

Continue CPR (30:2) until defibrillator is attached

Give 5 rescue ventilations

Oxygen therapy

Reassess

ALS

One rescuer CPR 30 : 2
Two rescuer CPR 15 : 2
Compressions : Ventilations

Chest compressions
Rate: 100 to 120/min
Depth: 1/3 depth of chest
Child: two hands
Small child: one hand
Infant (< 1): two fingers

With two rescuer CPR use two thumb-encircling hand chest compression for infants

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

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

Minimum interruptions of chest compressions.

Maximum hands off time 10 seconds.

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

Give 5 rescue ventilations

Oxygen therapy

Consider changing defibrillator to manual mode

Change defibrillator to manual mode

Continue CPR while defibrillator is charging

Reference: ILCOR Guidelines 2010

4/5/6.4.4 06/11

SECTION 4 - MEDICAL EMERGENCIES

PHECC Clinical Practice Guidelines - Paramedic
Foreign Body Airway Obstruction – Adult

FBAO

Are you choking?

- Severe (ineffective cough)
  - Conscious
  - Yes: One cycle of CPR
  - No: Request ALS

- Mild (effective cough)
  - Conscious
  - Yes: Encourage cough
  - No: One cycle of CPR

- Effective
  - Yes: Consider Oxygen therapy
  - No: Go to BLS Adult CPG

- Inadequate ventilations
  - Yes: Adequate ventilations
  - No: One cycle of CPR

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

EMT

P

PHECC Clinical Practice Guidelines - Paramedic
Foreign Body Airway Obstruction – Paediatric (≤ 13 years)

Are you choking?

- Severe (ineffective cough)
  - Conscious
    - FBAO Severity
      - Mild (effective cough)
        - 1 to 5 back blows followed by 1 to 5 thrusts (child – abdominal thrusts) (infant – chest thrusts) as indicated
        - Encourage cough
      - Severe (ineffective cough)
        - Request ALS
          - Breathing adequately
            - Yes
              - Positive pressure ventilations (12 to 20/ min)
            - No
              - Go to BLS Paediatric CPG
        - Conscious
          - Effective
            - Yes
              - After each cycle of CPR open mouth and look for object. If visible attempt once to remove it
            - No
              - One cycle of CPR
                - Effective
                  - Yes
                    - After each cycle of CPR open mouth and look for object. If visible attempt once to remove it
                  - No
                    - Go to BLS Paediatric CPG
                - No
                  - One cycle of CPR
                    - Effective
                      - Yes
                        - After each cycle of CPR open mouth and look for object. If visible attempt once to remove it
                      - No
                        - Go to BLS Paediatric CPG
                    - No
                      - Go to BLS Paediatric CPG
          - No
            - Effective
              - Yes
                - After each cycle of CPR open mouth and look for object. If visible attempt once to remove it
              - No
                - Go to BLS Paediatric CPG
            - No
              - Go to BLS Paediatric CPG
**VF or Pulseless VT – Adult**

**VF or VT arrest**

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

**Go to Post Resuscitation Care CPG**

**Go to PEA CPG**

**Go to Asystole CPG**

**Defibrillate**

**VF/VT**

Rhythm check

- Asystole
- PEA
- VF/VT
- Yes
- No (ROSC)

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

**Clinical leader to monitor quality of CPR**

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

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

Every 3 to 5 minutes prn

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

**Amiodarone 300 mg (5 mg/kg) IV/ IO**

2nd dose (if required)

Amiodarone 150 mg (2.5 mg/kg) IV/ IO

**Defibrillate**

**VF/VT**

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

Every 3 to 5 minutes prn

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

If Torsades de pointes, consider Magnesium Sulphate 2 g IV/IO

If no ALS available

Consider transport to ED if no change after 20 minutes resuscitation

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

**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

**AP**

**Reference:** ILCOR Guidelines 2010

**PHECC Clinical Practice Guidelines - Paramedic**
VF or Pulseless VT – Paediatric (≤ 13 years)

From BLS Child CPG

Immediate IO access if IV not immediately accessible

 VF arrest

Defibrillate (4 joules/Kg)

Epinephrine (1:10 000), 0.01 mg/kg IV/IO Repeat every 3 to 5 minutes prn

Check blood glucose

VF/VT

Rhythm check *

VF or VT arrest

Go to Asystole / PEA CPG

Go to Post Resuscitation Care CPG

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/IQ

Clinical leader to monitor quality of CPR

VF or Pulseless VT – Paediatric (≤ 13 years)

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

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

Drive smoothly

Following successful Advanced Airway management:

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

If no ALS available

Consider use of waveform capnography

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

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

VF or VT arrest

AED

Child CPG

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

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

Reference: ILCOR Guidelines 2010
Symptomatic Bradycardia – Paediatric (≤ 13 years)

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

- If no ALS available:
  - Initiate mobilisation of 3 to 4 practitioners/responders on site to assist with cardiac arrest management.

- If no ALS available:
  - Request ALS.
  - Immediate IO access if IV not immediately accessible.

- Oxygen therapy
  - Positive pressure ventilations (12 to 20/min)

- Request ALS
  - HR < 60
    - & signs of inadequate perfusion
      - Yes
        - CPR
      - No
        - ECG & SpO₂ monitoring
        - NaCl (0.9%) 20 mL/Kg IV/IO
        - Riaess
          - Epinephrine (1:10 000) 0.01 mg/kg (10 mcg/kg) IV/IO
            - Every 3 – 5 min prn
        - Persistent bradycardia
          - Yes
            - Continue CPR
          - No
            - Reassess

- Check blood glucose

Asystole – Adult

From BLS Adult CPG

Immediate IO access if IV not immediately accessible

Immediate IO access if IV not immediately accessible

Go to Post Resuscitation Care CPG

Go to PEA CPG

Go to VF / Pulseless VT CPG

Rhythm check *

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

NaCl IV/IO 500 mL (use as flush)

Clinical leader to monitor quality of CPR

With CPR ongoing maximum hands off time 10 seconds

Asystole

Yes

ROSC

PEA

VF/VT

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

AP

Consider use of waveform capnography

NaCl 20 mL/Kg IV/IO

Consider fluid challenge

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

Reference: ILCOR Guidelines 2010
**Pulseless Electrical Activity – Adult**

From BLS Adult CPG

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

Go to Post Resuscitation Care CPG

**Go to Asystole CPG**

Consider transport to ED if no change after 20 minutes resuscitation

**Go to VF / Pulseless VT CPG**

**Rhythm check**

- **Yes**
  - Epinephrine (1:10 000) 1 mg IV/IO Every 3 to 5 minutes prn
  - Consider use of waveform capnography

