These CPGs are dedicated to the memory of Dr Geoff King, the inaugural Director of the Pre-Hospital Emergency Care Council (PHECC), who sadly passed away in August 2014. Geoff was a true leader who had the ability to influence change through his own charismatic presence, vision and the respect he showed to all who met and dealt with him. He had an ability to empower others to perform and achieve to a “higher standard”.

Geoff’s message was consistent “If you always put the patient first when making a decision, you will never make the wrong decision”.

His immense legacy is without equal.

Ní bheidh a leithéid arís ann.
PHECC Clinical Practice Guidelines

Fourth Edition, April 2012
Fifth Edition, July 2014
Sixth Edition, March 2017

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## CLINICAL PRACTICE GUIDELINES

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This Handbook comprises the 2017 Edition Clinical Practice Guidelines (CPGs). These guidelines outline patient assessments and pre-hospital management for responders at Emergency First Responder–Basic Tactical Emergency Care, Emergency First Responder, First Aid Responder and Occupational First Aider levels, and registered practitioners at Emergency Medical Technician, Paramedic and Advanced Paramedic levels, and I am delighted that there are now 386 CPGs to guide integrated care across the six pre-hospital emergency care clinical levels. These CPGs ensure that responders and practitioners are practicing to best international standards and support PHECC’s vision that people in Ireland receive excellent pre-hospital emergency care.

I would like to acknowledge the hard work and commitment the members of the Medical Advisory Committee have shown during the development of this publication, guided by Dr Mick Molloy (Chair). I would also like to pay tribute to the Medical Advisory Groups, chaired by Dr Cathal O’Donnell and Dr Zelie Gaffney, for their dedication and expertise in the publication of previous guidelines, during my term as Chair of Council. A special word of thanks goes to Mr Brian Power, PHECC Programme Development Officer, and the PHECC executive, for their continued support in researching and compiling these CPGs.

I recognise the contribution made by many responders and practitioners, whose feedback has assisted PHECC in the continual improvement and development of CPGs, and welcome these guidelines as an important contribution to best practice in pre-hospital emergency care.

Mr Tom Mooney, Chair, Pre-Hospital Emergency Care Council (June 2008 - June 2016)
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP</td>
<td>Advanced Paramedic</td>
</tr>
<tr>
<td>ALS</td>
<td>Advanced Life Support</td>
</tr>
<tr>
<td>ABC</td>
<td>Airway, Breathing &amp; Circulation</td>
</tr>
<tr>
<td>ATV</td>
<td>All Terrain Vehicle</td>
</tr>
<tr>
<td>ALoC</td>
<td>Altered Level of Consciousness</td>
</tr>
<tr>
<td>AED</td>
<td>Automated External Defibrillator</td>
</tr>
<tr>
<td>BVM</td>
<td>Bag Valve Mask</td>
</tr>
<tr>
<td>BLS</td>
<td>Basic Life Support</td>
</tr>
<tr>
<td>BG</td>
<td>Blood Glucose</td>
</tr>
<tr>
<td>BP</td>
<td>Blood Pressure</td>
</tr>
<tr>
<td>BTEC</td>
<td>Basic Tactical Emergency Care</td>
</tr>
<tr>
<td>CRT</td>
<td>Capillary Refill Time</td>
</tr>
<tr>
<td>CO₂</td>
<td>Carbon Dioxide</td>
</tr>
<tr>
<td>CPR</td>
<td>Cardiopulmonary Resuscitation</td>
</tr>
<tr>
<td>C-spine</td>
<td>Cervical Spine</td>
</tr>
<tr>
<td>COPD</td>
<td>Chronic Obstructive Pulmonary Disease</td>
</tr>
<tr>
<td>CPG</td>
<td>Clinical Practice Guideline</td>
</tr>
<tr>
<td>CPAP</td>
<td>Continuous Positive Airway Pressure</td>
</tr>
<tr>
<td>º</td>
<td>Degree</td>
</tr>
<tr>
<td>ºC</td>
<td>Degrees Centigrade</td>
</tr>
<tr>
<td>D10W</td>
<td>Dextrose 10% in water</td>
</tr>
<tr>
<td>D5W</td>
<td>Dextrose 5% in water</td>
</tr>
<tr>
<td>DNR</td>
<td>Do Not Resuscitate</td>
</tr>
<tr>
<td>gtt</td>
<td>Drop (gutta)</td>
</tr>
<tr>
<td>ECG</td>
<td>Electrocardiogram</td>
</tr>
<tr>
<td>ED</td>
<td>Emergency Department</td>
</tr>
<tr>
<td>EMT</td>
<td>Emergency Medical Technician</td>
</tr>
<tr>
<td>ETT</td>
<td>Endotracheal Tube</td>
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<tr>
<td>FBAO</td>
<td>Foreign Body Airway Obstruction</td>
</tr>
<tr>
<td>#</td>
<td>Fracture</td>
</tr>
<tr>
<td>GP</td>
<td>General Practitioner</td>
</tr>
<tr>
<td>GCS</td>
<td>Glasgow Coma Scale</td>
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<tr>
<td>g</td>
<td>Gram</td>
</tr>
<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>Intranasal</td>
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<td>IV</td>
<td>Intravenous</td>
</tr>
<tr>
<td>J</td>
<td>Joules</td>
</tr>
<tr>
<td>Kg</td>
<td>Kilogram</td>
</tr>
<tr>
<td>LMA</td>
<td>Laryngeal Mask Airway</td>
</tr>
</tbody>
</table>
Mean Arterial Pressure ................................................................. MAP
Milligram .................................................................................. mg
Millilitre .................................................................................... mL
Millimole ................................................................................... mmol
Minute ...................................................................................... min
Modified Early Warning Score ................................................... MEWS
Motor Vehicle Collision ............................................................. MVC
Myocardial Infarction ................................................................. MI
Milliequivalent ......................................................................... mEq
Millimetres of mercury ............................................................. mmHg
Nasopharyngeal airway ............................................................... NPA
Nebulised .................................................................................. NEB
Negative decadic logarithm of the H+ ion concentration .......... pH
Orally (per os). ......................................................................... PO
Oropharyngeal airway ................................................................. OPA
Oxygen ..................................................................................... O2
Paramedic .................................................................................. P
Peak Expiratory Flow Rate ......................................................... PEFR
Per rectum ................................................................................ PR
Per vagina .................................................................................. PV
Percutaneous Coronary Intervention ............................................ PCI
Personal Protective Equipment .................................................. PPE
Pulseless Electrical Activity ....................................................... PEA
Pulseless Ventricular Tachycardia .............................................. pVT
Registered Medical Practitioner .............................................. RMP
Registered Psychiatric Nurse ................................................... RPN
Respiration rate ........................................................................ RR
Return of Spontaneous Circulation ............................................. ROSC
Revised Trauma Score ............................................................... RTS
Saturation of arterial Oxygen ................................................... SpO2
ST Elevation Myocardial Infarction ............................................. STEMI
Subcutaneous ........................................................................... SC
Sublingual ................................................................................ SL
Supraventricular Tachycardia ...................................................... SVT
Systolic Blood Pressure ............................................................ SBP
Therefore ................................................................................. :
Total body surface area ............................................................. TBSA
Ventricular Fibrillation ............................................................. VF
Ventricular Tachycardia ............................................................. VT
When necessary (pro re nata) ....................................................... prn
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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An extra special thanks to all the PHECC team who were involved in this project, especially Ms Margaret Bracken and Ms Deirdre Borland for their painstaking recording of details and organisational skills.

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Welcome to the 2017 edition of the Clinical Practice Guidelines for pre-hospital care in Ireland. The field of pre-hospital care is still in its infancy and rapidly developing, as is evident from the 386 Clinical Practice Guidelines covering both responder and practitioner levels from Cardiac First Responder to Advanced Paramedic level.

A number of CPGs have been updated to reflect the 2015 guidelines from the International Liaison Committee on Resuscitation (ILCOR).

I would like to thank the focus groups for the substantial work they have completed on spinal injury management, which is reflected in the updated guidance on appropriate use of spinal motion restriction. Pain management has also been enhanced with the addition of Methoxyflurane and Ketamine, which will substantially improve management of pain for certain groups of patients.

We have developed a robust Delphi process for development and review of CPGs thanks to the work of Brian Power. This process prioritises those issues that are clinically important and likely to impact the widest group of patients. I would like to thank all the members of the Medical Advisory Committee for their work on this edition of the CPGs and on the Delphi process; without their input it would not have been possible to complete this body of work. It is our intention to develop or update guidelines which provide an effective and efficient practice of pre-hospital care. Feedback is welcomed on this edition and on issues you feel are not addressed but encountered in your pre-hospital practice.

Dr Mick Molloy, Chair, Medical Advisory Committee (May 2013 - June 2016)

Feedback on the CPGs may be sent to CPG-feedback@phecc.ie
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 – **Credentialed**.
2. The practitioner is acting on behalf of a licensed CPG provider (paid or voluntary) – **Licensed**.
3. The practitioner is privileged by the licensed CPG provider on whose behalf he/she is acting to implement the specific CPG – **Privileged**.
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](http://www.phecc.ie).

Definitions

<table>
<thead>
<tr>
<th>Adult</th>
<th>A patient of 16 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 (≤) 15 years old, unless specified on the CPG</td>
</tr>
<tr>
<td>Infant</td>
<td>A patient between 4 weeks and less than 1 year old, unless specified on the CPG</td>
</tr>
<tr>
<td>Neonate</td>
<td>A patient less than 4 weeks old, unless specified on the CPG</td>
</tr>
<tr>
<td>Paediatric patient</td>
<td>Any child, infant or neonate</td>
</tr>
</tbody>
</table>

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, the provision of emergency care comes from a range of disciplines and includes responders (Cardiac First Responders, First Aid Responders and Emergency First Responders) 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 traumatic emergencies respectively.
CPGs guide the practitioner in assessment, treatment and disposition of patients who present with an acute illness or injury.

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 lead. Explicit handover between responders/practitioners is essential and will eliminate confusion regarding the responsibility for care.

When a practitioner of higher clinical level on scene deems it appropriate to take clinical lead he/she should calmly state: “My name is xx, I am an AP/P/EMT, I am assuming clinical lead.”

If the practitioner of higher clinical level on scene wishes to hand over clinical lead to another practitioner (who may be of equal or lower clinical level), he/she states to the practitioner: “My name is xx, I am an AP/P/EMT, you are now clinical lead.”

The practitioner acknowledges immediately and accepts clinical lead. “I am now clinical lead”

A clinical lead exchange should be recorded on the PCR in the ‘continuity of care’ section. There should never be any doubt as to who is clinical lead on scene.

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

Emergency Medical Technician - Basic Tactical Emergency Care (EMT-BTEC)

EMT-BTEC certifies registered EMTs with additional knowledge and a skill set for providing pre-hospital emergency care in hostile or austere environments. Recognised institutions approved at EMT level may design an EMT-BTEC module to add to new entrant EMT courses or deliver as a CPG education/upskill module to registered EMTs.

Emergency First Response - Basic Tactical Emergency Care (EFR-BTEC)

The EFR-BTEC is an education and training standard published in 2014. Entry criteria to this course includes the minimum age of 18 and successful completion of a CFR-Advanced course within one calendar year of commencing the EFR-BTEC course. Persons certified at EFR-BTEC learn EFR and the additional knowledge and skill set for providing pre-hospital emergency care in hostile or austere environments.

First Aid Response

First Aid Response (FAR) is a new education and training standard published in 2014. This standard offers training and certification to individuals and groups who require a first aid skill set, including cardiac first response. This standard is designed to meet basic first aid and basic life support (BLS) requirements that a certified person, known as a ‘First Aid Responder’, may encounter in their normal daily activities.
Defibrillation Policy

The Medical Advisory Committee has recommended the following pre-hospital defibrillation policy:

- Paramedics and advanced paramedics should use manual defibrillation for all age groups.
- EMTs and responders shall use AED mode for all age groups.

Pre-Hospital Spinal Injury Management

The Medical Advisory Committee has recommended that ’spinal motion restriction’ shall be used as the preferred terminology in relation to pre-hospital spinal injury management. They further recommend that at paramedic and advanced paramedic levels a ’spinal injury rule in’ should apply and not actively performing spinal motion restriction on all trauma patients. Details of all spinal injury management recommendations are available in Appendix 6.
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CLINICAL PRACTICE GUIDELINES for EMERGENCY MEDICAL TECHNICIAN
(CODES EXPLANATION)

- **EMT** (Level 4) for which the CPG pertains
- **Paramedic** (Level 5) for which the CPG pertains
- **Advanced Paramedic** (Level 6) for which the CPG pertains

---

**EMT**

- **Go to xxx CPG**
- **Start from**
- **A clinical condition that may precipitate entry into the specific CPG**

---

**Paramedic**

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

---

**Advanced Paramedic**

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

---

**EMT BTEC**

- **An EMT who has completed Basic Tactical Emergency Care training and has been privileged to operate in adverse conditions**

---

**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**

---

**Emergency Medical Technician or lower clinical levels not permitted this route**

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

---

**Special instructions**

- Which the Practitioner must follow

---

**Special authorisation**

- This authorises the Practitioner to perform an intervention under specified conditions

---

**Reassess**

- Reassess the patient following intervention

---

**Request**

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

---

**Consider**

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

---

**Go to xxx CPG**

- Go to xxx CPG

---

**4/5/6.4.1**

Version 2, 07/11

---

**4/5/6.x.y**

Version 2, mm/yy

---

**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

---

**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
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 and medications on the Patient Care Report (PCR) or the Ambulatory Care Report (ACR), are consistent principles throughout the guidelines and reflect the practice of practitioners. Care principles are the foundations for risk management and the avoidance of error.

**PHECC Care Principles**

1. Ensure the safety of yourself, other emergency service personnel, your patients and the public.
2. A person has capacity in respect to clinical decisions affecting themselves unless the contrary is shown (Assisted Decision-Making (Capacity) Act 2015).
3. Seek consent prior to initiating interventions and/or administering medications.
4. Identify and manage life-threatening conditions.
5. Ensure adequate ventilation and oxygenation.
6. Optimise tissue perfusion.
7. Provide appropriate pain relief within the scope of practice. Pain management;
   7.1 should not delay the diagnosis of conditions or injuries
   7.2 should be implemented for all relevant patients
   7.3 should commence within ten minutes on scene
   7.4 goal is to reduce pain to a tolerable level
   7.5 to take cognisance of immediate and short term pain management requirements by administering appropriate combinations of analgesia
8. Identify and manage other conditions.
9. Place the patient in the appropriate posture according to the presenting condition.
10. Ensure the maintenance of normal body temperature (unless a CPG indicates otherwise).
11. Provide reassurance at all times.
12. Monitor and record patient’s vital observations.
13. Maintain responsibility for patient care until handover to an appropriate practitioner.
14. Arrange transport to an appropriate medical facility as necessary and in an appropriate time frame.
15. Complete a patient care record following an interaction with a patient.
16. Identify the clinical lead on scene; this shall be the most qualified practitioner on scene. In the absence of a more qualified practitioner, the practitioner providing care during transport shall be designated the clinical lead as soon as practical.
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.

The primary survey includes:

- Scene safety
- Scene survey
- Scene situation

**Assess responsiveness**

- **A** Airway patent & protected
  - Yes
  - No
  - Head tilt/chin lift

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

- **C** Adequate circulation
  - Yes
  - No
  - AVPU assessment

**Life threatening**

- **Clinical status decision**
  - Life threatening:
    - Request ALS
  - Serious not life threat:
    - Consider using an appropriate CPG

**Non serious or life threat**

- **Clinical status decision**
  - Non serious or life threat:
    - Go to Secondary Survey CPG

**Special Authorisation:**

EMTs having completed the BTEC course may be privileged by a licensed CPG provider to insert an NPA on its behalf.