- **No**
  - Asystole
  - Consider fluid challenge consider NaCl 20 mL/Kg IV/IO
  - If Tricyclic Antidepressant Toxicity consider Sodium Bicarbonate 8.4% 50 mL IV

**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

**Reference:** ILCOR Guidelines 2010

**4/5/6.4.11**

**Version 2, 03/11**
Asystole/PEA – Paediatric (≤ 13 years)

- Check blood glucose
- 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 no ALS available:
  - Consider use of waveform capnography

- With CPR ongoing maximum hands off time 10 seconds

- Advanced airway management
- Epinephrine (1:10 000), 0.01 mg/kg IV/IO
  - Repeat every 3 to 5 minutes prn

- Consider fluid challenge
  - NaCl 20 mL/Kg IV/IO

- Following successful Advanced Airway management:
  1. Ventilate at 12 to 20 per minute.
  2. Unisynchronised chest compressions continuous at 100 to 120 per minute

- Clinical leader to monitor quality of CPR

- Immediate IO access if IV not immediately accessible

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

- Drive smoothly

- With CPR ongoing maximum hands off time 10 seconds

- Asystole/PEA arrest

- From BLS Child CPG

- Go to Post Resuscitation Care CPG

- Go to VF / Pulseless VT CPG

- Transport to ED if no change after 10 minutes resuscitation

- If no ALS available:
  - Consider use of waveform capnography

- Reference: ILCOR Guidelines 2010

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

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

Witnessed arrest & CPR prior to arrival of EMS

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

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

Consider ceasing resuscitation efforts

Record two rhythm strips x 10 sec duration

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

Inform Ambulance Control

If present, inform next of kin

If present, 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

If no ALS available

Continue BLS & or ALS

From Traumatic Cardiac Arrest CPG

Resuscitation continuous for at least 20 minutes in asystole

From Asystole - Adult CPG

No

Yes

Traumatic Cardiac Arrest

SECTION 4 - MEDICAL EMERGENCIES

Pre-Hospital Emergency Care Council

05/08

PHECC Clinical Practice Guidelines - Paramedic
Return of Spontaneous Circulation

Maintain Oxygen therapy

Request ALS

Unresponsive

Yes

No

Adequate ventilation

Yes

No

Positive pressure ventilation Max 10 per minute

Commence active cooling

NaCl (4°C approx) 500 mL IV/IO

Repeat x 1 if required

Maintain patient at rest

ECG & SpO₂ monitoring:

12 lead ECG

Monitor blood pressure and GCS

Symptomatic bradycardia

Atropine 0.5 mg IV/IO

Repeat at 3 to 5 min intervals prn to max 3 mg

Check blood glucose

Monitor vital signs

Transport quietly and smoothly

Maintain patient at rest

ECG & SpO₂ monitoring

12 lead ECG

Monitor blood pressure and GCS

Symptomatic bradycardia

Atropine 0.5 mg IV/IO

Repeat at 3 to 5 min intervals prn to max 3 mg

Check blood glucose

Monitor vital signs

Transport quietly and smoothly

Return of Spontaneous Circulation

Maintain Oxygen therapy

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

For active cooling place cold packs at arm pit, groin & abdomen

Reference: ILCOR Guidelines 2010

Equipment list

Cold packs

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 causes and treat as appropriate:

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

**STEMI:** ST elevation in two or more contiguous leads (2 mm in leads V2 and V3, or 1 mm in any other leads) or new onset LBBB.

---

**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 PPCI centre > 90 minutes of STEMI confirmation on 12 lead ECG
7. No contraindications present

---

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

---

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

---

**Pre-hospital thrombolysis available**

---

**Tenecteplase IV**
- < 60 kg: 30 mg
- 60 – 70 kg: 35 mg
- 70 – 80 kg: 40 mg
- 80 – 90 kg: 45 mg
- > 90 kg: 50 mg

---

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

S4 MEDICAL EMERGENCIES
Symptomatic Bradycardia – Adult
Allergic Reaction/Anaphylaxis – Adult

**Mild**
- Urticaria and or angioedema

**Moderate**
- Mild symptoms + simple bronchospasm

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

---

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

**Epinephrine**
- Administered pre arrival? (within 5 minutes)
  - Yes: Epinephrine (1:1000) 0.5 mg (500 mcg) IM
    - Repeat at 5 minute intervals if no improvement
  - No: Request ALS

**If bronchospasm consider nebulizer**
- Salbutamol 5 mg NEB

**Recurs / deteriorates / no improvement**
- Yes: Repeat by one prn
- No: Reassess

**Monitor reaction**

**ECG & SpO2 monitor**

**Deteriorates**
- Yes: Request ALS
- No: Reassess

**NaCl (0.9%) 1 L IV/IO infusion**

**Allergic Reaction/Anaphylaxis – Adult**

**SECTION 4 - MEDICAL EMERGENCIES**

---

PHECC Clinical Practice Guidelines - Paramedic
Glycaemic Emergency – Adult

Abnormal blood glucose level

< 4 mmol/L

Dextrose 10% 250 mL IV/IO infusion
Or
Glucagon 1 mg IM
Or
Glucose gel 10-20 g buccal
Or
Sweetened drink

Reassess

Allow 5 minutes to elapse following administration of medication

Blood Glucose < 4 mmol/L

Yes

Consider ALS

Blood Glucose > 20 mmol/L

> 20 mmol/L

Consider ALS

NaCl (0.9%) 1 L IV/IO infusion

Reassess

11 to 20 mmol/L

Repeat if indicated

Dextrose 10%, 250 mL IV/IO infusion
Or
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
Seizure/Convulsion – Adult

- **Seizure/Convulsion**
  - Protect from harm
  - Oxygen therapy
  - Seizing currently:
    - Seizure status:
      - Post seizure
      - Seizure status:
        - Yes: Request ALS
        - No: IV access
          - Midazolam 10 mg buccal
            Repeat by one prn
            Or
            - Midazolam 5 mg IN
              Repeat by one prn
            Or
            - Midazolam 5 mg IM
              Repeat by one prn
            Or
            - Diazepam, 10 mg PR
              Repeat by one prn
          - Check blood glucose
            - Blood glucose < 4 or > 20 mmol/L
              - Yes: Go to Glycaemic Emergency CPG
              - No: Reassess
            - No: Midazolam 2.5 mg IV/IO
              Repeat by one prn
              Or
              - Diazepam 5 mg IV/IO
                Repeat by one prn