Reference: ILCOR Guidelines 2015
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
  - Yes → C-spine control
  - No → Assess responsiveness
- Airway patent & protected
  - Yes → Oxygen therapy
  - No → Suction OPA
- Jaw thrust
- Adequate ventilation
  - Yes → Oxygen therapy
  - No → Adequate circulation
    - Yes → AVPU assessment
    - No → Consider ALS
- Treat life-threatening injuries only at this point

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

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

Reference: ILCOR Guidelines 2015
SECTION 2 - Patient Assessment

4.2.4
Version 2, 09/2011

Secondary Survey Medical – Adult

Primary Survey

Record vital signs

Patient acutely unwell
No

Focused medical history of presenting complaint

SAMPLE history

Check for medications carried or medical alert jewellery

Consider Paramedic

Request ALS

EMT

Go to appropriate CPG

Identify positive findings and initiate care management

Markers identifying acutely unwell
Cardiac chest pain
Acute pain > 5

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

Markers for multi-system trauma
- Systolic BP < 90
- Respiratory rate < 10 or > 29
- Heart rate > 120
- AVPU = V, P or U on scale
- Mechanism of Injury

Identify positive findings and initiate care management

Examination of obvious injuries

Record vital signs

SAMPLE history

Complete a head to toe survey as history dictates

Check for medications carried or medical alert jewellery

Consider Paramedic

Request ALS

Go to appropriate CPG

EMT

SECTION 2 - Patient Assessment

Pain Management – Adult

If pain management not resolved:
- Implement pharmacology strategy at appropriate level on the pain ladder
- Consider non-pharmacological pain management techniques
  - Splinting
  - Psychological support
  - Heat or cold therapy
  - Positioning

Ketamine indicated if:
- Morphine or Fentanyl not adequate, or
- Painful extrication or procedure anticipated

Repeat Fentanyl IN once only at not < 10 min after initial dose prn.
Repeat Methoxyflurane INH once only prn.

If nausea following opioid administration:
- And/or Fentanyl 0.1 mg/Kg IV
- Ketamine 0.1 mg/Kg IV
- Ibuprofen 600 mg PO
- Paracetamol 1 g PO
- Nitrous Oxide & Oxygen INH
- Methoxyflurane 3 mL INH

PHECC pain ladder

Go to NAV CPG

SECTION 3 - Respiratory Emergencies

Advanced Airway Management – Adult

1. **Adult Cardiac arrest**
   - Able to ventilate?
     - Yes
       - Consider FBAO
     - No
       - Go to BLS-Adult CPG
   - Consider option of advanced airway?
     - Yes
       - Supraglottic Airway insertion
         - Successful
           - Yes
             - Go to appropriate CPG
           - No
             - 2nd attempt Supraglottic Airway insertion
               - Successful
                 - Yes
                   - Check supraglottic airway placement after each patient movement or if any patient deterioration
                 - No
                   - Revert to basic airway management
                   - Continue ventilation and oxygenation
                   - Go to appropriate CPG
               - No
                 - Revert to basic airway management
                 - Continue ventilation and oxygenation
                 - Go to appropriate CPG

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

3. **Maintain adequate ventilation and oxygenation throughout procedures**

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

5. **Special Authorisation:**
   - EMTs may use cuffed supraglottic airways subject to maintaining competence and Medical Director authorisation

Reference: ILCOR Guidelines 2015
SECTION 3 - Respiratory Emergencies

Inadequate Ventilations – Adult

- Respiratory difficulty
  - Airway patent & protected: Yes
    - Check SpO2
      - Oxygen therapy
        - Request ALS
          - Raised ETCO2 + reduced SpO2: Consider assisted ventilation
          - Raised ETCO2 + normal SpO2: Encourage deep breaths
  - No
    - Go to Airway CPG

Patient assessment
- Consider positive pressure ventilations (Max 10 per minute)
- 100% O2 initially unless patient has known COPD
  - Titrate O2 to standard as clinical condition improves
- Brain insult
  - Go to Head injury CPG
- Respiratory failure
  - Go to Stroke CPG
- Substance intake
  - Go to Poison CPG
- Other
  - Consider pain, posture & neuromuscular disorders
- Respiratory assessment
- bronchospasm/known asthma
  - Go to Asthma CPG
- Asymmetrical breath sounds
  - Go to Allergy/Anaphylaxis CPG
  - Go to COPD CPG
- Crepitations
  - Go to Sepsis CPG
- Other
  - Consider shock, cardio/neurological/systemic illness, pain or psychological upset
- Consider collapse, consolidation & fluid
  - Yes
    - Tension Pneumothorax suspected
      - Needle decompression
    - Go to APO CPG
  - No
SECTION 3 - Respiratory Emergencies

Exacerbation of COPD

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

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

Assess and maintain airway

Respiratory assessment

Salbutamol 5 mg NEB

OR

Salbutamol (0.1 mg) metered aerosol

Resolved/improved

Yes

No

ECG & SpO₂ monitoring

Oxygen therapy

Requested

ALS

Salbutamol 5 mg NEB

Resolved/improved

Yes

No

Salbutamol 5 mg NEB

Resolved/improved

Yes

No

Hydrocortisone 100 mg slow IV
(infusion in 100 mL NaCl)

Yes

No

Salbutamol 5 mg NEB

Resolved/improved

Yes

No

Magnesium Sulphate 2 g IV
(infusion in 100 mL NaCl)

Yes

No

Salbutamol 5 mg NEB

Every 5 minutes prn

Consider

SECTION 4 - Medical Emergencies


Basic Life Support – Adult

Cardiac Arrest

Request ALS

Attach defibrillation pads

Commence continuous chest compressions (or CPR) while defibrillator is being prepared

Assess Rhythm

Shockable
VF or pulseless VT

Give 1 shock

Non-Shockable
Asystole or PEA

Immediately resume CPR for 2 minutes

Oxygen therapy

Rhythm check *

Go to VF/VT CPG

Go to Asystole CPG

Go to PEA CPG

ROSC

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.

Minimum interruptions of chest compressions

Maximum hands off time 10 seconds

Ventilations
Volume: 500 to 600 mL

Ventilations
Volume: 500 to 600 mL

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

1 practitioner on site = continuous chest compressions
2 or more practitioners / responders on site = CPR

Chest compressions
Rate: 100 to 120/min
Depth: 5 to 6 cm

Consider changing defibrillator to manual mode

Change defibrillator to manual mode

Initiate mobilisation of 3 to 4 practitioners / responders

Reference: ILCOR Guidelines 2015
Foreign Body Airway Obstruction – Adult

Are you choking?

- Severe (ineffective cough)
  - FBAO Severity
  - One cycle of CPR
    - Conscious
      - Encourage cough
        - 1 to 5 back blows followed by 1 to 5 abdominal thrusts as indicated
        - Request ALS
          - Effective
            - Positive pressure ventilations maximum 10 per minute
            - Oxygen therapy
          - Adequate ventilations
            - Oxygen therapy
          - No
        - No
      - No
    - Request ALS
      - Conscious
        - 1 to 5 back blows followed by 1 to 5 abdominal thrusts as indicated
        - Effective
          - Positive pressure ventilations maximum 10 per minute
          - Oxygen therapy
        - Adequate ventilations
          - Oxygen therapy
        - No
      - No
    - No
  - No

- Conscious
  - Yes
  - Effective
    - Go to BLS Adult CPG
  - No
    - One cycle of CPR
      - Effective
        - Yes
      - No
        - One cycle of CPR
          - Effective
            - Yes
          - No
            - Go to BLS Adult CPG
  - No

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

Reference: ILCOR Guidelines 2015
SECTION 4 - Medical Emergencies

VF or pVT – Adult

- Defibrillate (escalating energy)
- 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 or harness induced suspension trauma consider
- Sodium Bicarbonate (8.4%) 1 mEq/Kg IV/IO

If refractory VF/pVT post Epinephrine and 3rd shock:
- Amiodarone 300 mg IV/IO
- 2nd dose (if required post 5th shock)
- Amiodarone 150 mg IV/IO

If torsades de pointes consider
- Magnesium Sulphate 2 g IV/IO

Immediate IO access if IV not immediately accessible

Initiate mobilisation of 3 to 4 practitioners / responders

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

Reference: ILCOR Guidelines 2015
**SECTION 4 - Medical Emergencies**

### Asystole – Adult

From BLS Adult CPG

- **Asystole**

  - Go to Post Resuscitation Care CPG
  - Go to PEA CPG
  - Go to VF / Pulseless VT CPG

  **Rhythm check**

  - VF/VT

  **100% Oxygen**

  **Special Authorisation:** An EMT may cease resuscitation, following 20 minutes of asystole and no P or AP available, provided that the EMT is privileged to do so by the licensed CPG provider on whose behalf he/she is acting.

- **EMT**

  **Initiate mobilisation of 3 to 4 practitioners / responders**

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

  **Contact Ambulance control for direction**

  **Contact Ambulance Control and identify timeframe for arrival of P or AP and follow direction re transport**

- **Advanced airway management**

  **Consider mechanical CPR assist**

**Reference:** ILCOR Guidelines 2015

* +/- Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm
**SECTION 4 - Medical Emergencies**

**Pulseless Electrical Activity – Adult**

1. **From BLS Adult CPG**
   - **PEA**
     - Immediate IO access if IV not immediately accessible

2. **AP**
   - Go to Post Resuscitation Care CPG
   - Go to Asystole CPG
   - Go to VF / Pulseless VT CPG

3. **Rhythm check**
   - Yes
     - NaCl IV/IO 500 mL (use as flush)
   - **100% Oxygen**
   - Epinephrine (1:10 000) 1 mg IV/IO Every 3 - 5 Minutes (every 2nd cycle) prn

4. **No**
   - Asystole

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

6. **Consider transport to ED if no change after 20 minutes resuscitation**
   - If no ALS available

7. **EMT P**
   - Initiate mobilisation of 3 to 4 practitioners / responders on site to assist with cardiac arrest management

8. **AP**
   - 1st dose of Epinephrine should be administered as soon as feasible (but not at the expense of CPR)

9. **Consider fluid challenge**
   - **NaCl IV/IO Repeat pm**

10. **If Tricyclic Antidepressant Toxicity or harness induced suspension trauma consider**
    - Sodium Bicarbonate (8.4%) 1 mEq/Kg IV/IO

**Reference:** ILCOR Guidelines 2015

*+/- Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm*
SECTION 4 - Medical Emergencies

Consider advanced airway & positive pressure ventilations. Max 10 per minute.

Maintain patient at rest

Monitor vital signs

Avoid warming

Maintain care until handover to appropriate Practitioner

Contact NAS control for direction

Reference: ILCOR Guidelines 2015
SECTION 4 - Medical Emergencies

End stage terminal illness

Patient becomes acutely unwell

Respiratory distress

Yes

Inform Ambulance Control

Basic airway maintenance

No

Oxygen therapy

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

Yes

Go to Primary survey CPG

Agreement between caregivers present and Practitioners not to resuscitate

Yes

It is inappropriate to commence resuscitation

Inform Ambulance Control

Pulse present

Yes

Provide supportive care until handover to appropriate Practitioner

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

No

Follow local protocol for care of deceased

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

Appropriate Practitioner

Registered Medical Practitioner
Registered Nurse
Registered Advanced Paramedic
Registered Paramedic
Registered EMT

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

4.4.8
Version 1, 06/2010

EMT
SECTION 4 - Medical Emergencies

4.4.9 Recognition of Death – Resuscitation not Indicated

Apparent dead body

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

Definitive indicators of death:
1. Decomposition
2. Obvious rigor mortis
3. Obvious pooling (hypostasis)
4. Inclination
5. Decapitation
6. Injuries totally incompatible with life

- Yes: It is inappropriate to commence resuscitation
  - Inform Ambulance Control
    - Complete all appropriate documentation
      - Await arrival of appropriate Practitioner and / or Gardaí

- No: Definitive indicators of Death
  - Yes: Inform Ambulance Control
    - Complete all appropriate documentation
      - Await arrival of appropriate Practitioner and / or Gardaí
SECTION 4 - Medical Emergencies

Cardiac Chest Pain – Acute Coronary Syndrome

Cardiac chest pain

Apply 3 lead ECG & SpO₂ monitor

Consider
Oxygen therapy

Aspirin 300 mg PO

GTN 0.4 mg SL
Repeat at 3 to 5 min prn (max 1.2 mg SL)

Monitor vital signs

Yes
Chest Pain

No

GTN 0.4 mg SL
Repeat at 3 to 5 min prn (max 1.2 mg SL)

Monitor vital signs

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

Contact NAS control for direction

EMT

Reference: ILCOR Guidelines 2015
Symptomatic Bradycardia – Adult

Symptomatic includes:
- Acute altered mental status
- Ischemic chest discomfort
- Acute heart failure
- Hypotension
- Signs of shock

Titrated Atropine to effect (HR > 60) and non symptomatic

If cardiogenic shock suspected consider:
- Epinephrine 0.01 mg IV/IO
- Repeat prn

Reference: ILCOR guidelines 2015

1 mg Epinephrine in 100 mL NaCl
* 1 mL = 0.01 mg, draw up in 1 mL syringe and administer as a bolus.
SECTION 4 - Medical Emergencies

Altered Level of Consciousness – Adult

Maintain airway

No

Trauma Yes

Recovery Position

Consider Cervical Spine

Yes

P or U on AVPU scale

No

Obtain SAMPLE history from patient, relative or bystander

ECG & SP02 monitoring

Check temperature

Check pupillary size & response

Check for skin rash

Check blood glucose

Differential Diagnosis

Anaphylaxis

Submersion incident

Head injury

Hypothermia

Poison

Seizures

Symptomatic Bradycardia

Glycaemic emergency

Shock from blood loss

Inadequate respirations

Post resuscitation care

Stroke

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
**Allergic Reaction/Anaphylaxis – Adult**

- **Mild**
  - Urticaria

- **Moderate**
  - Mild symptoms + angio oedema
  - Simple bronchospasm

- **Severe**
  - Anaphylaxis

**Clinical Practice Guidelines - 2017 Edition (Updated February 2018)**

**SECTION 4 - Medical Emergencies**

SECTION 4 - Medical Emergencies

Decompression Illness (DCI)

SCUBA diving within 48 hours

Consider diving buddy as possible patient also.