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

- **Obtain GCS**
  - **Positive FAST assessment**
    - Yes: **Maintain airway**
    - No: **Oxygen therapy**
  - **Oxygen therapy**
    - Maintain SpO2 between 94% to 98% (lower range if COPD)
  - **Check blood glucose**
    - Yes: **Go to Glycaemic Emergency CPG**
    - BG < 4 or > 20 mmol/L
      - No: **ECG & SpO2 monitoring**
        - Onset < 4.5 hours
          - Yes: **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
          - No: Follow local protocol re notifying ED prior to arrival
        - 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; 108-108
Poisons – Adult

Poison source

**Ingestion**
- Yes
- Sips of water or milk
- Corrosive
  - Yes: Cool area
  - No: Adequate ventilations
- No: Site burns
  - Yes: Consider decontamination prior to transportation
  - No: Caution with oral intake

**Inhalation**
- No

**Injection**
- No

**Absorption**
- No

Poison type

- **Paraquat**
  - Do not give oxygen
- **Other**
  - Oxygen therapy
- **Alcohol**
  - Check blood glucose
    - BG < 4 or > 20 mmol/L
      - No: Consider Oxygen therapy
      - Yes: Go to Glycaemic Emergency CPG

Reference:
Dr Joe Tracey, Director, National Poison Information Centre
Hypothermia

**Query hypothermia**

- **Immersion**
  - Yes: Remove patient horizontally from liquid (Provided it is safe to do so)
  - No: Protect patient from wind chill
  - Complete primary survey (Commence CPR if appropriate)
  - Oxygen therapy: Warmed O₂ if possible
  - Remove wet clothing by cutting
  - Place patient in dry blankets/ sleeping bag with outer layer of insulation
  - ECG & SpO₂ monitoring

- **Mild (Responsive)**
  - Give hot sweet drinks

- **Moderate/ severe (Unresponsive)**
  - Request ALS

If Cardiac Arrest follow CPGs but - no active re-warming

- Hot packs to armpits & groin
- Check blood glucose
- Transport in head down position
  - Helicopter: head forward
  - Boat: head aft

**Equipment list**
- Survival bag
- Space blanket
- Warm air rebreather

Epistaxis

- Medical
  - Advise patient to sit forward
  - Apply digital pressure for 3 to 5 minutes
  - Advise patient to breathe through mouth only and not to blow nose

- Trauma
  - Yes: Go to Shock CPG
  - No: Haemorrhage controlled

- Primary Survey Medical
  - Yes: Request ALS
  - No: Consider ALS

- Primary Survey Trauma
  - Yes: Go to Shock CPG

- Hypovolaemic
  - Yes: Go to Shock CPG
  - No: Haemorrhage controlled

- Haemorrhage controlled
  - Yes: Request ALS
  - No: Consider ALS
**Decompression Illness (DCI)**

**SCUBA diving within 48 hours**
- Consider diving buddy as possible patient also.

**Comprehensive primary survey**
- (Commence CPR if appropriate)
- Treat in supine position

**Oxygen therapy 100% O₂**

**Conscious**
- Yes
  - Pain relief required
    - Yes
      - Entonox absolutely contraindicated
    - No
      - Maintain Airway, Breathing & Circulation
- No
  - Maintain Airway, Breathing & Circulation

**Go to Pain Mgt. CPG**

**Nausea**
- Yes
  - Go to Nausea & Vomiting CPG
  - Monitor ECG & SpO₂
  - NaCl (0.9%) 500 mL IV/IO
  - Notify control of query DCI & alert ED
- No
  - Transport is completed at an altitude of < 300 metres above incident site or aircraft pressurised equivalent to sea level

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

**Reference:** The Primary Clinical Care Manual 3rd Edition, 2003, Queensland Health and the Royal Flying Doctor Service (Queensland Section)
Consider recovery position

Altered Level of Consciousness – Adult

V, P or U on AVPU scale

Maintain airway

No

Trauma

Yes

Consider recovery position

Consider Cervical Spine

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

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

Go to CPG

Go to CPG

Go to CPG

Go to CPG

Go to CPG

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.**

**Indications of medical cause of illness**

- **Yes**
  - Go to appropriate CPG

- **No**
  - **Potential to harm self or others**
    - **Yes**
      - Request control to inform Gardaí
    - **No**
      - **Patient agrees to travel**

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

**Reassure patient**

- Explain what is happening at all times
- Avoid confrontation

**Attempt verbal de-escalation**

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

- **Yes**
  - Inform patient of potential consequences of treatment refusal
  - **No**

**Offer to treat and or transport patient**

- **Yes**
  - Treatment only
  - **No**
  - **Patient agrees to travel**

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

**Request control to inform Gardaí and or Doctor**

**Is patient competent to make informed decision**

- **Yes**
  - Await arrival of doctor or Gardaí or receive implied consent
- **No**
  - Advise alternative care options and to call ambulance again if there is a change of mind

**Document refusal of treatment and or transport to ED**

**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

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

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

1. Behaviour abnormal with previous psychiatric history
   - If potential to harm self or others ensure minimum two people accompany patient in saloon of ambulance at all times.

2. Obtain a history from patient and or bystanders present as appropriate.
   - Co-operate as appropriate with medical or nursing team.
   - Transport patient to an Approved Centre.

3. Potential to harm self or others
   - Reassure patient
   - Explain what is happening at all times
   - Avoid confrontation
   - Attempt verbal de-escalation

4. Combative with hallucinations or Paranoia & risk to self or others
   - Request control to inform Gardaí

5. Patient agrees to travel
   - Request as appropriate - Gardaí - Medical Practitioner - Mental health team

**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.

HSE Mental Health Services

PHECC Clinical Practice Guidelines - Paramedic

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**SECTION 4 - MEDICAL EMERGENCIES**

**End of Life – DNR**

**End stage terminal illness**

- Patient becomes acutely unwell
  - Respiratory distress:
    - Basic airway maintenance
    - Oxygen therapy
    - Planned ambulance transport
      - Recent & reliable written instruction from patient’s doctor stating that the patient is not for resuscitation
      - Agreement between caregivers present and Practitioners not to resuscitate
        - It is inappropriate to commence resuscitation
          - Inform Ambulance Control
            - Pulse present:
              - Yes: Provide supportive care until handover to appropriate Practitioner
              - No: Consult with Ambulance Control re: ‘location to transport patient / deceased’
                - Complete all appropriate documentation
                - Keep next of kin informed, if present
                  - Emotional support for relatives should be considered before leaving the scene

- 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

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

- Agreement between caregivers present and Practitioners not to resuscitate

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

- Go to Primary Survey CPG

**Appropriate Practitioner**
- Registered Medical Practitioner
- Registered Nurse
- Registered Advanced Paramedic
- Registered Paramedic
- Registered EMT
Pre-Hospital Emergency Childbirth

Query labour

Take SAMPLE history

Patient in labour

Yes

No

Birth imminent or travel time too long

Yes

No

Request ALS

Position mother and prepare equipment for birth

Monitor vital signs and BP

Cord complication

Yes

No

Breech birth

Yes

No

Support baby throughout delivery

Dry baby and check ABCs

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

Gestation < 28 weeks

Yes

No

Go to Umbilical Cord Complications CPG

Go to Breech Birth CPG

Go to BLS & ALS Neonate CPG

Go to Primary Survey CPG

Reference: ILCOR Guidelines 2010

5/6.5.1
Version 2, 03/11

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

Consider Entonox

If no progress with labour consider transporting patient

Equipment list

- Cord Clamps
- Bulb syringe
- Towels
- Surgical gloves
- Surgical apron
- Gauze swaps 10 x 10 cm
- Umbilical cord scissors
- Clinical waste bag
- Neonatal BVM
- Polythene bag

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

If placenta delivers, bring to hospital with mother

Reasonable

PHECC Clinical Practice Guidelines - Paramedic

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

**Birth**

- **Gestation < 28 weeks**
  - Yes: Cover newborn in polythene wrap/bag up to neck without drying first
  - No: Provide warmth, position; clear airway (if necessary), stimulate, reposition

- **Term gestation**
  - Amniotic fluid clear
  - Yes: Breathing or crying, good muscle tone
  - No: Provide warmth, position; clear airway (if necessary), dry, stimulate, reposition

**< 4 Weeks old**

- **Assess respirations, heart rate & colour**
  - Breathing, HR > 100 & Pink: Provide warmth
  - Breathing well, HR > 100: Request ALS
  - Apnoeic or HR < 100: Provide positive pressure ventilation for 30 sec

- **Persistent Cyanosis**
  - No: Provide supplementary O2
  - Yes: CPR (ratio 3:1) for 30 sec

- **HR < 60**
  - Assess HR rate
  - CPR (ratio 3:1) for 30 sec

- **HR 60 to 100**
  - Assess HR rate
  - Breathing well, HR > 100

- **Epinephrine (1:10 000) 0.01 mg/kg IV/IO** (Every 3 to 5 minutes prn)
  - If mother is opiate user consider:
    - Naloxone, 0.01 mg/kg IV/IO
    - Naloxone, 0.01 mg/kg IM

- **Consider blood glucose check**
- **Consider pulse oximetry**

**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
- Estimate blood loss
- 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

Unlock ask mother re multiple births prior to administration of Syntometrine

Umbilical Cord Complications

Cord complication

Request

Oxygen therapy

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

AP

Apply direct pressure with sterile dressing

Prolapsed cord

Mother to adopt knee chest position

AP

Hold presenting part off the cord using fingers

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

In labour

Yes

No

Consider
Nifedipine, 20 mg, PO

For prolapsed cord pre-alert hospital as emergency caesarean section will be required

Duley, LMM, 2002, Clinical Guideline No 1(B), Tocolytic Drugs for women in preterm labour, Royal College of Obstetricians and gynaecologists
**Breech Birth**

**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
    - No
  - Nape of neck anteriorly visible at vulva
    - Yes
    - No
    - Go to Childbirth CPG
      - Consider Entonox
  - 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
  - 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

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

Open wound

Active bleeding

No

Significant blood loss

Yes

Go to Shock CPG

No

Posture Elevation Examination Pressure

Yes

Depress proximal pressure point

No

HAEMORRHAGE controlled

Yes

Apply sterile dressing

Consider Oxygen therapy

No

HAEMORRHAGE controlled

Yes

Apply additional dressing(s)

No

HAEMORRHAGE controlled

Yes

Apply tourniquet

No

HAEMORRHAGE controlled

Yes

Depress proximal pressure point

No

HAEMORRHAGE controlled

Yes

Apply tourniquet

No

Significant blood loss

Yes

Go to Shock CPG

No

Consider Oxygen therapy

Significant blood loss

Yes

Go to Shock CPG

No
Clinical signs of shock

Control external haemorrhage

Oxygen therapy

Request ALS

Patient trapped

Yes

NaCl (0.9%), 500 mL IV/IO

No

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**

- 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

**Low risk factors**

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

**Equipment list**

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

**Flowchart**

1. **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
2. **Remove helmet (if worn)**
3. **Neck or back pain or midline spinal tenderness**
   - Dangerous mechanism of injury or significant distracting injury
4. **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
5. **Life Threatening**
   - Immobilisation may not be indicated
   - Go to appropriate CPG
6. **Rapid extrication with long board and cervical collar**
   - Apply cervical collar
   - Patient in sitting position
   - Use extrication device
   - Load onto vacuum mattress or long board
   - Consider Vacuum mattress

**Dangerous mechanism incclude;**

- Fall ≥ 1 meter/ 5 steps
- Axial load to head
- MVC > 100 km/hr, rollover or ejection
- ATV collision
- Bicycle collision
- Pedestrian v vehicle
Burns – Adult

Burn or Scald

Cease contact with heat source

Inhalation and/or facial injury

Yes

No

Airway management

Respiratory distress

Yes

Go to Inadequate Respirations CPG

No

Comence local cooling of burn area

Consider humidified Oxygen therapy

Remove burned clothing & jewellery (unless stuck)

Dressing/covering of burn area

Go to Pain Mgt CPG

Pain > 2/10

Yes

No

Isolated superficial injury (excluding FHFP)

Yes

No

TBSA burn > 10%

ECG & SpO2 monitoring

> 25% TBSA and or time from injury to ED > 1 hour

Consider

\[ \text{NaCl (0.9%), 500 mL, IV/IO} \]

\[ \text{NaCl (0.9%), 1000 mL, IV/IO} \]

Monitor body temperature


Caution with the elderly, circumferential & electrical burns

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

**Establish need for pain relief**

Expose and examine limb

Dress open wounds

Provide manual stabilisation for injured limb

Check CSMs distal to injury site

**Limb injury**

**Fracture mid shaft of femur**

Apply traction splint

**Fracture**

Apply appropriate splinting device

**Soft tissue injury**

Rest Ice Compression Elevation

**Dislocation**

Isolated lateral dislocation of patella?