Complete primary survey (Commence CPR if appropriate)

Treat in supine position

Oxygen therapy

100% O₂

Request ALS

Conscious

Maintain Airway, Breathing & Circulation

No

Yes

Pain relief required

No

Yes

Entonox absolutely contraindicated

Go to Pain Mgt. CPG

Go to Nausea & Vomiting CPG

Monitor ECG & SpO₂

NaCl (0.9%) 500 mL IV/IO

Notify control of query DCI & alert ED

Transport is completed at an altitude of < 300 metres above incident site or aircraft pressurised equivalent to sea level

**SECTION 4 - Medical Emergencies**

**Epistaxis**

1. **Medical**
   - Advise patient to sit forward
   - Apply digital pressure for 15 minutes
   - Advise patient to breathe through mouth only and not to blow nose
   - Haemorrhage controlled
     - Yes: Go to Shock CPG
     - No: Consider insertion of a proprietary nasal pack
   - Hypovolaemic
     - Yes: Request ALS
     - No: Go to Shock CPG

2. **Trauma**
   - Primary Survey
     - Trauma
     - EMT
     - Equipment list
       - Proprietary nasal pack

SECTION 4 - Medical Emergencies

**Glycaemic Emergency – Adult**

**Abnormal blood glucose level**

- **< 4 mmol/L**
  - Conscious/able to swallow?
    - Yes: Glucose gel 10 - 20 g buccal and/or Sweetened drink
    - No: Allow 5 minutes to elapse following administration of medication
      - Reassess
      - Blood Glucose < 4 mmol/L?
        - Yes: Consider ALS
        - No: Advise a carbohydrate meal (sandwich)
          - Repeat prn: Dextrose 10% 250 mL IV/IO infusion and/or Glucose gel 10 - 20 g buccal

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

- **> 20 mmol/L**
  - Consider ALS

**Reference:**
SECTION 4 - Medical Emergencies

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)

**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)**
  - **Resuscitated 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

**Members of rescue teams should have a clinical leader of at least EFR level**

**Hypothermic patients should be handled gently & not permitted to walk**

European Resuscitation Council Guidelines for Resuscitation 2015
SECTION 4 - Medical Emergencies

Poisons – Adult

Poison source

- Ingested corrosive
  - Yes
  - No

Ingested corrosive

- Yes
- No

- Sips of water or milk

- Consider ALS

- Poison type

- Paraquat
  - With Paraquat poisoning do not administer oxygen unless SpO₂ < 92%

- Other

- Alcohol
  - Check blood glucose
    - No
    - Yes
    - BG < 4 or > 20 mmol/L

- Opiate

- Naloxone 0.4 mg IM/SC
  - (Repeat to Max of 2 mg prn)

- ECG & SpO₂ monitoring

- Oxygen therapy

- Consider

- Go to Inadequate Ventilations CPG

- Go to Glycaemic Emergency CPG

Reference: ILCOR Guidelines 2015
SECTION 4 - Medical Emergencies

**Seizure/Convulsion – Adult**

- **Seizure status**
  - Seizing currently
    - Request ALS
      - Support head
        - Check blood glucose
          - Blood glucose < 4 mmol/L
            - Yes
              - Go to Glycaemic Emergency CPG
            - No
              - Reassess
                - Still seizing
                  - Yes
                    - Transport to ED if requested by Ambulance Control
                  - No
                    - Reassess
          - No
        - Reassess
  - Post seizure
    - Consider ALS
      - Alert
        - Yes
          - Recovery position
        - No
          - Airway management
            - Check blood glucose
              - Blood glucose < 4 mmol/L
                - Yes
                  - Go to Glycaemic Emergency CPG
                - No
                  - Reassess
**SECTION 4 - Medical Emergencies**

**Sepsis – Adult**

**Signs of Systemic Inflammatory Response Syndrome (SIRS):**
- Temperature < 36 or > 38.3°C
- Heart rate > 90
- Respiratory rate > 20
- Acutely confused
- Glucose > 7.7 (not diabetic)
- Has the patient two or more signs (SIRS)

**Could this be a severe infection?**
- For example:
  - Pneumonia
  - Meningitis/meningococcal disease
  - UTI
  - Abdominal pain or distension
  - Indwelling medical device
  - Cellulitis/septic arthritis/infected wound
  - Chemotherapy < 6 weeks
  - Recent organ transplant
  - On immune-suppressant medication

**Risk stratifier**
- SBP < 90 mmHg or MAP < 65 mmHg
- Signs of poor perfusion

**Pre alert ED if:**
- Severe sepsis
- Septic shock
- Meningitis suspected
- At risk of neutropenia

**Indication for antibiotic**
- Septic shock
- Severe sepsis
- Meningitis suspected
- At risk of neutropenia

Sickle Cell Crisis - Adult

If patient is cold ensure that he/she is warmed to normal temperature

Encourage oral fluids

Dehydration & unable to take oral fluids

Yes

Request ALS

100% O₂

No

NaCl (0.9%) 1 L IV infusion

SpO₂ & ECG monitor

NaCl (0.9%) 1 L IV infusion

SpO₂ & ECG monitor

Consider patient’s care plan

Sickle Cell crisis

Oxygen therapy

Pain management required

Yes

Go to Pain CPG

No

Elevated temperature

Yes

Go to Sepsis CPG

No

SECTION 4 - Medical Emergencies

Acute neurological symptoms

Complete a FAST assessment

Maintain airway

Oxygen therapy

Check blood glucose

Go to Glycaemic Emergency CPG

Yes

BG < 4 or > 20 mmol/L

No

ECG & SPO2 monitoring

Consider Emergency Care

F - facial weakness
  Can the patient smile? Has their mouth or eye drooped? Which side?
A - arm weakness
  Can the patient raise both arms and maintain for 5 seconds?
S - speech problems
  Can the patient speak clearly and understand what you say?
T - time of onset

Reference: ILCOR Guidelines 2015
Mental Health Emergency

Abnormal behaviour with a history of psychiatric illness

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

If potential to harm self or others ensure minimum two people accompany patient in saloon of ambulance at all times.

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

Reassure patient

Avoid confrontation

Attempt verbal de-escalation

Combative with hallucinations or Paranosis & risk to self or others

Request as appropriate

- Gardaí
- Medical Practitioner
- Mental health team

A person lacks of capacity to make a decision if he or she is unable to –
*Understand the information relevant to the decision
*Retain that information long enough to make a voluntary choice
*Use or weigh that information as part of the process of making the decision, or
*Communicate decision by any means (including sign language/assistive technology) or if the implementation of the decision requires the act of a third party.

HSE Mental Health Services

RMP – Registered Medical Practitioner
RPN – Registered Psychiatric Nurse
### Behavioural Emergency

**Behaviour abnormal**

- Obtain a history from patient and/or bystanders present as appropriate

**Aggressive/violent and/or risk to self or others and un-cooperative with practitioner**

- Reassure patient
- Explain what is happening at all times
- Avoid confrontation

**Medical or traumatic causation**

- Consider verbal de-escalation
- Consider treating reversible causes with Garda assistance

**Intoxication or withdrawal**

- Request Garda assistance
- Ensure practitioner safety (await Garda if any doubt)

**The patient has capacity and declines care**

- Hand over to Garda care

**The patient is ill**

- No
- Yes

**Continuous monitoring of patient**

**A person lacks of capacity to make a decision if he or she is unable to**

- *Understand the information relevant to the decision*
- *Retain that information long enough to make a voluntary choice*
- *Use or weigh that information as part of the process of making the decision, or*
- *Communicate decision by any means (including sign language/assistive technology) or if the implementation of the decision requires the act of a third party*

**Consider (adult)**

- Midazolam 2 mg PO (Repeat x 2 prn)
- Monitor BP, SpO2 and ECG

**Consider (pediatric)**

- Midazolam 0.1 mg/Kg IN (Repeat x 2 prn)

**Reference:** HSE Mental Health Services Assisted Decision-Making (Capacity) Act 2015
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

Monitor vital signs and BP

Birth Complications

Yes

No

Support baby throughout delivery

Dry baby and check ABCs

Baby stable

Yes

No

Clamp & cut cord

Wrap baby to maintain temperature (skin to skin preference)

Mother stable

Yes

No

If placenta delivers, retain for inspection

Reassess

EMT

Go to BLS Neonate CPG

Go to Primary Survey CPG

Consider Nitrous Oxide & Oxygen

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

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

Rendezvous with Paramedic, Advanced Paramedic, midwife or doctor en-route to hospital

4.5.1 Version 2, 03/2016

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SECTION 5 - Obstetric Emergencies

Basic Life Support – Neonate (< 4 weeks)

CPR 3:1
Compressions ratio
Use two thumbs
encircling technique
when two practitioners present

60 seconds

Term gestation
Amniotic fluid clear
Breathing or crying
Good muscle tone

No

< 4 weeks old

Request ALS

Yes

EMT

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

Record time of birth

Provide warmth
Position; Clear airway if necessary
Dry, stimulate, reposition

Breathing, HR > 100

ECG monitor to assess heart rate

Assess respiratory
heart rate & colour

Breathing, HR > 100 but Cyanotic

Persistent Cyanosis

Yes

Provide 5 positive pressure ventilations
(room air)

30 seconds PPV
(40 to 60 breaths per minute)

HR 60 to 100

Breathing well, HR > 100

Wrap baby well and give to mother (or skin to skin)
Observe baby

If ongoing CPR consider
* Supplemental O₂ (≤ 30%)

Contact Ambulance
control for direction

If HR < 60 continue CPR (3:1 ratio), checking HR every 30 sec, until appropriate Practitioner takes over or HR > 60

Monitor Heart Rate

HR < 60

CPR for 30 sec
(Ratio 3:1)

Term gestation
Amniotic fluid clear
Breathing or crying
Good muscle tone

Yes

Reference: ILCOR Guidelines 2015
PV Haemorrhage in Pregnancy

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
ECG & SpO₂ monitoring

Patient is haemodynamically unstable

Yes
No

Request ALS

Go to Shock CPG

SECTION 5 - Obstetric Emergencies

Postpartum Haemorrhage

2nd stage of labour complete

Apply absorbent pad to perineum area

Oxygen therapy

Mother is haemodynamically unstable

Yes

No

Oxytocin 5 international units IM (if not already administered)

External massage of the uterus

Elevate lower limbs

NaCl 1 L IV Repeat x 1 pm

Consider inserting a urinary catheter

Consider Tranexamic Acid 1 g IV

Estimate blood loss

Check that mother is multiple births prior to administration of Oxytocin

SECTION 5 - Obstetric Emergencies

Umbilical Cord Complications

Cord complication

Cord around baby’s neck

Attempt to slip the cord over the baby’s head

Yes - Successful

Ease the cord from around the neck as shoulders are delivered

Go to Childbirth CPG

No

Cord rupture

Apply additional clamps to cord

Apply direct pressure with sterile dressing

Prolapsed cord

Mother to adopt head down left lateral position

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

AP

In labour

Yes

Consider Nifedipine 20 mg PO

No

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

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

Oxygen therapy

Duley, LMM, 2002, Clinical Guideline No 1(B), Tocolytic Drugs for women in preterm labour, Royal College of Obstetricians and gynaecologists
SECTION 6 - Trauma

Burns – Adult

Burn or Scald

Cease contact with heat source

Airway management

Inhalation and/or facial injury

Yes

No

Respiratory distress

Yes

No

Go to Inadequate Ventilations CPG

Remove burned clothing & jewellery (unless stuck)

Dressing/covering of burn area

Monitor body temperature


4/5/6.6.1 Version 2, 07/2011

Caution with the elderly, circumferential & electrical burns

P: face
H: hands
F: feet
F: flexion points
P: perineum

ECG & SpO2 monitoring

Yes

No

NaCl (0.9%) 500 mL IV/IO

Consider

NaCl (0.9%) 1000 mL IV/IO

> 10% TBSA burn

Yes

No

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

Consider humidified Oxygen therapy

Caution with hypothermia

Yes

No

Yes

No

Yes

No

Inhalation and/or facial injury

Go to Pain Mgt. CPG

Pain > 2/10

Caution with hypothermia

Bruce or Scald
SECTION 6 - Trauma

**External Haemorrhage – Adult**

- **Open wound**
  - Active bleeding
    - Yes: Consider wound closure clips for temporary closure if serious haemorrhage
    - No: Haemorrhage controlled
  - Catastrophic haemorrhage
    - Yes: Go to Shock CPG
    - No: Haemorrhage controlled

- **Posture Elevation Examination Pressure**
  - Posture: Elevation / Examination / Pressure
  - Wound still bleeding
    - Yes: Consider applying a dressing impregnated with haemostatic agent
    - No: Haemorrhage controlled

- **Apply sterile dressing**
  - Oxygen therapy
    - Yes: Go to Shock CPG
    - No: Haemorrhage controlled
  - Significant blood loss
    - Yes: Go to Shock CPG
    - No: Haemorrhage controlled
  - Haemorrhage controlled
    - Yes: Go to Shock CPG
    - No: Apply tourniquet

Reference: ILCOR Guidelines 2015
SECTION 6 - Trauma

Harness Induced Suspension Trauma

- Place patient in a horizontal position as soon as practically possible.
- Monitor BP, SpO₂ and ECG.
- Oxygen therapy to maintain SpO₂ > 94%.
- NaCl (0.9%) 2 L IV; Maintain Sys BP > 90 mmHg.
- Go to appropriate CPG.
- Patients must be transported to ED following suspension trauma regardless of injury status.
- Consider removing a harness suspended person from suspension in the direction of gravity i.e. downwards, so as to avoid further negative hydrostatic force, however this measure should not otherwise delay rescue.

Australian Resuscitation Council, 2009, Guideline 9.1.5 Harness Suspension Trauma first aid management.
doi:10.1136/emj.2008.064931
SECTION 6 - Trauma

**Head Injury – Adult**

1. **Head trauma**
   - Maintain Airway
   - Oxygen therapy
   - Control external haemorrhage
   - Maintain in-line immobilisation

   **Decision Tree**
   - **Yes**: V, P or U on AVPU
     - **Yes**: Request ALS
   - **No**: Consider Paramedic

2. **Consider mechanism of injury; is spinal immobilisation indicated?**
   - Immobilise spine appropriately
   - SpO2 & ECG monitoring

3. **Check blood glucose**
   - **Patient seizing**
     - Consider Vacuum mattress
     - See Glycaemic Emergency CPG
     - See Seizures / Convulsions CPG

SECTION 6 - Trauma

Heat Related Emergency – Adult

Collapse from heat related condition

Remove/protect from hot environment (providing it is safe to do so)

Alert

Give cool fluids to drink

Maintain airway

Check blood glucose

Cool patient

SpO2 & ECG monitor

Consider

ALS

Consider

NaCl (0.9%) 1 L IV

Elevate oedematous limbs

Mild Hyperthermia (heat stress)

Moderate Hyperthermia (Heat exhaustion) > 40°C

Severe Hyperthermia (Heat stroke) > 40°C

Do not over cool
Cooling may be achieved by:
Removing clothing
Fanning
Tepid sponging
Ice packs

Reference: ILCOR Guidelines 2015
European Resuscitation Guidelines 2010
RFDS, 2011, Primary Clinical Care Manual
SECTION 6 - Trauma

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

Injury type

Fracture

Fractured femur

Soft tissue injury

Dislocation

Fracture

Fractured femur

Soft tissue injury

Dislocation

Other

Neck of femur

Mid shaft of femur

Isolated lateral dislocation of patella

Yes

No

Consider NaCl (0.9%) 250 mL IV

Apply appropriate splinting device

Apply traction splint

Rest Ice Compression Elevation

Splint/support in position found

Reduce dislocation and apply splint

Recheck CSMs

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

SECTION 6 - Trauma

**Shock from Blood Loss – Adult**

**Signs of poor perfusion**

- A: (Not affected)
- B: Tachypnea
- C: Tachycardia
- Delayed capillary refill
- Diminished/absent peripheral pulses
- D: V, P or U / Irritability / confusion
- E: Cool, pale & moist skin

**Control external haemorrhage**

**Oxygen therapy**

**Lie patient flat with legs elevated (if safe to do so)**

**Request ALS**

**SpO₂ & ECG monitor**

**With polytrauma consider application of a pelvic splint**
SECTION 6 - Trauma

**Spinal Injury Management**

**High risk factors:** any of the following:
- dangerous mechanism of injury
- fall from a height of greater than 1 metre or 5 steps
- axial load to the head or base of the spine
- for example: diving, high-speed motor vehicle collision, rollover motor accident, ejection from a motor vehicle, accident involving motorised recreational vehicle, bicycle collision, horse riding accident, pedestrian v vehicle.
- impaired awareness (alcohol/ drug intoxication, confused /uncooperative or ALoC)
- age 65 years or older
- age 2 years or younger incapable of verbal communication

**Spinal injury rule in considerations:**
- any significant distracting injuries
- impaired awareness (alcohol/ drug intoxication, confused /uncooperative or ALoC)
- immediate onset of spinal/ midline back pain
- hand or foot weakness (motor issue)
- altered or absent sensation in the hands or feet (sensory issue)
- priapism
- history of past spinal problems, including previous spinal surgery or conditions that predispose to instability of the spine.
- Unable to actively rotate their neck 45 degrees to the left and right.

**Low risk factors:** any two or more of:
- involved in a minor rear-end motor vehicle collision
- comfortable in a sitting position
- ambulatory at any time since the injury
- no midline cervical spine tenderness
- no spinal column/ midline pain.
- **And are able to actively rotate their neck 45 degrees to the left and right.**

**PHECC Spinal Injury Management Standard**

Active spinal motion restriction; using inline techniques with or without spinal injury management devices to reduce spinal column motion.