Yes

Splint/support in position found

AP

Reduce dislocation and apply splint

No

Recheck CSMs

**Reconsider**

Consider ALS CPG

Go to Pain Mgt. CPG

Injury type

**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

- Yes
  - Apply cervical collar
  - Secure to long board
  - SpO₂ & ECG monitoring

- No
  - Consider cervical collar application and long board use

GCS < 12

- Yes
  - Consider Vacuum mattress

- No
  - Go to Seizures / Convulsions CPG

SpO₂ & ECG monitoring

- GCS < 12
  - Yes
    - 10° upward head tilt
    - Maintain SBP > 120 mmHg

- No
  - Go to Seizures / Convulsions CPG

Check blood glucose

- Seizures
  - Yes
    - Go to Seizures / Convulsions CPG

- No
  - Consider Vacuum mattress

Maintain in-line immobilisation

Transport to most appropriate ED according to local protocol

Maintain SBP > 120 mmHg

Maintain Airway (Consider Advanced airway)

LoC history

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

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

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

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)

If bronchospasm consider Salbutamol
≥ 5 years 5 mg NEB
< 5 years 2.5 mg NEB

Do not delay on site
Continue algorithm en route

Transport to ED for investigation of secondary drowning insult

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

S6

SECTION 6 - TRAUMA

**Crush Injury**

**Patient trapped**
- **Request ALS**
  - **Maintain AcBC**
    - **Oxygen therapy**
    - **Significant compression force maintained**
      - **Yes**
        - **Consider Mobile Surgical Team (for amputation)**
      - **No**
        - **Prepare all required patient carrying devices and have on standby following extrication**

**Co-ordinate with rescue personnel on release timing**

**If possible commence IV fluids prior to release**
- **NaCl 0.9% 20 mL/Kg IV/IO**
- **ECG & SPO2 monitoring**
- **Apply standard trauma care during and post extrication**
- **Go to appropriate CPG**

**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
    - Yes
    - <18 years
      - Hypothermia
      - Drowning
      - Lightning strike
      - Electrical injury
        - Yes to any
          - Commence CPR and ALS
        - No to all
          - Low energy incident
            - Yes
            - Rapid transport towards ALS
          - No
          - Consider ceasing resuscitation
            - Go to Recognition of Death CPG
- No
  - Go to Recognition of Death CPG

EMS Witnessed Traumatic Arrest

- Patient responds to BLS or ALS provision within 15 min
  - Yes
  - Rapid transport towards ALS
  - Consider ceasing resuscitation
    - Go to Asystole Decision Tree CPG
  - No
    - Go to Recognition of Death CPG

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 – Paediatric (≤ 13 Years)

1. Take standard infection control precautions.
2. Consider pre-arrival information.
3. Scene safety
4. Scene survey
5. Scene situation

Paediatric Assessment Triangle

- Appearances
- Work of Breathing
- Circulation to skin

Consider pre-arrival information:

- Pediatric Assessment Triangle

Give 5 Ventilations

- Oxygen therapy

A
- Airway patent & protected

B
- Adequate ventilation

C
- 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

Request ALS

Go to appropriate CPG

If child protection concerns are present

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

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>
</tr>
<tr>
<td>Toddler</td>
<td>90 – 150</td>
<td>24 – 40</td>
</tr>
<tr>
<td>Pre school</td>
<td>80 – 140</td>
<td>22 – 34</td>
</tr>
<tr>
<td>School age</td>
<td>70 – 120</td>
<td>18 – 30</td>
</tr>
</tbody>
</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

PHECC Clinical Practice Guidelines - 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 Trauma - Paediatric (≤ 13 years)**

- **Catastrophic external haemorrhage:** Control catastrophic external haemorrhage as per standard procedures.
- **Consider pre-arrival information:** Scene safety, scene survey, scene situation.
- **Paediatric Assessment Triangle:** Appearance, work of breathing, circulation to skin.
- **Control catastrophic external haemorrhage:** No, yes.
- **Mechanism of injury suggestive of spinal injury:** Yes, no.
- **C-spine control:**
  - Suction, OPA (NPA (> 1 year))
  - Jaw thrust (Head tilt/ chin lift)
- **Airway patent & protected:**
  - Yes, no.
- **Adequate ventilation:**
  - Yes, no.
- **Pulse < 60 & signs of poor perfusion:**
  - Yes, no.
- **AVPU assessment:**
  - Expose & check obvious injuries.
  - Treat life threatening injuries only.

**Life threatening**

- Clinical status decision:
  - **Non serious or life threat**: No serious or life threat.
  - **Serious not life threat**: Request ALP to go to appropriate CPG.

**Normal ranges**

<table>
<thead>
<tr>
<th>Age</th>
<th>Pulse</th>
<th>Respiration</th>
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<tr>
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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)

1. Make appropriate contact with patient and/or guardian if possible.
2. Identify presenting complaint and exact chronology from the time the patient was last well.
3. Check for normal patterns of:
   - feeding
   - toilet
   - sleeping
   - interaction with guardian

4. Identify patient’s weight.
5. Head to toe examination:
   - observing for:
     - pyrexia
     - rash
     - pain
     - tenderness
     - bruising
     - wounds
     - fractures
     - medical alert jewellery

6. Re-check vital signs:
7. Check for current medications.
8. Identify positive findings and initiate care management.
9. If child protection concerns are present:
   - Report findings as per Children First guidelines to ED staff and line manager in a confidential manner.

Reference:
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

- Request ALS
- Assess and maintain airway
- Oxygen therapy
- Chest Auscultation

Inadequate rate or depth
Asymmetrical movement

Possible Hx of Narcotic overdose
- Yes
- No

- Ipratropium bromide 0.250 mg nebul & salbutamol (age specific dose) nebul mixed

Inadequate Respirations

Severe
- Salbutamol < 5 years 2.5 mg NEB ≥ 5 years 5 mg NEB Repeat x 1 at 5 minutes prn
- Silent chest, < 2 words per breath, cannot feed or SpO2 < 92%

Mid / Moderate
- Salbutamol < 5 years 2.5 mg NEB ≥ 5 years 5 mg NEB Repeat x 1 at 5 minutes prn
- O2

Consider supporting ventilations if patient becomes exhausted

Silent chest, cyanosis
- Yes
- No

- Ipratropium bromide 0.250 mg nebul & salbutamol (age specific dose) nebul mixed

Positive pressure ventilations – 12 to 20 per minute

ECG & SpO2 monitoring

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

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)