**Unlikely to have a clinically significant spinal injury**

**Active spinal motion restriction until clinical assessment is complete**

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

Rapid extrication with appropriate device if life threat present

Remove helmet (if worn)

Assess risk factors

High risk factors

Low risk factors

Consider use of undamaged child seat for appropriate age groups

Secure to appropriate transportation device

Reference: PHECC Pre-hospital spinal injury management standard STN 024 Version 2
SECTION 6 - Trauma

Submersion Incident

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

2. Complete primary survey (Commence CPR if appropriate)
   - Adequate ventilations
     - Yes: Oxygen therapy
     - No: Go to Inadequate Ventilations CPG
   - Inadequate ventilations
     - Go to SpO2 & ECG monitoring

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

4. If bronchospasm consider:
   - Salbutamol
     - ≥ 5 years: 5 mg NEB
     - < 5 years: 2.5 mg NEB

5. Check blood glucose
   - Yes: Go to Hypothermia CPG
   - No: Transport to ED for investigation of secondary drowning insult

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

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

Reference:
SECTION 7 - Paediatric Emergencies

Primary Survey Medical – Paediatric (≤ 15 Years)

- Take standard infection control precautions
- Consider pre-arrival information
- Scene safety
- Scene survey
- Scene situation

Paediatric Assessment Triangle

- Give 5 Ventilations
- Oxygen therapy
- Head tilt/chin lift
- Airway patent & protected
- Adequate ventilation
- Pulse < 60 & signs of poor perfusion
- AVPU assessment
- Clinical status decision
- Life threatening
- Non serious or life threat
- Serious not life threat

- Go to Secondary Survey CPG
- 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

Estimated weight
- Neonate = 3.5 Kg
- Six months = 6 Kg
- One to five years = (age x 2) + 8 Kg
- Greater than 5 years = (age x 3) + 7 Kg

Normal ranges (2015)
- Age   Pulse Respiration
- 0-3 months 90 – 180 30 – 60
- 4-6 months 80 – 160 30 – 60
- 7-12 months 80 – 140 22 – 34
- 1-3 years 75 – 130 20 – 30
- 4-6 years 70 – 110 16 – 24
- ≥ 7 years 60 – 90 14 – 20

Reference:
- ILCOR Guidelines 2015, 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
SECTION 7 - Paediatric Emergencies

Primary Survey Trauma – Paediatric (≤ 15 years)

**Trauma**
- Take standard infection control precautions
- Consider pre-arrival information
- Scene safety
- Scene survey
- Scene situation

**Paediatric Assessment Triangle**
- Appearace
- Work of breathing
- Circulation to skin

**Control catastrophic external haemorrhage**
- Mechanism of injury suggestive of spinal injury?
  - Yes: C-spine control
  - No: Continue primary survey

**Paediatric Assessment Triangle**
- Extend neck
- Take standard infection control precautions
- Consider pre-arrival information
- Scene safety
- Scene survey
- Scene situation

**Estimated weight**
- Neonate = 3.5 Kg
- Six months = 6 Kg
- One to five years = (age x 2) + 8 Kg
- Greater than 5 years = (age x 3) + 7 Kg

**Normal ranges (ICTS)**

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

**Give 5 Ventilations**
- Oxygen therapy

**Airway patent & protected?**
- Yes: Consider Oxygen therapy
- No: Move on to secondary survey

**Adequate ventilation?**
- Yes: Consider Oxygen therapy
- No: Move on to secondary survey

**Pulse < 60 & signs of poor perfusion?**
- Yes: Consider Oxygen therapy
- No: Move on to secondary survey

**AVPU assessment**
- Expose & check obvious injuries
- Treat life-threatening injuries only

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

**Life threatening**
- Go to Secondary Survey CPG

Reference:
- ILCOR Guidelines 2015, 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
SECTION 7 - Paediatric Emergencies

Secondary Survey – Paediatric (≤ 15 years)

- Use age appropriate language for patient
- Make appropriate contact with patient and or guardian if possible
- Identify presenting complaint and exact chronology from the time the patient was last well
- Make a SAMPLE history
- Identify patient’s weight
- Perform head to toe examination
- Recheck vital signs
- Check for current medications
- Identify positive findings and initiate care management
- Go to appropriate CPG
- Report findings as per Children First guidelines to ED staff and line manager in a confidential manner

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

Estimated weight
Neonate = 3.5 Kg
Six months = 6 Kg
One to five years = (age x 2) + 8 Kg
Greater than 5 years = (age x 3) + 7 Kg

Normal ranges (0-15y)

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**SECTION 7 - Paediatric Emergencies**

**Pain Management – Paediatric (≤ 15 years)**

- **Pain assessment**
  - Consider non-pharmacological pain management techniques:
    - Splinting
    - Psychological support
    - Heat or cold therapy
    - Positioning

- If pain management not resolved:
  - Implement pharmacology strategy at appropriate level on the pain ladder
  - Consider non-pharmacological pain management techniques:
    - Splinting
    - Psychological support
    - Heat or cold therapy
    - Positioning

- If pain management not resolved:
  - If pain relief not best achievable or adequate relief of pain:
    - Go back to originating CPG

**Pain assessment recommendation**

- < 5 years use FLACC scale
- 5 – 7 years use Wong Baker scale
- ≥ 8 years use analogue pain scale

**Analogue/Visual Pain Scale**

- 0 = no pain
- ......10 = unbearable

**Ketamine indicated if:**

- Morphine or Fentanyl not adequate, or
- Painful extrication or procedure anticipated

**Fentanyl IN for ≥ 1 year olds only**

- Repeat Fentanyl at not < 10 min after initial dose once only

**Morphine PO for ≥ 1 year olds only**

- Repeat Morphine at not < 2 min intervals prn to Max of 0.1 mg/Kg IV

**Repeat Ketamine once only at not < 10 minutes prn**

**Methoxyflurane INH for ≥ 5 year olds only. Repeat once only prn.**

### Pain assessment

- FLACC: 0 = no pain, 1 = a little pain, 2 = some pain, 3 = a lot of pain, 4 = very much pain
- Wong Baker: 0 = no pain, 1 = a little pain, 2 = some pain, 3 = lots of pain, 4 = very much pain
- Analogue Pain Scale: 0 = no pain, 10 = unbearable pain

**PHECC paediatric pain ladder**

- **Mild pain**
  - Paracetamol 20 mg/Kg PO
  - Ibuprofen 10 mg/Kg PO

- **Moderate pain**
  - Paracetamol 20 mg/Kg PO and Ibuprofen 10 mg/Kg PO
  - Nitrous Oxide & Oxygen INH
  - Methoxyflurane 3 mL INH

- **Severe pain**
  - Paracetamol > 1 mth < 1 year: 90 mg PR
  - 1 to 3 years: 180 mg PR
  - 4 to 8 years: 360 mg PR
  - or
  - Paracetamol 20 mg/Kg PO
  - Ibuprofen 10 mg/Kg PO

- Fentanyl 0.0015 mg/Kg IN
  - Repeat Fentanyl at not < 10 min after initial dose once only

- Morphine 0.3 mg/Kg PO
  - Repeat at not < 2 min intervals prn to Max of 0.1 mg/Kg IV

- Ketamine 0.1 mg/Kg IV
  - Repeat Ketamine once only at not < 10 minutes prn

- Fentanyl 0.0015 mg/Kg IN or Morphine 0.3 mg/Kg PO

- Ibuprofen 10 mg/Kg PO

- If nausea consider:
  - Ondansetron 0.1 mg/Kg IM/IV slowly (Max 4 mg)

### Reference:

Inadequate Ventilations – Paediatric (≤ 15 years)

Respiratory difficulty

Airway patent & protected

Yes

Consider ET CO2

Check SpO2

Oxygen therapy

Request ALS

Go to Airway CPG

No

Raised ET CO2 + reduced SpO2:
  - Consider assisted ventilation
  - Naloxone 0.01 mg/Kg IM/SC
  - Naloxone 0.02 mg/Kg IN

Raised ET CO2 + normal SpO2:
  - Encourage deep breaths

Patient assessment

Consider positive pressure ventilations (12 to 20 per minute) via BVM

Brain insult

Go to Head injury CPG

Respiratory failure

Respiratory assessment

Suspected narcotic OD

Naloxone 0.01 mg/Kg IV/IO

Or

Naloxone 0.01 mg/Kg IM/SC

Or

Naloxone 0.02 mg/Kg IN

Substance intake

Other

Consider shock, cardiac/ neurological/ systemic illness, pain or psychological upset

Bronchospasm/ known asthma

Go to Asthma CPG

Asymmetrical breath sounds

Go to Anaphylaxis CPG

Crepitations

Go to Sepsis CPG

Other

Consider pain, posture & neuromuscular disorders

Tension Pneumothorax suspected

Yes

Needle decompression

No

Consider collapse, consolidation & fluid

AP

100% O₂ initially
Titrated O₂ to standard as clinical condition improves

Inadequate Ventilations – Paediatric (≤ 15 years)

4/5/6.11
Version 3, 03/2014

Naloxone 0.01 mg/Kg IM/SC

Repeat Naloxone pm to Max 0.1 mg/Kg or 2 mg
Asthma – Paediatric (≤ 15 years)

1. Assess and maintain airway
2. Respiratory assessment
3. ECG & SpO2 monitoring
4. Oxygen therapy

Mild Asthma

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

OR

- Salbutamol (0.1 mg) metered aerosol

- Resolved/improved: Yes
- No: ECG & SpO2 monitoring

Moderate Asthma

- Ipratropium Bromide
- < 12 years 0.25 mg NEB
- ≥ 12 years 0.5 mg NEB

- & age specific Salbutamol NEB mixed

- Resolved/improved: Yes
- No: Salbutamol age-specific dose NEB

Severe Asthma

- Hydrocortisone (in 100 mL NaCl)
- < 1 year: 25 mg IV
- 1 – 5 years: 50 mg IV
- > 5 years: 100 mg IV

- Salbutamol age-specific dose NEB

- Resolved/improved: Yes
- No: Salbutamol age-specific dose NEB

Life-threatening Asthma

- Salbutamol age-specific dose NEB
- Every 5 minutes prn

**Stridor – Paediatric (≤ 15 years)**

- **Stridor**
  - Consider FBAO
  - Assess & maintain airway
  - Humidified O₂ – as high a concentration as tolerated
  - Oxygen therapy
  - Do not distress
  - Treat and transport in a position of comfort
  - ECG & SpO₂ monitoring
  - Croup or epiglottitis suspected:
    - Yes
      - Do not insert anything into the mouth
      - Severe croup
      - Epinephrine:
        - < 1 year: 2.5 mg Neb
        - ≥ 1 year: 5 mg Neb
        - Nebulised epinephrine may be repeated after 30 minutes prn
  - No
    - Severe croup
    - Yes
      - Humidified O₂ – as high a concentration as tolerated
      - Oxygen therapy
      - Check temperature (if > 38.5°C and septic)
      - Go to Sepsis CPG

Reference: BNF for children 2015 - 2016

National Clinical Guideline No. 6: Sepsis Management, National Clinical Effectiveness Committee, Department of Health, November, 2014
SECTION 7 - Paediatric Emergencies

Basic Life Support – Paediatric (≤ 15 Years)

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

Give 5 rescue ventilations

Assess Rhythm

Shockable VF or pulseless VT (4 J/Kg)

Give 1 shock

Immediately resume CPR x 2 minutes

Rhythm check *

Go to VF / Pulseless VT CPG

Go to Asystole / PEA CPG

Go to Post Resuscitation Care CPG

Non - Shockable Asystole or PEA

Apply paediatric system AED pads

Apply adult defibrillation pads

Chest compressions
Rate: 100 to 120/min
Depth: 1/3 depth of chest
Child: two hands (5 cm)
Small child: one hand (4 cm)
Infant (< 1): two fingers (4 cm)

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)

One rescuer CPR 30:2
Two rescuer CPR 15:2
(≥ 12 years two rescuer CPR 30:2)
Compressions : Ventilations

Compressions : Ventilations

Immediatly resume CPR x 2 minutes

Rhythm check *

Go to VF / Pulseless VT CPG

Go to Asystole / PEA CPG

Go to Post Resuscitation Care CPG

 infants 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 2015

4/5/6.7.20
Version 3, 03/2016
**Foreign Body Airway Obstruction – Paediatric (≤ 15 years)**

1. **Are you choking?**
   - No
     - Severe (ineffective cough)
       - Conscious
         - Yes
           - 1 to 5 back blows followed by 1 to 5 thrusts (child – abdominal thrusts) (infant – chest thrusts) as indicated
         - No
           - Request ALS
     - Mid (effective cough)
       - Conscious
         - Yes
           - Encourage cough
         - No
           - Effective
             - Yes
               - Breathing adequately
               - Yes
                 - Consider Oxygen therapy
               - No
                 - Positive pressure ventilations (12 to 20/min)
             - No
               - Request ALS
           - No
             - Effective
               - Yes
                 - Breathing adequately
                 - Yes
                   - Consider Oxygen therapy
               - No
                 - Positive pressure ventilations (12 to 20/min)
             - No
               - Request ALS
           - No
             - Request ALS
   - Yes
     - 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

Reference: ILCOR Guidelines 2015
VF or pVT – Paediatric (≤ 15 years)

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

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

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

Reference: ILCOR Guidelines 2015
SECTION 7 - Paediatric Emergencies

Asystole/PEA – Paediatric (≤ 15 years)

- Initial mobilisation of 3 to 4 practitioners / responders
- Immediate IO access if IV not immediately accessible
- Go to Post Resuscitation Care CPG
- Consider causes and treat as appropriate:
  - Hydrogen ion acidosis
  - Hyper/hypokalaemia
  - Hypothermia
  - Hypovolaemia
  - Hypoxia
  - Thrombosis – pulmonary
  - Tension pneumothorax
  - Thrombus – coronary
  - Tamponade – cardiac
  - Toxins
  - Trauma
- Consider fluid challenge: NaCl (0.9%) 20 mL/Kg IV/IO
- * +/- Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm

Reference: ILCOR Guidelines 2015
Symptomatic Bradycardia – Paediatric (≤ 15 years)

**Symptomatic Bradycardia**

- Consider positive pressure ventilations (12 to 20/min)

**Oxygen therapy**

- Yes: Hypoxia
  - No

**Request ALS**

**Unresponsive Signs of Inadequate perfusion & HR < 60**

- Yes
  - CPR
  - ECG & SpO2 monitoring
  - NaCl (0.9%) 20 mL/Kg IV/IO
  - Reassess
  - Epinephrine (1:10 000) 0.01 mg/Kg IV/IO
    - Repeat every 3 – 5 minutes (every 2nd cycle prn)

- No: Persistent bradycardia

- Yes
  - Continue CPR

- No

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

**Collective signs of inadequate perfusion**
- Tachypnoea
- Diminished/absent peripheral pulses
- Delayed capillary refill
- Cool extremities, mottling
- Unresponsive

**Reference**: ILCOR Guidelines 2015

Reference: ILCOR Guidelines 2015
SECTION 7 - Paediatric Emergencies

**Post-Resuscitation Care – Paediatric (≤ 15 years)**

- **Return of Spontaneous Circulation**
  - Maintain Oxygen therapy
  - **Request ALS**
  - Conscious: Yes → Prevent warming
  - Conscious: No → Adequate ventilation: Yes → Maintain patient at rest
  - Adequate ventilation: No → Positive pressure ventilations Max 12 to 20 per minute

- **Maintain Oxygen therapy**
  - **Request ALS**
  - Conscious: Yes → Prevent warming
  - Conscious: No → Adequate ventilation: Yes → Maintain patient at rest
  - Adequate ventilation: No → Positive pressure ventilations Max 12 to 20 per minute

- **Monitor vital signs**
  - **Check blood glucose**
  - **Maintain care until handover to appropriate Practitioner**
  - **Contact NAS control for direction**

Reference: ILCOR Guidelines 2015
SECTION 7 - Paediatric Emergencies

Allergic Reaction/Anaphylaxis – Paediatric (≤ 15 years)

**Allergic Reaction**

- **Mild**: Urticaria
- **Moderate**: Mild symptoms + angio oedema, simple bronchospasm
- **Severe anaphylaxis**: Moderate symptoms + A, B or C compromise (haemodynamic and/or respiratory compromise)

**Oxygen therapy**

- **Severe anaphylaxis**
  - Chlorphenamine
    - < 1 year: 0.25 mg/Kg IV
    - 1 – 5 years: 2.5 mg IV
    - 6 – 11 years: 5 mg IV
    - ≥ 12 years: 10 mg IV
  - Chlorphenamine
    - < 1 year: 6 to 11 years 2 mg PO
    - ≥ 12 years: 4 mg PO

**Epinephrine**

- Repeat at 5 minute intervals prn

**Hydrocortisone**

- < 1 year: 25 mg IM
- 1-5 yrs: 50 mg IM
- > 5 yrs: 100 mg IM

**Salbutamol NEB**

- < 5 yrs: 2.5 mg
- ≥ 5 yrs: 5 mg

**Chlorphenamine**

- < 1 year: 0.25 mg/Kg IM
- 1 – 5 years: 2.5 mg IM
- 6 – 11 years: 5 mg IM
- ≥ 12 years: 10 mg IM

**SECTION 7 - Paediatric Emergencies**

**Glycaemic Emergency – Paediatric (≤ 15 years)**

**Abnormal blood glucose level**

- **< 4 mmol/L**
  - Yes: Conscious/able to swallow
  - No: Glucose gel
    - ≤ 8 years: 5-10 g Buccal
    - > 8 years: 10-20 g Buccal
    - and/or Sweetened drink
  - Allow 5 minutes to elapse following administration of medication
  - Reassess
  - Yes: Conscious/able to swallow
  - No: Consider ALS

- **> 20 mmol/L**
  - Yes: Dehydration
  - No: Request ALS

- **11 to 20 mmol/L**
  - Yes: Dextrose 10% 5 mL/Kg IV/IO bolus and/or Glucagon
    - 1-8 years: 0.5 mg IM
    - > 8 years: 1 mg IM
    - Repeat x 1 prn
  - No: Dehydration
    - Yes: NaCl (0.9%) 10 mL/Kg IV/IO bolus

- **Check for presence of an insulin pump; turn off or remove if present.**

Reference: Dehydration - Paramedic Textbook 2nd Ed p 1229
SECTION 7 - Paediatric Emergencies

Seizure/Convulsion – Paediatric (≤ 15 years)

1. **Seizure / convulsion**
   - Protect from harm
   - Check blood glucose
   - Oxygen therapy
   - Recovery position
   - Seizure status
   - Seizing currently
   - Seizure status
   - Post seizure
   - Post seizure
   - Transport to ED if requested by Ambulance Control
   - Consider other causes of seizures
     - Meningitis
     - Head injury
     - Hypoglycaemia
     - Fever
     - Poisons
     - Alcohol/drug withdrawal

2. **Blood glucose**
   - < 4 mmol/L
     - Yes
     - Go to Glycaemic Emergency CPG
     - No
     - Reassess

3. **Still seizing**
   - Yes
     - Go to Glycaemic Emergency CPG
   - No
     - Reassess

4. **Go to**
   - Glycaemic Emergency CPG
   - Pyrexia CPG

5. **Alert**
   - Yes
     - Consider ALS
       - Airway management
         - Pyrexia
           - Yes
             - Go to Pyrexia CPG
           - No
             - Reassess
         - No
           - Reassess
     - No
       - Reassess

6. **Reassess**
   - Post seizure
     - Transport to ED if requested by Ambulance Control

7. **Yes**
   - Go to Glycaemic Emergency CPG
   - No
     - Reassess

8. **No**
   - Reassess

4.7.33
Version 3, 02/14
Pyrexia – Paediatric (≤ 15 years)

Child with elevated temperature

Remove/protect from hot environment (providing it is safe to do so)

Yes: Alert

No:

- Give cool fluids to drink
- Recovery position (maintain airway)
- Check blood glucose

Cool patient

> 38.5°C temperature with signs of distress or pain

- Paracetamol 20 mg/Kg PO
- Or
  - Paracetamol
    - > 1 mth < 1 year: 90 mg PR
    - 1 to 3 years: 180 mg PR
    - 4 to 8 years: 360 mg PR

Consider

ALS

Query severe Sepsis

No

SpO2 & ECG monitor

Yes

Go to Septic Shock CPG

Reference: ILCOR Guidelines 2015
RFDS, 2013, Primary Clinical Care Manual 8th Edition
**Sickle Cell Crisis – Paediatric (≤ 15 years)**

1. **Sickle Cell crisis**
   - **Oxygen therapy**
     - Pain management required
       - Yes: Go to Pain CPG
       - No: Elevated temperature
     - No: Go to Pyrexia CPG
   - If patient is cold ensure that he/she is warmed to normal temperature
     - Encourage oral fluids
     - Dehydration & unable to take oral fluids
       - Yes: Request ALS
       - No: Dehydration & unable to take oral fluids
   - SpO2 & ECG monitor
   - NaCl (0.9%) 10 mL/Kg IV

External Haemorrhage – Paediatric (≤ 15 years)

- Open wound
  - Active bleeding: Yes
    - Consider wound closure clips for temporary closure if serious haemorrhage
  - No
    - Consider applying a dressing impregnated with haemostatic agent

- Posture
- Elevation
- Examination
- Pressure

- Posture
- Elevation
- Examination
- Pressure

- Apply sterile dressing
- Consider Oxygen therapy

- Haemorrhage controlled: Yes
  - Apply additional dressing(s)
  - Yes
    - Haemorrhage controlled
      - No
        - Depress proximal pressure point
  - Yes
    - Haemorrhage controlled
      - No
        - Apply tourniquet

- Significant blood loss: Yes
  - Go to Shock CPG
- No

Reference: ILCOR Guidelines 2015
Signs of poor perfusion

Control external haemorrhage

Oxygen therapy

Lie patient flat with legs elevated (if safe to do so)

Request ALS

SpO2 & ECG monitor

Signs of inadequate perfusion

A: (not directly affected)
B: Increased respiratory rate (without increased effort)
C: Tachycardia
   Diminished/absent peripheral pulses
   Delayed capillary refill
D: Irritability/ confusion / ALoC
E: Cool extremities, mottling
SECTION 7 - Paediatric Emergencies

Burns – Paediatric (≤ 15 years)

Cease contact with heat source

Inhalation and/or facial injury

Airway management

Respiratory distress

Go to Inadequate Ventilations CPG

Commence 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

E: face
H: hands
F: feet
P: flexion points
P: perineum

Brush off powder & irrigate chemical burns
Follow local expert direction

Ingestion

ECG & SpO2 monitoring

> 10% TBSA and/or time from injury to ED > 1 hour

NaCl (0.9%) IV/IO
5 to 10 years = 250 mL
> 10 years = 500 mL

Monitor body temperature

SECTION 8 - Pre-Hospital Emergency Care Operations

Possible Major Emergency

Take standard infection control precautions

Consider pre-arrival information

PPE (high visibility jacket and helmet) must be worn

Practitioner 1

Practitioner 2 (Ideally MIMMS trained)

Park at the scene as safety permits and in conjunction with Fire & Garda if present

Leave blue lights on as vehicle acts as Forward Control Point pending the arrival of the Mobile Control Vehicle

Confirm arrival at scene with Ambulance Control and provide an initial visual report stating Major Emergency (Major Incident) Standby or Declared

Maintain communication with Practitioner 2

Leave the ignition keys in place and remain with vehicle

Carry out Communications Officer role until relieved

Carry out scene survey

Give situation report to Ambulance Control using METHANE message

Carry out HSE Controller of Operations (Ambulance Incident Officer) role until relieved

Liaise with Garda Controller of Operations (Police Incident Officer) and Local Authority Controller of Operations (Fire Incident Officer)

Select location for Holding Area (Ambulance Parking Point)

Set up key areas in conjunction with other Principal Response Agencies on site:
- Site Control Point (Ambulance Control Point),
- Casualty Clearing Station
- Ambulance loading point
- On site co-ordination centre

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

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

SECTION 8 - Pre-Hospital Emergency Care Operations

Major Emergency (Major Incident) – Operational Control

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

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)

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

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 Sieve

Multiple casualty incident

- Can casualty walk
  - Yes
  - No

- Is casualty breathing
  - Yes
    - Open airway one attempt
    - Breathing now
      - No
        - Respiratory rate < 10 or > 29
          - Yes
            - Pulse > 120
              - Yes
                - Green
              - No
                - Yellow
            - No
                - Red
          - No
                - Yellow
        - No
          - Capillary refill > 2 sec
            - Yes
              - Green
            - No
              - Yellow
    - No
      - Priority 2 (Delayed)
        - Yellow
      - Priority 1 (Immediate)
        - Red

- Priority 1 (Immediate)
- Priority 2 (Urgent)
- Priority 3 (Delayed)
- Dead

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.
SECTION 8 - Pre-Hospital Emergency Care Operations

Identification: P1
Role: Airway and ventilatory support & initial team leader
Location: Inside BLS Triangle at patient’s head
Tasks:
1. Position defibrillator/monitor.
2. Attach defib pads and operate defibrillator/monitor (If awaiting arrival of P3)
3. Basic airway management (manoeuvre, suction & adjunct)
4. Assemble ventilation equipment and ventilate
5. Insert advanced airway (unsynchronised ventilation and ETCO2 monitor, if available)
6. Team leader (until P4 assigned)

Identification: P2
Role: Chest compressor
Location: Inside BLS Triangle at patient’s side
Tasks:
1. Position BLS response bag and suction.
2. Initiate patient assessment.
3. Commence compression only CPR (continue until P1 ready to ventilate).
4. Alternate chest compressions with P3 (P1 until P3 arrival)

Identification: P3
Role: Chest compressor & AED operator
Location: Inside BLS Triangle at patient’s side
Tasks:
1. Alternate compressions with P2
2. Operate AED/monitor
3. Turn on metronome (if available)
4. Monitor time/cycles

Identification: P4
Role: Cardiac Arrest Team Leader
Location: Outside the BLS Triangle (ideally at the patient’s feet with a clear view of the patient, team and Monitor)
Tasks:
1. Positive exchange of Team Leader
2. Position ALS bag (AP)
3. Take Handover from P1
5. Initiate IV/IO access & administers medications (AP)
6. Intubate if clinically warranted (AP)
7. Communicate with family/Family Liaison.
8. Identify and treat reversible causes (Hs + Ts)
9. Provide clinical leadership.
10. Conduct post event debrief.

Identification: P5
Role: Family & Team Support
Position: Outside the BLS triangle
1. Family Liaison
2. Patient Hx/meds
3. Manage Equipment
4. Plan removal (if transporting)

Identification: P6
Role: Team Support
Location: Outside BLS Triangle
Tasks:
1. Support P1 with airway and ventilation.
2. Support P2/P3 with chest compressions and defibrillation
3. Documentation
4. Support tasks assigned by P4

Positions and roles are as laid out, however a practitioner may change position thus taking on the role of that position.

Reference: ILCOR Guidelines 2015

If ALS are first on scene they perform BLS until sufficient BLS personnel are on scene.
Medication Formulary for Emergency Medical Technician

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 Medicinal Products 7th Schedule (SI 300 of 2014). 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 Committee (MAC) 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 a PHECC licensed CPG provider.
4. The practitioner is privileged, 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 7th Schedule.

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](http://www.phecc.ie).

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

Water for injection shall be used when diluting medications, however if not available NaCl (0.9%) may be used if not contraindicated.
All medication doses for patients $\leq$ 15 years shall be calculated on a weight basis unless an age related dose is specified for that medication.

The route of administration should be appropriate to the patient’s clinical presentation. IO access is authorised for advanced paramedics for Life Threatening Emergencies (or under medical direction).

The dose for paediatric patients may never exceed the adult dose.

Paediatric weight estimations acceptable to PHECC are:

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Weight Estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonate</td>
<td>3.5 Kg</td>
</tr>
<tr>
<td>Six months</td>
<td>6 Kg</td>
</tr>
<tr>
<td>One to five years</td>
<td>(age x 2) + 8 Kg</td>
</tr>
<tr>
<td>Greater than 5 years</td>
<td>(age x 3) + 7 Kg</td>
</tr>
</tbody>
</table>

Pregnancy caution:

Medications should be prescribed in pregnancy only if the expected benefit to the mother is thought to be greater than the risk to the foetus, and all medications should be avoided if possible during the first trimester.

PHECC practitioners therefore should avoid using medications in early pregnancy unless absolutely essential and where possible medical advice should be sought prior to administration.

Paramedic authorisation for IV infusion continuation

PHECC registered paramedics are authorised to continue an established IV infusion in the absence of an advanced paramedic or doctor during transportation.

This version contains 13 medications.

Please visit www.phecc.ie for the latest edition/version.
Amendments to the Emergency Medical Technician 2014 Edition:

*New Medications introduced:*
- Chlorphenamine
- Methoxyflurane

Changes in orange text relate to the 2018 updates.

**Aspirin**

<table>
<thead>
<tr>
<th>Heading</th>
<th>Add</th>
<th>Delete</th>
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</thead>
<tbody>
<tr>
<td>Indications</td>
<td>Management of unstable angina and non ST-segment elevation myocardial infarction (NSTEMI) Management of ST-segment elevation myocardial infarction (STEMI)</td>
<td></td>
</tr>
<tr>
<td>Contra-Indicated</td>
<td>(risk of Reye's syndrome)</td>
<td></td>
</tr>
<tr>
<td>Side Effects</td>
<td>Increased bleeding time Skin reactions in hypersensitive patients</td>
<td></td>
</tr>
</tbody>
</table>

**Epinephrine (1:1,000)**

<table>
<thead>
<tr>
<th>Heading</th>
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</thead>
<tbody>
<tr>
<td>Administration (CPG: 2/3.4.15, 4/5/6.4.11, 4/5/6.7.13)</td>
<td>CPG: 4.4.15, 2/3.4.16, 4.7.31</td>
<td></td>
</tr>
<tr>
<td>Indications</td>
<td>Stridor, Symptomatic Bradycardia</td>
<td></td>
</tr>
</tbody>
</table>
| Usual Dosages            | **Adult:** EMT 0.5 mg IM  
                          **Paediatric:** EMT  
                          < 6 months - 0.05 mg IM  
                          6 months to 5 years - 0.125 mg IM  
                          6 to 8 years - 0.25 mg IM  
                          > 8 years - 0.5 mg IM |        |

**Glucagon:**

<table>
<thead>
<tr>
<th>Heading</th>
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</thead>
<tbody>
<tr>
<td>Administration (CPG: 4/5/6.4.19, 4/5/6.7.32)</td>
<td>CPG: 4.4.19, 4.7.32</td>
<td></td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>&lt; 1 year</td>
<td></td>
</tr>
<tr>
<td>Usual Dosages</td>
<td>1 - 8 years - 0.5 mg (500 mcg) IM.</td>
<td>( \leq 8 \text{ years} - 0.5 \text{ mg (500 mcg)} \text{ IM}</td>
</tr>
<tr>
<td>Additional Information</td>
<td>Hypoglycaemic paediatrics patients who are not diagnosed as diabetic should not be administered Glucagon (this does not preclude the administration of Glucose gel or Dextrose to treat hypoglycaemia)</td>
<td></td>
</tr>
</tbody>
</table>
## Glucose gel

<table>
<thead>
<tr>
<th>Heading</th>
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</thead>
<tbody>
<tr>
<td>Administration</td>
<td>(CPG: 4/5/6.4.19, 4/5/6.7.32)</td>
<td>CPG: 4.4.19, 4.7.32</td>
</tr>
</tbody>
</table>