- Consider FBAO
- Assess & maintain airway
- 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
**Allergic Reaction/Anaphylaxis – Paediatric (≤ 13 years)**

- **Mild**
  - Urticaria and or angioedema

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

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

**Epinephrine administered pre arrival? (within 5 minutes)**
- **No**
- **Yes**

**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**

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

**Repeat by one prn**

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

**If bronchospasm consider nebulizer**
- **Salbutamol NEB**
  - < 5 yrs: 2.5 mg
  - 5 yrs: 5 mg

**If bronchospasm consider nebulizer**
- **Salbutamol NEB**
- See age related doses above

**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
  - 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
  - IV access

- 4 to 8 mmol/L
  - Dextrose 10% 5 mL/Kg IV/IO bolus
  - Repeat x 1 prn

- 8 to 11 mmol/L
  - 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
  - IV access

- 11 to 20 mmol/L
  - NaCl (0.9%) 20 mL/Kg IV/IO bolus

- > 20 mmol/L
  - Dehydration

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 / convolution**

- **Protect from harm**
- **Oxygen therapy**

**Seizure status**

- Seizing currently
- Seizure status
- Post seizure

**Consider**

- **Request ALS**
- **Consider ALS**

**IV access**

- 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**

- Midazolam 0.5 mg/Kg buccal
  - Repeat by one prn
  - Or
  - Midazolam 0.2 mg/Kg IN
  - Repeat by one prn
  - Or
  - Diazepam PR
  - < 3 years: 2.5 mg PR
  - 3 to 7 years: 5 mg PR
  - ≥ 8 years: 10 mg PR
  - Repeat by one prn

**Paracetamol PR**

- < 1 year: 60 mg PR
- 1 – 3 years: 180 mg PR
- 4 – 8 years: 360 mg PR
- ≥ 8 years: 10 mg PR
  - Repeat by one prn
  - Or
  - Paracetamol, 20 mg/Kg, PO

**Check blood glucose**

- Blood glucose < 4 or > 20 mmol/L
  - Go to Glycaemic Emergency CPG
  - Reassess

**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.

**Maximum two doses of anticonvulsant medication by Practitioner regardless of route**

**Do not exceed adult dose**

**Version 2, 07/11**
Open wound

Yes

Active bleeding

No

Posture
Elevation
Examination
Pressure

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

No

Go to Shock CPG

Yes
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

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)

No

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

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

Ensure appropriate PPE worn;
Mask and goggles
Shock from Blood Loss – Paediatric (≤ 13 years)

Clinical signs of shock

Control external haemorrhage

Oxygen therapy

Request ALS

Patient trapped

Yes

NaCl (0.9%) 10 mL/Kg IV/IO

Reassess

NaCl (0.9%), 10 mL/Kg IV/IO aliquots 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

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

Reference:
American Academy of Pediatrics, 2000, Pediatric Education for Prehospital Professionals, Jones and Bartlett.
PHECC Clinical Practice Guidelines - Paramedic

**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

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

**Analogue Pain Scale**

0 = no pain……..10 = unbearable

**Wong – Baker Faces for 3 years and older**


Reference: World Health Organization, Pain Ladder

Administer pain medication based on pain assessment and pain ladder recommendations.

**Minor pain**

(2 to 3 on pain scale)

**Moderate pain**

(3 to 5 on pain scale)

**Severe pain**

(≥ 6 on pain scale)

Consider other non pharmacological interventions

**Paracetamol 20 mg/Kg PO**

Consider

**Morphine 0.3 mg/Kg PO Max 10 mg**

**Paracetamol 20 mg/Kg PO and / or**

**Morphine 0.05 mg/Kg IV Max 10 mg**

**Nasal Oxygen & Oxygen**

**Ibuprofen 10 mg/Kg PO**

Consider

**Ondansetron 0.1 mg/Kg IV slowly (Max 4 mg)**

Repeat Morphine IV at not < 2 min intervals pm to Max: 0.1 mg/kg IV
Spinal Immobilisation – Paediatric (≤ 13 years)

Trauma 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 paediatric patient that is combative

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

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

Life Threatening

Yes

Immobilisation may not be indicated

No

Apply cervical collar

Patient in sitting position

Yes

Go to appropriate CPG

No

Immobilise in child seat

Use extrication device

Load onto vacuum mattress, paediatric board or long board

Consider Vacuum mattress

References:
**Post-Resuscitation Care – Paediatric (≤ 13 years)**

1. **Return of Spontaneous Circulation**
   - Maintain Oxygen therapy
   - **Request ALS**

2. **Unresponsive**
   - No
     - **Adequate ventilation**
     - No
       - **Positive pressure ventilation**
         - Max 12 to 20 per minute
         - **Commence active cooling**
   - Yes
     - **Maintain patient at rest**

3. **ECG & SpO₂ monitoring**

4. **Monitor blood pressure and GCS**

5. **Check blood glucose**

6. **Monitor vital signs**

7. **Transport quietly and smoothly**

**Equipment list**
- Cold packs

**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 poor perfusion consider:**
- **NaCl 20 mL/Kg IV/IO**

**Return of Spontaneous Circulation**

[Flowchart showing decision-making process]
**Major Emergency (Major Incident) – First Practitioners on site**

**Irish (Major Emergency) terminology in black**
**UK (Major Incident) terminology in blue**

**Possible Major Emergency**

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

**Practitioner 1**

- 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

**Practitioner 2 (Ideally MIMMS trained)**

- 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**

**METHANE message**

- **M** – Major Emergency declaration / standby
- **E** – Exact location of the emergency
- **T** – Type of incident (transport, chemical etc.)
- **H** – Hazards present and potential
- **A** – Access / egress routes
- **N** – Number of casualties (injured or dead)
- **E** – Emergency services present and required

---

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

**Danger Area**

**Traffic Cordon**

**Outer Cordon**

**Inner Cordon**

- **Body Holding Area**
- **Casualty Clearing Station**
- **Ambulance Loading Point**
- **Site Control Point**
- **HSE Holding Area**
- **Garda Holding Area**
- **LA Holding Area**

**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)

**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)

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

---

**Irish (Major Emergency) terminology in black**

**UK (Major Incident) terminology in blue**

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

Entry to Inner Cordon (Bronze Area) is limited to personnel providing emergency care and or rescue

Personal Protective Equipment required

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

One way ambulance circuit

---


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

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4/5/6.8.2
05/08

PHECC Clinical Practice Guidelines - Paramedic
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.
Triage Sort

Multiple casualty incident

<table>
<thead>
<tr>
<th>Cardiopulmonary function</th>
<th>Measured value</th>
<th>Score</th>
<th>Insert score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory Rate</td>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>≥ 10 / min</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 29 / min</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 6 / min</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 1 / min</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Systolic Blood Pressure           |                |       | B            |
| ≥ 90 mm Hg                       | 4              |       |              |
| 76 – 89 mm Hg                    | 3              |       |              |
| 50 – 75 mm Hg                    | 2              |       |              |
| 1 – 49 mm Hg                     | 1              |       |              |
| No BP                             | 0              |       |              |

| Glasgow Coma Scale               |                |       | C            |
| 13 – 15                           | 4              |       |              |
| 9 – 12                             | 3              |       |              |
| 6 – 8                               | 2              |       |              |
| 4 – 5                               | 1              |       |              |
| 3                                   | 0              |       |              |

Triage Revised Trauma Score = A + B + C

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.
Prior to touching the patient ensure that the Garda has disconnected the wires from the hand held unit.