## Glyceryl trinitrate (GTN)

<table>
<thead>
<tr>
<th>Heading</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>(CPG: 1/2/3.4.10)</td>
<td></td>
</tr>
<tr>
<td>Indications</td>
<td>EMT: Systolic BP ≥ 110</td>
<td></td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>Severe mitral stenosis</td>
<td></td>
</tr>
<tr>
<td>Additional Information</td>
<td>Caution with inferior wall MI with right ventricular involvement as this may lead to profound hypotension</td>
<td></td>
</tr>
</tbody>
</table>

## Ibuprofen

<table>
<thead>
<tr>
<th>Heading</th>
<th>Add</th>
<th>Delete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation</td>
<td>200 mg in 5 mL</td>
<td></td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>Known renal failure / Known severe liver failure / Known severe heart failure / Concurrent NSAID use (e.g. Diclofenac, Naproxen)</td>
<td></td>
</tr>
<tr>
<td>Usual Dosages</td>
<td>400 mg PO (Mild pain) 600 mg PO (Moderate pain)</td>
<td></td>
</tr>
<tr>
<td>Paediatric:</td>
<td>10 mg/Kg PO to a maximum of 400 mg.</td>
<td></td>
</tr>
<tr>
<td>Additional Information</td>
<td>Caution if on oral anticoagulant (e.g. Warfarin, Rivaroxaban, Apixaban, Edoxaban) due to increased bleeding risk</td>
<td></td>
</tr>
</tbody>
</table>

## Methoxyflurane

<table>
<thead>
<tr>
<th>Heading</th>
<th>Add</th>
<th>Delete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contra-Indications</td>
<td>Renal Failure or Impairment</td>
<td>Do not use in patients with renal impairment or renal failure.</td>
</tr>
<tr>
<td>Additional Information</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Oxygen

<table>
<thead>
<tr>
<th>Heading</th>
<th>Add</th>
<th>Delete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usual Dosages</td>
<td>Basic and Advanced Life Support – Neonate (&lt; 4 weeks) Consider supplemental O₂ (≤ 30%)</td>
<td></td>
</tr>
</tbody>
</table>
### Paracetamol

<table>
<thead>
<tr>
<th>Heading</th>
<th>Add</th>
<th>Delete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation</td>
<td>Rectal suppository 1 g, 500 mg, 250 mg, 240 mg, 125 mg, 120 mg, 80 mg Glass vial, 1 g of Paracetamol in 100 mL solution for infusion</td>
<td>180 mg and 60 mg</td>
</tr>
</tbody>
</table>
| Indications   | **Adult**: Pyrexia / Temperature > 38.3°C / Minor or moderate pain for adult patients  
**Paediatric**: Pyrexia / Temperature > 38.5°C / Minor or moderate pain for paediatric patients |                                                                          |

### Salbutamol

<table>
<thead>
<tr>
<th>Heading</th>
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<th>Delete</th>
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</thead>
<tbody>
<tr>
<td>Administration</td>
<td>(CPG: 4/5/6.7.12)</td>
<td>CPG: 4.4.15, 2/3.4.16, 4.7.31, 3.7.12</td>
</tr>
</tbody>
</table>
| Usual Dosages | 0.1 mg metered aerosol spray (repeat aerosol x 11 prn)  
Repeat NEB at 5 minute intervals prn  
**EFR**: assist patient with Asthma/Anaphylaxis 0.1 mg metered aerosol spray (repeat aerosol x 11 prn)  
**Paediatric**:  
< 5 yrs - 0.1 mg metered aerosol spray (repeat aerosol x 5 prn)  
> 5 yrs - 0.1 mg metered aerosol spray (repeat aerosol x 11 prn)  
Repeat NEB at 5 minute intervals prn  
**EFR**: assist patient with Asthma/Anaphylaxis  
< 5 yrs - 0.1 mg metered aerosol spray (repeat aerosol x 5 prn)  
≥ 5 yrs - 0.1 mg metered aerosol spray (repeat aerosol x 11 prn) | (0.1 mg metered aerosol spray x 5)  
**EFRs**: (0.1 mg metered aerosol spray x 2)  
**Paediatric**:  
< 5 yrs - (0.1 mg metered aerosol spray x 3)  
> 5 yrs - (0.1 mg metered aerosol spray x 5) |
## APPENDIX 1 - Medication Formulary

### Index of medication formulary (Adult $\geq$ 16 and Paediatric $\leq$ 15 unless otherwise stated)

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</tr>
<tr>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Class</strong></td>
<td>Platelet aggregation inhibitor.</td>
</tr>
</tbody>
</table>
| **Descriptions** | Anti-inflammatory agent and an inhibitor of platelet function.  
Useful agent in the treatment of various thromboembolic diseases such as acute myocardial infarction. |
| **Presentation** | 300 mg dispersible tablet. |
| **Administration** | Orally (PO) - dispersed in water, or to be chewed - if not dispersible form.  
*(CPG: 5/6.4.10, 4.4.10, 1/2/3.4.10).* |
| **Indications** | Cardiac chest pain or suspected myocardial infarction.  
Management of unstable angina and non ST-segment elevation myocardial infarction (NSTEMI).  
Management of ST-segment elevation myocardial infarction (STEMI). |
| **Contra-Indications** | Active symptomatic gastrointestinal (GI) ulcer / Bleeding disorder (e.g. haemophilia) / Known severe adverse reaction / Patients < 16 years old (risk of Reye’s syndrome). |
| **Usual Dosages** | **Adult:**  
300 mg tablet.  
**Paediatric:**  
Contraindicated. |
| **Pharmacology / Action** | **Antithrombotic:**  
Inhibits the formation of thromboxane A2, which stimulates platelet aggregation and artery constriction. This reduces clot/thrombus formation in an MI. |
| **Side effects** | Epigastric pain and discomfort / Bronchospasm / Gastrointestinal haemorrhage / Increased bleeding time / Skin reactions in hypersensitive patients. |
| **Long term effects** | Generally mild and infrequent but incidence of gastro-intestinal irritation with slight asymptomatic blood loss, increased bleeding time, bronchospasm and skin reaction in hypersensitive patients. |
| **Additional information** | Aspirin 300 mg is indicated for cardiac chest pain regardless if patient is on anti-coagulants or is already on Aspirin.  
If the patient has swallowed an Aspirin (enteric coated) preparation without chewing it, the patient should be regarded as not having taken any Aspirin; administer 300 mg PO. |
### Chlorphenamine

**Class**: Antihistamine

**Descriptions**: H₁ antagonist to counteract the effects of histamine release.

**Presentation**: 10 mg in 1 mL ampoule. 4 mg tablet.

**Administration**: Intravenous (IV), Intramuscular (IM) and Orally (PO).

- **Indications**: Anaphylaxis or allergic reaction.

- **Contra-Indications**: Known severe adverse reaction / Pre-coma states.

<table>
<thead>
<tr>
<th>Clinical level:</th>
<th><strong>Usual Dosages</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medication</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Class</strong></td>
<td><strong>Chlorphenamine</strong></td>
</tr>
</tbody>
</table>

#### Adult:

**Allergic reaction**
- Mild: - 4 mg PO (EMT / P / AP).
- Moderate: - 4 mg PO or 10 mg IM (EMT / P) or 10 mg IV (AP).
- Severe/Anaphylaxis: - 10 mg IM (EMT / P) or 10 mg IV (AP).

#### Paediatric:

**Allergic reaction**
- Mild: 6 to 11 years – 2 mg PO (EMT / P / AP).
  ≥ 12 years – 4 mg PO (EMT / P / AP).
- Moderate: < 1 year – 0.25 mg/Kg IM (EMT / P) or 0.25 mg/Kg IV (AP).
  1 to 5 years – 2.5 mg IM (EMT / P) or 2.5 mg IV (AP).
  6 to 11 years – 2 mg PO or 5 mg IM (EMT / P) or 5 mg IV (AP).
  ≥ 12 years – 4 mg PO or 10 mg IM (EMT / P) or 10 mg IV (AP).
- Severe / Anaphylaxis: < 1 year – 0.25 mg/Kg IM (EMT / P) or 0.25 mg/Kg IV (AP).
  1 to 5 years – 2.5 mg IM (EMT / P) or 2.5 mg IV (AP).
  6 to 11 years – 5 mg IM (EMT / P) or 5 mg IV (AP).
  ≥ 12 years – 10 mg IM (EMT / P) or 10 mg IV (AP).

#### Pharmacology / Action

Chlorphenamine is a potent antihistamine (H₁-receptor antagonist). Antihistamines diminish or abolish the action of histamine in the body by competitive reversible blockade of histamine 1 receptor sites on tissues. Chlorphenamine also has anticholinergic activity.

#### Side effects

Causes drowsiness and patients receiving it should not drive or operate machinery.

#### Additional information

Use with caution in epilepsy / Prostatic hypertrophy / Glaucoma / Hepatic disease / Bronchitis / Bronchiectasis / Thyrotoxicosis / Raised intra-ocular pressure / Severe hypertension / Cardiovascular disease / Bronchial asthma.

For IV route, administer over 1 minute.

If small dose required, dilute with NaCl 0.9%.
### APPENDIX 1 - Medication Formulary

**Clinical level:**

- **EFR**
- **EMT**
- **P**
- **AP**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Epinephrine (1:1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Sympathetic agonist.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Naturally occurring catecholamine. It is a potent alpha and beta adrenergic stimulant; however, its effect on beta receptors is more profound.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Pre-filled syringe, ampoule or Auto injector. 1 mg/1 mL (1:1,000).</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intramuscular (IM), Intravenous (IV) and Nebulisation (Neb)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Severe anaphylaxis, Stridor, Symptomatic Bradycardia and Cardiogenic shock.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>None known.</td>
</tr>
</tbody>
</table>
| **Usual Dosages** | **Adult: Anaphylaxis**  
0.5 mg (500 mcg) IM (0.5 mL of 1:1,000).  
*EFR* assist patient – 0.3 mg (Auto injector)  
(Repeat every 5 minutes’ prn).  

**Adult: Symptomatic Bradycardia/ Cardiogenic shock:**  
0.01 mg IV/IO repeat prn.  
(Dilute 1 mg Epinephrine in 100 mL NaCl and draw up in 1 mL syringe, administer the dose over 1 minute).  

**Anaphylaxis Paediatric:**  
< 6 months: - 0.05 mg (50 mcg) IM (0.05 mL of 1:1,000)  
6 months to 5 years: - 0.125 mg (125 mcg) IM (0.13 mL of 1:1,000)  
6 to 8 years: - 0.25 mg (250 mcg) IM (0.25 mL of 1:1,000)  
> 8 years: - 0.5 mg (500 mcg) IM (0.5 mL of 1:1,000)  
*EFR* assist patient –  
6 Months < 10 years: 0.15 mg (Auto injector) (repeat every 5 minutes prn).  
≥ 10 years: 0.3 mg (Auto injector) (repeat every 5 minutes prn).  

**Stridor (AP):**  
< 1 Year: 2.5 mg NEB  
≥ 1 year: 5 mg NEB  
(repeat after 30 minutes’ prn) (AP).  

**Pharmacology / Action** | Alpha and beta adrenergic stimulant:  
Reversal of laryngeal oedema and bronchospasm in anaphylaxis.  
Antagonises the effects of histamine. |
| **Side effects** | Palpitations / Tachyarrhythmias / Hypertension / Angina-like symptoms. |
| **Additional information** | *N.B.* Double check the concentration on pack before use. |
### Glucagon

<table>
<thead>
<tr>
<th>Clinical level:</th>
<th>EMT</th>
<th>P</th>
<th>AP</th>
</tr>
</thead>
</table>

<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)</td>
</tr>
<tr>
<td></td>
<td><em>(CPG: 4/5/6.4.19, 4/5/6.7.32)</em></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>&lt;1 year / Phaeochromocytoma / KSAR</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td>1 mg IM.</td>
</tr>
<tr>
<td><strong>Pharmacology / Action</strong></td>
<td><em>Glycogenolysis:</em> Increases plasma glucose by mobilising glycogen stored in the liver.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Rare, may cause Hypotension / Dizziness / Headache / Nausea and Vomiting.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>May be ineffective in patients with low stored glycogen e.g. prior use in previous 24 hours, alcohol dependent patients with liver disease. Store in refrigerator. Protect from light. Hypoglycaemic paediatrics patients who are not diagnosed as diabetic should not be administered Glucagon. (this does not preclude the administration of Glucose Gel or Dextrose to treat hypoglycaemia)</td>
</tr>
</tbody>
</table>
### Medication Formulary

#### Glucose gel

<table>
<thead>
<tr>
<th>Clinical level:</th>
<th>EFR</th>
<th>EMT</th>
<th>P</th>
<th>AP</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Medication</strong></th>
<th><strong>Glucose gel</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Antihypoglycaemic.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Synthetic glucose paste.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Glucose gel in a tube or sachet.</td>
</tr>
</tbody>
</table>
| **Administration** | Buccal administration: Administer gel to the inside of the patient’s cheek and gently massage the outside of the cheek. (
|                  | **CPG:** 2/3.4.19, 4/5/6.4.19, 4/5/6.7.32). |
| **Indications** | Hypoglycaemia. Blood glucose < 4 mmol/L. **EFR** - Known diabetic with confusion or altered levels of consciousness. |
| **Contra-Indications** | Known severe adverse reaction. |
| **Usual Dosages** | **Adult:** 10 – 20 g buccal (repeat prn). **Paediatric:** ≤ 8 years: 5 – 10 g buccal (repeat prn). > 8 years: 10 – 20 g buccal (repeat prn). |
| **Pharmacology / Action** | Increases blood glucose levels. |
| **Side effects** | May cause vomiting in patients under the age of 5 years if administered too quickly. |
| **Additional information** | Glucose gel will maintain glucose levels once raised but should be used secondary to Dextrose to reverse hypoglycaemia. **Proceed with caution:** Patients with airway compromise. Altered level of consciousness. |
### Glyceryl trinitrate (GTN)

**Clinical level:** EFR, EMT, P, AP

<table>
<thead>
<tr>
<th>Class</th>
<th>Nitrate.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptions</strong></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><strong>Presentation</strong></td>
<td>Aerosol spray: Metered dose of 0.4 mg (400 mcg).</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td><strong>Sublingual:</strong> 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: 5/6.3.5, 5/6.4.10, 4.4.10, 1/2/3.4.10).</td>
</tr>
</tbody>
</table>
| **Indications** | Angina / suspected myocardial infarction (MI).  
**EMT:** Angina / suspected myocardial infarction (MI) with systolic BP ≥ 110 mmHg.  
**EFR:** may assist with administration.  
**Advanced Paramedics and Paramedics** - Pulmonary oedema. |
| **Contra-Indications** | SBP < 90 mmHg / Viagra or other phosphodiesterase type 5 inhibitors (Sildenafil, Tadalafil and Vardenafil) used within previous 24 hours / Severe mitral stenosis / Known severe adverse reaction. |
| **Usual Dosages** | **Adult:**  
Angina or MI: 0.4 mg (400 mcg) sublingual. (Repeat at 3-5 min intervals, Max: 1.2 mg).  
**EFR:** assist administration - 0.4 mg sublingual max.  
Pulmonary oedema: 0.8 mg (800 mcg) sublingual (repeat x 1 pm) (P & AP).  
**Paediatric:** Not indicated. |
| **Pharmacology / Action** | **Vasodilator:**  
Releases nitric oxide which acts as a vasodilator. Dilates coronary arteries particularly if in spasm increasing blood flow to myocardium.  
Dilates systemic veins reducing venous return to the heart (pre-load) and thus reduces the heart's workload.  
Reduces BP. |
| **Side effects** | Headache / Transient Hypotension / Flushing / Dizziness. |
| **Additional information** | Caution with inferior wall MI with right ventricular involvement as this may lead to profound hypotension.  
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. |
### Clinical Practice Guidelines - 2017 Edition (Updated February 2018)

**APPENDIX 1 - Medication Formulary**

<table>
<thead>
<tr>
<th>Clinical level:</th>
<th>EMT</th>
<th>P</th>
<th>AP</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Medication</th>
<th>Ibuprofen</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Non-Steroidal Anti-Inflammatory Drugs (NSAIDs).</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>It is an anti-inflammatory analgesic.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Suspension 100 mg in 5 mL and 200 mg in 5 mL. 200 mg, 400 mg tablets.</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Orally (PO).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Mild to moderate pain.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Not suitable for children under 3 months / Patient with history of asthma exacerbated by Aspirin / Pregnancy / Peptic ulcer disease / Known renal failure / Known severe liver failure / Known severe heart failure / Concurrent NSAID use (e.g. Diclofenac, Naproxen) / Known severe adverse reaction.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 400 mg PO (Mild pain). 600 mg PO (Moderate pain). <strong>Paediatric:</strong> 10 mg/Kg PO to a maximum of 400 mg.</td>
</tr>
<tr>
<td><strong>Pharmacology / Action</strong></td>
<td>Suppresses prostaglandins, which cause pain via the inhibition of cyclooxygenase (COX). Prostaglandins are released by cell damage and inflammation.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Skin rashes / Gastrointestinal intolerance and bleeding.</td>
</tr>
<tr>
<td><strong>Long term side effects</strong></td>
<td>Occasional gastrointestinal bleeding and ulceration can occur. May also cause acute renal failure / Interstitial nephritis / NSAID-associated nephropathy.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>If Ibuprofen administered in previous 6 hours, adjust the dose downward by the amount given by other sources resulting in a maximum of 10 mg/Kg or 400 mg for paediatrics. Caution with significant burns or poor perfusion due to risk of kidney failure. Caution if on oral anticoagulant (e.g. Warfarin, Rivaroxaban, Apixaban, Edoxaban) due to increased bleeding risk. Ibuprofen may be combined with Paracetamol for synergic effect.</td>
</tr>
</tbody>
</table>
### APPENDIX 1 - Medication Formulary

<table>
<thead>
<tr>
<th>Medication</th>
<th>Methoxyflurane</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Volatile anaesthetic agent.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Clear, almost colourless, volatile liquid, with a characteristic fruity odour that becomes a vapour or gas when used with the single use inhaler.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>3 mL vial with a tear off tamper-evident seal.</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Inhaled (INH) through an activated Carbon Chamber (self-administered). (<em>CPG: 4/5/6.2.6, 4/5/6.7.5</em>).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td><strong>Adult:</strong> Moderate to severe pain. <strong>Paediatric:</strong> Moderate to severe pain.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>&lt; 5 years old. Altered LOC due to head injury, drugs or alcohol / Cardiovascular instability / Respiratory depression / Renal Failure or Impairment / KSAR.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 3 mL (INH) (repeat x 1 only prn). <strong>Paediatric:</strong> 3 mL (INH) (repeat x 1 only prn).</td>
</tr>
<tr>
<td><strong>Pharmacology / Action</strong></td>
<td>Methoxyflurane vapour provides analgesia when inhaled at low concentrations. Methoxyflurane perturbs membrane fluidity and alters the activity of many ion channels and receptors required for cell-cell signalling across gap junctions and which underlie the action potential.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Amnesia / Anxiety / Depression / Dizziness / Dysarthria / Dysgeusia / Euphoria / Headache / Sensory neuropathy / Somnolence / Hypotension / Coughing / Dry mouth / Nausea / Feeling drunk / Sweating. <strong>Uncommon:</strong> Tingling or numbness to hands and feet / Tiredness / Mouth discomfort.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Patients with pain due to acute coronary syndrome (ACS) or migraine may not be suitable for Methoxyflurane. Methoxyflurane crosses the placenta. Consider the risk of central nervous system (CNS) and respiratory depression in an already compromised foetus. Contains butylated hydroxytoluene (E321) as a stabiliser. Methoxyflurane has a mildly pungent odour. If used in a confined space request the patient to inhale and exhale through the inhaler tube while ensuring that the activated Carbon Chamber is attached.</td>
</tr>
<tr>
<td>Medication</td>
<td>Naloxone</td>
</tr>
<tr>
<td>------------</td>
<td>----------</td>
</tr>
<tr>
<td>Class</td>
<td>Narcotic antagonist.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>Effective in management and reversal of overdoses caused by narcotics or synthetic narcotic agents.</td>
</tr>
<tr>
<td>Presentation</td>
<td>Ampoules 0.4 mg in 1 mL (400 mcg / 1 mL) or pre-loaded syringe.</td>
</tr>
<tr>
<td>Administration</td>
<td>IV / IO / IM / SC / IN.</td>
</tr>
<tr>
<td>Indications</td>
<td>Inadequate respiration and/or ALoC following known or suspected narcotic overdose.</td>
</tr>
<tr>
<td>Contra-Indications</td>
<td>Known severe respiration and/or ALoC following known or suspected narcotic overdose.</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td><strong>Adult:</strong> 0.4 mg (400 mcg) IV/IO (AP) (repeat after 3 min prn to a Max dose of 2 mg). 0.4 mg (400 mcg) IM/SC (P) (repeat after 3 min prn to a Max dose of 2 mg). 0.8 mg (800 mcg) IN (EMT) (repeat x 1 after 3 min prn).  <strong>Paediatric:</strong> 0.01 mg/Kg (10 mcg/Kg) IV/IO (AP). 0.01 mg/Kg (10 mcg/Kg) IM/SC (P). 0.02 mg/Kg (20 mcg/Kg) IN (EMT). (Repeat dose prn to maintain opioid reversal to Max 0.1 mg/Kg or 2 mg).</td>
</tr>
<tr>
<td>Pharmacology / Action</td>
<td>Narcotic antagonist: Reverse the respiratory depression and analgesic effect of narcotics.</td>
</tr>
<tr>
<td>Side effects</td>
<td>Acute reversal of narcotic effect ranging from nausea and vomiting to agitation and seizures.</td>
</tr>
<tr>
<td>Additional information</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>
### APPENDIX 1 - Medication Formulary

<table>
<thead>
<tr>
<th>Medication</th>
<th>Nitrous Oxide 50% and Oxygen 50% (Entonox®)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Analgesic.</td>
</tr>
<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, 5/6.5.1, 5/6.5.6, 4/5/6.7.5).</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Moderate to severe pain.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>Altered level of consciousness / Chest Injury / Pneumothorax / Shock / Recent scuba dive / Decompression sickness / Intestinal obstruction / Inhalation Injury / Carbon monoxide (CO) poisoning / Known severe adverse reaction.</td>
</tr>
</tbody>
</table>
| **Usual Dosages** | **Adult:** Self-administered until pain tolerable.  
**Paediatric:** Self-administered until pain tolerable. |
| **Pharmacology / Action** | Analgesic agent gas: CNS depressant. Pain relief. |
| **Side effects** | Disinhibition / Decreased level of consciousness / Light headedness. |
| **Additional information** | 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. Caution when using Entonox® for greater than one hour for sickle cell crisis. |
# APPENDIX 1 - Medication Formulary

## Clinical Level: Gas.

<table>
<thead>
<tr>
<th>Medication</th>
<th>Oxygen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Gas.</td>
</tr>
<tr>
<td>Descriptions</td>
<td>Odourless / Tasteless / Colourless gas necessary for life.</td>
</tr>
</tbody>
</table>
| Presentation | *Medical gas:* D, E or F cylinders, coloured black with white shoulders.  
*CD cylinder:* White cylinder. |
| Administration | *Inhalation via:* High concentration reservoir (non-rebreather) mask / Simple face mask / Venturi mask / Tracheostomy mask / Nasal cannulae / CPAP device / 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.  
SpO₂ < 90% for patients with acute onset of Pulmonary Oedema. |
| Contra-Indications | Bleomycin lung injury. |
| Usual Dosages | **Adult:** Cardiac and respiratory arrest or sickle cell crisis; 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 or sickle cell crisis; 100%.  
Life threats identified during primary survey; 100% until a reliable SpO₂ measurement obtained then titrate O₂ to achieve SpO₂ of 96% - 98%.  
Neonatal resuscitation (< 4 weeks) consider supplemental O₂ (≤ 30%).  
All other acute medical and trauma titrate O₂ to achieve SpO₂ of 96% - 98%. |
| Pharmacology / Action | Oxygenation of tissue/organs. |
| Side effects | Prolonged use of O₂ with chronic COPD patients may lead to reduction in ventilation stimulus. |
| Additional information | A written record must be made of what oxygen therapy is given to every patient.  
Documentation recording oximetry measurements should state whether the patient is breathing air or a specified dose of supplemental Oxygen.  
Consider humidifier if oxygen therapy for paediatric patients is > 30 minutes duration.  
Caution with paraquat poisoning, administer Oxygen if SpO₂ < 92%.  
Avoid naked flames, powerful oxidising agent. |
### Paracetamol

**Clinical Level:**
- EMT
- P
- AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Paracetamol</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Analgesic and antipyretic.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Paracetamol is used to reduce pain and body temperature.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Rectal suppository 1 g, 500 mg, 250 mg, 180 mg, 125 mg, 80 mg. Suspensions 120 mg in 5 mL or 250 mg in 5 mL. 500 mg tablet. Plastic vial, 1 g of Paracetamol in 100 mL solution for infusion.</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td><strong>Adult:</strong> Pyrexia / Temperature &gt; 38.3°C / Mild or moderate pain. <strong>Paediatric:</strong> Pyrexia / Temperature &gt; 38.5°C / Mild or moderate pain.</td>
</tr>
<tr>
<td><strong>Contra-Indications</strong></td>
<td>&lt; 1 month old / Known severe adverse reaction / Chronic liver disease.</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 1 g PO (EMT, P/AP). 1 g IV infusion (AP), if estimated weight &lt; 50 kg, 15 mg/kg (administered slowly over 15 minutes). <strong>Palliative Care:</strong> 1 g PO (Repeat x 1 pm). <strong>Paediatric:</strong> PO (EMT, P/AP) PR (AP) IV Infusion (AP) 20 mg/Kg PO &gt;1 month &lt; 1 year - 90 mg PR &lt; 1 year – 7.5 mg/kg IV slowly 1-3 years - 180 mg PR ≥ 1 year – 15 mg/kg IV slowly 4-8 years - 360 mg PR</td>
</tr>
<tr>
<td><strong>Pharmacology / Action</strong></td>
<td>Analgesic – central prostaglandin inhibitor. Antipyretic – prevents the hypothalamus from synthesising prostaglandin E, inhibiting the body temperature from rising further.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>If Paracetamol IV is administered too fast it may result in hypotension.</td>
</tr>
<tr>
<td><strong>Long term side effects</strong></td>
<td>Long term use at high dosage or over dosage can cause liver damage and less frequently renal damage.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Paracetamol is contained in Paracetamol suspension and other over the counter drugs. Consult with parent / guardian in relation to medication administration prior to arrival on scene. For PR use be aware of the modesty of the patient, should be administered in the presence of a 2nd person. If Paracetamol administered in the previous 4 hours, adjust the dose downward by the amount given by other sources resulting in a maximum of 20 mg/Kg. Caution with IV Paracetamol in the absence of a buretrol.</td>
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</table>
### APPENDIX 1 - Medication Formulary

<table>
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<tr>
<th>Medication</th>
<th>Salbutamol</th>
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<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Sympathetic agonist.</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Sympathomimetic that is selective for beta-2 adrenergic receptors.</td>
</tr>
</tbody>
</table>
| **Presentation** | Nebule 2.5 mg in 2.5 mL.  
Nebule 5 mg in 2.5 mL.  
*aerosol inhaler*: Metered dose 0.1 mg (100 mcg). |
| **Administration** | **NEB.**  
Inhalation via aerosol inhaler.  
*(CPG: 4/5/6.3.3, 3.3.4, 4/5/6.3.4, 2/3.4.15, 4/5/6.4.15, 4/5/6.10, 4/5/6.7.12, 2/3.7.31, 4/5/6.7.31).* |
| **Indications** | Bronchospasm / Exacerbation of COPD / Respiratory distress following submersion incident. |
| **Contra-Indications** | Known severe adverse reaction. |
| **Usual Dosages** | **Adult:**  
5 mg NEB or 0.1 mg metered aerosol spray (repeat aerosol x 11)  
Repeat NEB at 5 minute intervals prn  
*EFR* assist patient with Asthma/ Anaphylaxis – 0.1 mg metered aerosol spray (repeat aerosol x 11 prn) |
| | **Paediatric:**  
< 5 yrs - 2.5 mg NEB or 0.1 mg metered aerosol spray (repeat aerosol x 5).  
≥ 5 yrs - 5 mg NEB or 0.1 mg metered aerosol spray (repeat aerosol x 11).  
(Repeat NEB at 5 minute intervals prn).  
*EFR*: assist patient with Asthma/ Anaphylaxis –  
< 5 yrs - 0.1 mg metered aerosol spray (repeat aerosol x 5 pm).  
≥ 5 yrs - 0.1 mg metered aerosol spray (repeat aerosol x 11 pm). |
| **Pharmacology / Action** | Beta-2 agonist / Bronchodilation / Relaxation of smooth muscle. |
| **Side effects** | Tachycardia / Tremors / Tachyarrhythmias / High doses may cause Hypokalaemia. |
| **Additional information** | It is more efficient to use a volumiser 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. |
# New Medications and Skills for 2017

<table>
<thead>
<tr>
<th>CLINICAL LEVEL</th>
<th>CFR-C</th>
<th>CFR-A</th>
<th>FAR/OFA</th>
<th>EFR</th>
<th>EMT</th>
<th>P</th>
<th>AP</th>
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<td>Management of presenting umbilical cord (finger control)</td>
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</table>

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. Practitioners must be privileged by a licensed CPG provider to administer specific medications and perform specific clinical interventions.