- Complete primary survey
- Cut wire connection proximal to barbs
- Monitor ECG & SpO2 for minimum 15 minutes
- Go to appropriate CPG

- Go to Behavioural emergency CPG

Patient care takes precedent over removal of barb

- 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
- Barbs should not be removed if they are embedded in the face, eye, neck, or groin

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
APPENDIX 1 - MEDICATION FORMULARY

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 15 medications.
AMENDMENTS TO THE 2012 VERSION INCLUDE:

Clopidogrel has been authorised for Paramedic use under Special Authorisation.

<table>
<thead>
<tr>
<th>MIDAZOLAM SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heading</td>
</tr>
<tr>
<td>Presentation</td>
</tr>
<tr>
<td>Contraindications</td>
</tr>
</tbody>
</table>
(Adult ≥14 and Paediatric ≤13 unless otherwise stated)

<table>
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<th>Page</th>
</tr>
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<td>Glucose gel</td>
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<td>Glyceryl trinitrate (GTN)</td>
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<td>Sodium Chloride 0.9% (NaCl)</td>
<td>107</td>
</tr>
</tbody>
</table>
### APPENDIX 1 - MEDICATION FORMULARY

**DRUG NAME**: ASPIRIN

<table>
<thead>
<tr>
<th>Class</th>
<th>Platelet aggregator inhibitor.</th>
</tr>
</thead>
<tbody>
<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 soluble, 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>
</tbody>
</table>
| Usual Dosages | **Adult**: 300 mg tablet.  
**Paediatric**: Not indicated. |
| Pharmacology/Action | Antithrombotic. Inhibits the formation of thromboxane $A_2$, which stimulates platelet aggregation and artery constriction. This reduces clot/thrombus formation in an MI. |
| Long-term side effects | Generally mild and infrequent but high incidence of gastrointestinal irritation with slight asymptomatic blood loss, increased bleeding time, bronchospasm and skin reaction in hypersensitive patients. |
| Additional information | Aspirin 300 mg is indicated for cardiac chest pain regardless if patient has taken anti coagulants or is already on aspirin. One 300 mg tablet in 24 hours. 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. |
## CLINICAL LEVEL:

**P**

**AP**

### DRUG NAME: CLOPIDOGREL

<table>
<thead>
<tr>
<th>Class</th>
<th>Platelet aggregation inhibitor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptions</td>
<td>An inhibitor of platelet function.</td>
</tr>
<tr>
<td>Presentation</td>
<td>300 mg tablet. 75 mg tablet.</td>
</tr>
<tr>
<td>Administration</td>
<td>Orally (PO). (CPG: 5/6.4.16).</td>
</tr>
<tr>
<td>Indications</td>
<td>Identification of ST Elevation Myocardial Infarction (STEMI).</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>Known severe adverse reaction. Active pathological bleeding. Severe liver impairment.</td>
</tr>
</tbody>
</table>
| 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:

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Dextrose 10% Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Carbohydrate.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Dextrose is used to describe the six-carbon sugar d-glucose, which is the principal form of carbohydrate used by the body. $D_10W$ is a hypertonic solution.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Soft pack for infusion 250 mL and 500 mL.</td>
</tr>
<tr>
<td><strong>Administration</strong></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><strong>Indications</strong></td>
<td>Hypoglycaemic emergency. Blood glucose level &lt; 4 mmol/L.</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> 250 mL IV/IO infusion. Repeat x 1 prn. <strong>Paediatric:</strong> 5 mL/Kg IV/IO. Repeat X 1 prn.</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Hypertonic glucose solution. Dextrose is a readily utilisable energy source.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Necrosis of tissue around IV access.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Also called Glucose. Cannula patency will reduce the effect of tissue necrosis.</td>
</tr>
</tbody>
</table>
### Epinephrine (1:1 000)

<table>
<thead>
<tr>
<th>Class</th>
<th>Naturally occurring catecholamine. It is a potent alpha and beta adrenergic stimulant; however, its effect on beta receptors is more profound.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation</td>
<td>Pre-filled syringe, ampoule or auto injector (for EMT use). 1 mg/1 mL (1:1 000).</td>
</tr>
<tr>
<td>Administration</td>
<td>Intramuscular (IM). (CPG: 5/6.4.18, 5/6.7.8, 4.4.18, 4.7.8).</td>
</tr>
<tr>
<td>Indications</td>
<td>Severe anaphylaxis.</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>None known.</td>
</tr>
<tr>
<td>Usual Dosages</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.</td>
</tr>
<tr>
<td></td>
<td><strong>Paediatric:</strong></td>
</tr>
<tr>
<td>EMT: 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>
<td></td>
</tr>
<tr>
<td>Additional information</td>
<td>N.B. Double check the concentration on pack before use.</td>
</tr>
</tbody>
</table>
## GLUCAGON

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>GLUCAGON</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Hormone and Antihypoglycaemic.</td>
</tr>
<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: 5/6.4.19, 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:  

<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>
<tr>
<td><strong>Administration</strong></td>
<td>Buccal administration:</td>
</tr>
<tr>
<td></td>
<td>Administer gel to the inside of the patient’s cheek and gently massage the outside of the cheek.</td>
</tr>
<tr>
<td></td>
<td>(CPG: 5/6.4.19, 5/6.7.9, 4.4.19, 4.7.9, 2/3.4.19).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Hypoglycaemia.</td>
</tr>
<tr>
<td></td>
<td>Blood glucose &lt; 4 mmol/L.</td>
</tr>
<tr>
<td></td>
<td>EFR – Known diabetic with confusion or altered levels of consciousness.</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> 10 – 20 g buccal.</td>
</tr>
<tr>
<td></td>
<td>Repeat prn.</td>
</tr>
<tr>
<td></td>
<td><strong>Paediatric:</strong> ≤ 8 years: 5 – 10 g buccal.</td>
</tr>
<tr>
<td></td>
<td>&gt;8 years: 10 – 20 g buccal.</td>
</tr>
<tr>
<td></td>
<td>Repeat prn.</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Increases blood glucose levels.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>May cause vomiting in patients under the age of five if administered too quickly.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Glucose gel will maintain glucose levels once raised but should be used secondary to Dextrose or Glucagon to reverse hypoglycaemia.</td>
</tr>
<tr>
<td></td>
<td>Proceed with caution:</td>
</tr>
<tr>
<td></td>
<td>- patients with airway compromise.</td>
</tr>
<tr>
<td></td>
<td>- altered level of consciousness.</td>
</tr>
</tbody>
</table>
## CLINICAL LEVEL:

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>GLYCERYL TRINITRATE (GTN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Nitrate.</td>
</tr>
<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>Contra-Indications</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>Paediatric:</strong> Not indicated.</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>Vasodilator. Releasing 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>
## Ibuprofen

### Class
Non-Steroidal Anti-Inflammatory Drugs (NSAIDs).

### Descriptions
It is used to reduce mild to moderate pain.

### Presentation
- Suspension 100 mg in 5 mL
- 200 mg tablet

### Administration
Orally (PO).
(CPG: 4/5/6.2.6, 4/5/6.7.14)

### Indications
Mild to moderate pain.

### Contra-Indications
- Not suitable for children under 3 months.
- Patient with history of asthma exacerbated by aspirin.
- Pregnancy.
- Peptic ulcer disease.
- Known severe adverse reaction.

### Usual Dosages
- **Adult:** 400 mg PO.
- **Paediatric:** 10 mg/Kg PO.

### Pharmacology/Action
Suppresses prostaglandins, which cause pain via its inhibition of cyclooxygenase (COX). Prostaglandins are released by cell damage and inflammation.

### Side effects
- Skin rashes, gastrointestinal intolerance and bleeding.
- Occasionally gastrointestinal bleeding and ulceration occurs.
- May also cause acute renal failure, interstitial nephritis and nephritic syndrome.

### Additional information
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.
## Midazolam Solution

### Clinical Level:

<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. <strong>Respiratory depression.</strong></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>
**APPENDIX 1 - MEDICATION FORMULARY**

**CLINICAL LEVEL:**

<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>
</tbody>
</table>
### NITROUS OXIDE 50% AND OXYGEN 50% (ENTONOX®)

<table>
<thead>
<tr>
<th><strong>Class</strong></th>
<th>Analgesic.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptions</strong></td>
<td>Potent analgesic gas contains a mixture of both nitrous oxide and oxygen.</td>
</tr>
<tr>
<td><strong>Presentation</strong></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><strong>Administration</strong></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><strong>Indications</strong></td>
<td>Pain relief.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> Self-administered until pain relieved. <strong>Paediatric:</strong> Self-administered until pain relieved.</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Analgesic agent gas: - CNS depressant. - pain relief.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Disinhibition. Decreased level of consciousness. Light headedness.</td>
</tr>
<tr>
<td><strong>Additional information</strong></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>
## OXYGEN

### Class
Gas.

### Descriptions
Odourless, tasteless, colourless gas necessary for life.

### Presentation
D, E or F cylinders, coloured black with white shoulders. CD cylinder; white cylinder. Medical gas.

### 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/organisms.

### 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.
### Paracetamol

<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. <strong>Advanced Paramedics</strong> 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. 20 mg/Kg PO.</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. 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>
<tr>
<td>MEDICATION</td>
<td>SALBUTAMOL</td>
</tr>
<tr>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>Class</td>
<td>Sympathetic agonist.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>Sympathomimetic that is selective for beta-2 adrenergic receptors.</td>
</tr>
<tr>
<td>Presentation</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>Administration</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>Indications</td>
<td>Bronchospasm. Exacerbation of COPD. Respiratory distress following submersion incident.</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>Known severe adverse reaction.</td>
</tr>
<tr>
<td>Usual Dosages</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>Side effects</td>
<td>Tachycardia. Tremors. Tachyarrhythmias.</td>
</tr>
<tr>
<td>Long term side effects</td>
<td>High doses may cause hypokalaemia.</td>
</tr>
<tr>
<td>Additional information</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>
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## APPENDIX 1 - MEDICATION FORMULARY

### SODIUM CHLORIDE 0.9% (NaCl)

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<th>SODIUM CHLORIDE 0.9% (NaCl)</th>
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</thead>
<tbody>
<tr>
<td>Class</td>
<td>Isotonic crystalloid solution.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>Solution of sodium and chloride, also known as normal saline (NaCl).</td>
</tr>
<tr>
<td>Presentation</td>
<td>100 mL, 500 mL &amp; 1000 mL soft pack for infusion. 10 mL ampoules.</td>
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</table>
| Administration | Intravenous (IV) infusion, Intravenous (IV) flush, Intraosseous (IO).  
| Paramedic: | maintain infusion once commenced.  
| Indications | IV/IO fluid for pre-hospital emergency care. |
| Contra-Indications | Known severe adverse reaction. |
| 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. |
NEW FOR 2012:

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<th>CFR – A</th>
<th>OFA</th>
<th>EFR</th>
<th>EMT</th>
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**KEY:**
- ✔️ Authorised under PHECC CPGs
- URMPIO Authorised under PHECC CPGs under registered medical practitioner's instructions only
- APO Authorised under PHECC CPGs to assist practitioners only (when applied to EMT, to assist Paramedic or higher clinical levels)
- ✔️ SA Authorised subject to special authorisation as per CPG

**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.**
# APPENDIX 2 - MEDICATION & SKILLS MATRIX

<table>
<thead>
<tr>
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## APPENDIX 2 - MEDICATION & SKILLS MATRIX

### Medication

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<tr>
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### Airway & Breathing Management

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## APPENDIX 2 - MEDICATION & SKILLS MATRIX

### CLINICAL LEVEL

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### Cardiac

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## APPENDIX 2 - MEDICATION & SKILLS MATRIX

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### Trauma

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## APPENDIX 2 - MEDICATION & SKILLS MATRIX

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### Other

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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 Paramedics April 2012

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

Updated CPGs from the previous version.

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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.                                                                                                       |
### CPGS

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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 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’. |
| CPG 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.