**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
- BTEC = Authorised subject to Basic Tactical Emergency Care rules

**Paramedic authorisation for IV continuation**

Practitioners should note that PHECC registered paramedics are authorised to continue an established IV infusion in the absence of an advanced paramedic or doctor during transportation.
## APPENDIX 2 - Medications & Skills Matrix

<table>
<thead>
<tr>
<th>MEDICATIONS</th>
<th>CLINICAL LEVEL</th>
<th>CFR-C</th>
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APPENDIX 2 - Medications & Skills Matrix

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AIRWAY & BREATHING MANAGEMENT

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## HAEMORRHAGE CONTROL

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<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td></td>
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<tr>
<td>Secure and move a patient with an extrication device</td>
<td>✓</td>
<td>SA</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td></td>
</tr>
<tr>
<td>Move a patient with a split device (Orthopaedic stretcher)</td>
<td>✓</td>
<td>SA</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<tr>
<td>Passive Spinal Motion Restriction</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
# APPENDIX 2 - Medications & Skills Matrix

## TRAUMA (contd.)

<table>
<thead>
<tr>
<th>Clinical Level</th>
<th>CFR-C</th>
<th>CFR-A</th>
<th>FAR/OFA</th>
<th>EFR</th>
<th>EMT</th>
<th>P</th>
<th>AP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pelvic Splinting device</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Move and secure patient into a vacuum mattress</td>
<td></td>
<td></td>
<td>BTEC</td>
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<tr>
<td>Move and secure a patient to a paediatric board</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Traction splint application</td>
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<td></td>
<td></td>
<td></td>
<td>APO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral dislocation of patella – reduction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taser gun barb removal</td>
<td></td>
<td></td>
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## OTHER

<table>
<thead>
<tr>
<th>Clinical Level</th>
<th>CFR-C</th>
<th>CFR-A</th>
<th>FAR/OFA</th>
<th>EFR</th>
<th>EMT</th>
<th>P</th>
<th>AP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of Red Card</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>Assist in the normal delivery of a baby</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>APO</td>
<td></td>
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<tr>
<td>De-escalation and breakaway skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
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<tr>
<td>ASHICE radio report</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>✓</td>
<td></td>
</tr>
<tr>
<td>IMIST-AMBO handover</td>
<td></td>
<td></td>
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<td>✓</td>
<td></td>
</tr>
<tr>
<td>External massage of uterus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Broselow tape</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Management of presenting umbilical cord (finger control)</td>
<td></td>
<td></td>
<td></td>
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<td>✓</td>
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<tr>
<td>Verification of Death</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Intraosseous cannulation</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Intravenous cannulation</td>
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<td></td>
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<tr>
<td>Urinary catheterisation</td>
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<td></td>
<td></td>
<td></td>
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## PATIENT ASSESSMENT

<table>
<thead>
<tr>
<th>Clinical Level</th>
<th>CFR-C</th>
<th>CFR-A</th>
<th>FAR/OFA</th>
<th>EFR</th>
<th>EMT</th>
<th>P</th>
<th>AP</th>
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</thead>
<tbody>
<tr>
<td>Assess responsiveness</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Check breathing</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>FAST assessment</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Capillary refill</td>
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<td>AVPU</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Pulse check</td>
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<td>✓</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Breathing &amp; pulse rate</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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## APPENDIX 2 - Medications & Skills Matrix

### PATIENT ASSESSMENT (contd.)

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<th>CLINICAL LEVEL</th>
<th>CFR-C</th>
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<th>EFR</th>
<th>EMT</th>
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<tbody>
<tr>
<td>Primary survey</td>
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<tr>
<td>SAMPLE history</td>
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<tr>
<td>Secondary survey</td>
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<tr>
<td>Rule of Nines</td>
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<td>Assess pupils</td>
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<td>Blood pressure</td>
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<tr>
<td>Capacity evaluation</td>
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<tr>
<td>Chest auscultation</td>
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<td>Glucometery</td>
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<tr>
<td>Paediatric Assessment Triangle</td>
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<tr>
<td>Pain assessment</td>
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<td>☑</td>
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<td>Patient Clinical Status</td>
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<td>Temperature °C</td>
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<tr>
<td>Triage sieve</td>
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<td>☑</td>
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<td>☑</td>
<td>☑</td>
<td>☑</td>
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<tr>
<td>Glasgow Coma Scale (GCS)</td>
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<td>☑</td>
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<td>☑</td>
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<tr>
<td>Pre-hospital Early Warning Score</td>
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<td>☑</td>
</tr>
<tr>
<td>Treat and referral</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Triage sort</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
</tbody>
</table>
APPENDIX 3 - Critical Incident Stress Management

Your Psychological Well-Being

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 traumas 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. 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.

How do I know when I am adversely affected by a critical incident(s)?

Listed below are some common ways in which people react to incidents like this:

- Feeling of distress
- Feeling of sadness
- Strong feeling of anger
- Feeling of disillusionment
- Feeling of guilt
- Feeling of apprehension/anxiety/fear of:
  - losing control/breaking down or
  - something similar happening again
  - not having done all I think I could have done
- Avoidance of the scene of incident/trauma or of anything that reminds you of it
- Bad dreams or nightmares
- Distressing memories or ‘flashbacks’ of the incident
- Feeling 'on edge', irritable, angry, under threat/pressure
- Feeling emotionally fragile – unable to experience your normal range of emotions
- Feeling cut off from your family or close friends – "I can't talk to them" or "I don't want to upset them"


SOME DOS AND DON'TS

DO express your emotions
DO talk about what has happened as often as you need to
DO find opportunities to review the experience
DO discuss what happened with colleagues
DO look to friends and colleagues for support
DO listen sympathetically if a colleague wants to speak with you, unless it is too distressing
DO advise colleagues who need more help where they can get appropriate help
DO try to keep your life as normal as possible
DO keep to daily routines
DO drive more carefully
DO be more careful around the home
DON'T use alcohol, nicotine or other drugs to hide your feelings
DON'T simply stay away from work – seek help and support
DON'T allow anger and irritability to mask your feelings
DON'T bottle up feelings
DON'T be afraid to ask for help
DON'T think your feelings are signs of weakness

Everyone may have these feelings. Experience has shown that they may vary in intensity according to circumstance. Nature heals through allowing these feelings to come out. This will not lead to loss of control, but stopping these feelings may lead to other and possibly more complicated problems.

WHEN TO FIND HELP

1. If you feel you cannot cope with your reactions or feelings.
2. If your stress reactions do not lessen in the two or three weeks following the event.
3. If you continue to have nightmares and poor sleep.
4. If you have no-one with whom to share your feelings when you want to do so.
5. If your relationships seem to be suffering badly, or sexual problems develop.
6. If you become clumsy or accident prone.
7. If, in order to cope after the event, you smoke, drink or take more medication, or other drugs.
8. If your work performance suffers.
9. If you are tired all the time.
10. If things get on top of you and you feel like giving up.
11. If you take it out on your family.
12. If your health deteriorates.
APPENDIX 3 - Critical Incident Stress Management

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 seek support and help.

Where to find help?

Your own licensed CPGs provider will have a CISM support network or system.

We recommend that you contact them for help and advice (i.e. your peer support worker/coordinator/staff support officer).

- For a self-help guide, please go to www.cismnetworkireland.ie
- The NAS CISM and CISM Network published a booklet called 'Critical Incident Stress Management for Emergency Personnel'.
  
  It can be purchased by emailing: info@cismnetworkireland.ie
- Consult your own GP or see a health professional who specialises in traumatic stress.
- The NAS CISM Committee in partnership with PHECC developed an eLearning CISM Stress Awareness Training (SAT) module. It can be accessed by the following personnel:
  - PHECC registered practitioners at all levels
  - National Ambulance Service-linked community first responders
  - NAS non-PHECC registered personnel
  - SAT modules in development for CISM Network member organisations.
New EMT CPGs in 2017 Edition

To support upskilling of the 2017 CPGs new CPGs are identified below.

<table>
<thead>
<tr>
<th>New CPGs</th>
<th>The new skills and medications incorporated into the CPGs are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPG 4/5/6.8.6 Team Resuscitation</td>
<td>This CPG outlines the team approach to resuscitation and defines specific roles for team members.</td>
</tr>
<tr>
<td>CPG 4/5/6.5.3 PV Haemorrhage in Pregnancy</td>
<td>This CPG combines AP, P and EMT practice on one CPG.</td>
</tr>
<tr>
<td>CPG 4/5/6.5.4 Postpartum Haemorrhage</td>
<td>This CPG combines AP, P and EMT practice on one CPG.</td>
</tr>
<tr>
<td>CPG 4/5/6.5.5 Umbilical Cord Complications</td>
<td>This CPG combines AP, P and EMT practice on one CPG.</td>
</tr>
</tbody>
</table>

Deleted EMT CPGs in 2017 Edition

<table>
<thead>
<tr>
<th>CPG Deleted</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CPG 4.7.52 Spinal immobilisation – Paediatric</td>
<td>This CPG has been deleted. Both Adult and Paediatric Spinal Injury Management CPGs have been incorporated into one Spinal Injury Management CPG 4.6.9.</td>
</tr>
<tr>
<td>CPG 4.4.15 Allergic Reaction/Anaphylaxis – Adult</td>
<td>This CPG has been deleted. All three practitioner levels are now incorporated into one CPG 4/5/6.4.15 Allergic Reaction/Anaphylaxis – Adult.</td>
</tr>
<tr>
<td>CPG 4.4.19 Glycaemic Emergency – Adult</td>
<td>This CPG has been deleted. All three practitioner levels are now incorporated into one CPG 4/5/6.4.19 Glycaemic Emergency – Adult.</td>
</tr>
</tbody>
</table>
Updated EMT CPGs from 2014 version

To support upskilling of the 2017 CPGs, the CPGs that have content changes are outlined below. Changes in blue text relate to the 2018 updates.

Practitioners should also be advised that there are updated care principles in this edition. In an attempt to reduce unnecessary content on CPGs the list of equipment has been deleted from all CPGs.

<table>
<thead>
<tr>
<th>CPGs</th>
<th>The principal differences are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPG 4/5/6.2.6</td>
<td>The CPG layout has been changed significantly</td>
</tr>
<tr>
<td>Pain Management – Adult</td>
<td>Deleted</td>
</tr>
<tr>
<td></td>
<td>‘And/or’ - for Paracetamol and Ibuprofen for moderate pain</td>
</tr>
<tr>
<td></td>
<td>Scores depicting severe, moderate and mild pain</td>
</tr>
<tr>
<td></td>
<td>Added</td>
</tr>
<tr>
<td></td>
<td>‘Consider medical support’</td>
</tr>
<tr>
<td></td>
<td>Pathway to nausea &amp; vomiting CPG</td>
</tr>
<tr>
<td></td>
<td>Management of severe pain classified into 1st, 2nd and 3rd line administration of analgesia</td>
</tr>
<tr>
<td></td>
<td>Methoxyflurane 3 mL INH for moderate pain</td>
</tr>
<tr>
<td></td>
<td>Medication updates</td>
</tr>
<tr>
<td></td>
<td>Ibuprofen for mild pain</td>
</tr>
<tr>
<td></td>
<td>Ibuprofen dose increased to 600 mg PO for moderate pain in conjunction with Paracetamol 1 g PO</td>
</tr>
<tr>
<td>CPG 4/5/6.3.4</td>
<td>Added</td>
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<tr>
<td>Asthma – Adult</td>
<td>Consider CO₂ monitoring</td>
</tr>
<tr>
<td></td>
<td>‘Consider FEFR prior to Salbutamol administration’ – advice box</td>
</tr>
<tr>
<td></td>
<td>Medication update</td>
</tr>
<tr>
<td></td>
<td>Salbutamol aerosol 0.1 mg repeat increased from 5 to 11 times</td>
</tr>
<tr>
<td>CPG 4/5/6.4.1</td>
<td>Deleted</td>
</tr>
<tr>
<td>Basic Life Support – Adult</td>
<td>‘Commence CPR while defibrillator is being prepared only if 2nd person available’</td>
</tr>
<tr>
<td></td>
<td>Chest compression depth: at least 5 cm</td>
</tr>
<tr>
<td></td>
<td>Added</td>
</tr>
<tr>
<td></td>
<td>‘Commence continuous chest compressions (or CPR) while defibrillator is being prepared’</td>
</tr>
<tr>
<td></td>
<td>1 practitioner on site = continuous chest compressions</td>
</tr>
<tr>
<td></td>
<td>2 or more practitioners / responders on site = CPR</td>
</tr>
<tr>
<td></td>
<td>Chest compression depth: 5 to 6 cm</td>
</tr>
<tr>
<td></td>
<td>Oxygen therapy de-emphasised during initial resuscitation to minimise chest compression delay</td>
</tr>
<tr>
<td>CPGs</td>
<td>The principal differences are:</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------</td>
</tr>
</tbody>
</table>
| CPG 4/5/6.4.3  
VF or pVT – Adult | Renamed from ‘VF or Pulseless VT – Adult’ to ‘VF or pVT – Adult’  
**Deleted**  
Driving graphic and information box regarding mechanical CPR device  
**Added**  
Defibrillate – (escalating energy) |
| CPG 4.4.4  
Asystole – Adult | **Deleted**  
Driving graphic and information box regarding CPR hands-off time  
Consider waveform capnography  
**Added**  
100% Oxygen  
‘Contact ambulance control and identify timeframe for arrival of P or AP and follow direction re transport’ – information box  
EMT special authorisation – ‘An EMT may cease resuscitation, following 20 minutes of asystole and no P or AP available, provided that the EMT is privileged to do so by the licenced CPG provider on whose behalf he/she is acting’ |
| CPG 4/5/6.4.6  
Pulseless Electrical Activity – Adult | **Deleted**  
Driving graphic and information box regarding mechanical CPR device  
Information box regarding CPR hands-off time  
Consider waveform capnography |
| CPG 4.4.7  
Post-Resuscitation Care – Adult | **Deleted**  
‘Positive pressure ventilations’ mandatory box  
Titrate O₂ to 94% - 98%  
Consider active cooling if unresponsive  
Recovery position  
**Added**  
‘Airway’ to first decision box  
’Consider advanced airway and positive pressure ventilations’  
‘ETCO₂ added to ECG and SpO₂ monitoring  
Special instruction box added for STEMI identification, contact Primary PCI facility for direction (follow ACS CPG)  
‘Avoid warming’ |
| CPG 4.4.10  
Cardiac Chest Pain – Acute Coronary Syndrome | **Deleted**  
‘Time critical commence transport to definitive care ASAP’ – information box  
**Added**  
‘Contact NAS control for direction’  
**Medication update**  
Oxygen therapy has been changed to ‘consider oxygen therapy’ |
## APPENDIX 4 - CPG Updates for Emergency Medical Technicians

<table>
<thead>
<tr>
<th>CPGs</th>
<th>The principal differences are:</th>
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<tbody>
<tr>
<td>CPG 4/5/6.4.15</td>
<td><strong>Allergic Reaction/Anaphylaxis – Adult</strong></td>
</tr>
<tr>
<td></td>
<td>The algorithm flow through the CPG has been modified extensively</td>
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<tr>
<td></td>
<td><strong>Deleted</strong></td>
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<td></td>
<td>‘Angio-oedema’ from mild allergic signs</td>
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<tr>
<td></td>
<td><strong>Added</strong></td>
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<tr>
<td></td>
<td>EMT level – all three practitioner levels now combined</td>
</tr>
<tr>
<td></td>
<td>‘Effective’ to pre-arrival Epinephrine decision diamond</td>
</tr>
<tr>
<td></td>
<td>‘Angio-oedema’ to moderate allergic signs</td>
</tr>
<tr>
<td></td>
<td><strong>New Medications</strong></td>
</tr>
<tr>
<td></td>
<td>Epinephrine (1:1,000) 0.5 mg IM</td>
</tr>
<tr>
<td></td>
<td>Chlorphenamine PO/IM</td>
</tr>
<tr>
<td>CPG 4/5/6.4.16</td>
<td><strong>Decompression Illness</strong></td>
</tr>
<tr>
<td></td>
<td>Updated to reflect paramedic authorisation of antiemetic</td>
</tr>
<tr>
<td>CPG 4/5/6.4.19</td>
<td><strong>Glycaemic Emergency – Adult</strong></td>
</tr>
<tr>
<td></td>
<td>The algorithm flow through the CPG has been modified</td>
</tr>
<tr>
<td></td>
<td><strong>Deleted</strong></td>
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<tr>
<td></td>
<td>‘A or V on AVPU’ – decision diamond</td>
</tr>
<tr>
<td></td>
<td><strong>Added</strong></td>
</tr>
<tr>
<td></td>
<td>EMT level – all three practitioner levels now combined</td>
</tr>
<tr>
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<td>‘Conscious/able to swallow’ – decision diamond</td>
</tr>
<tr>
<td></td>
<td>Yes - Glucose gel 10 - 20 g buccal, sweetened drink</td>
</tr>
<tr>
<td></td>
<td>No - Dextrose or Glucagon 1 mg IM</td>
</tr>
<tr>
<td></td>
<td>‘Advise a carbohydrate meal (sandwich)’</td>
</tr>
<tr>
<td></td>
<td>An advisory box: ‘Check for presence of an insulin pump; turn off or remove if present’</td>
</tr>
<tr>
<td>CPG 4/5/6.4.24</td>
<td><strong>Sepsis – Adult</strong></td>
</tr>
<tr>
<td></td>
<td>Deleted</td>
</tr>
<tr>
<td></td>
<td>Commence with 100% O&lt;sub&gt;2&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td><strong>Added</strong></td>
</tr>
<tr>
<td></td>
<td>‘advise triage nurse if SIRS + infection’</td>
</tr>
<tr>
<td></td>
<td>‘On immune-suppressant medication’ – Could this be severe infection?</td>
</tr>
<tr>
<td></td>
<td>‘BP monitoring’</td>
</tr>
<tr>
<td></td>
<td>O&lt;sub&gt;2&lt;/sub&gt; titrate to sats &gt; 94%</td>
</tr>
<tr>
<td></td>
<td>Risk stratifier instruction box</td>
</tr>
<tr>
<td></td>
<td>Penicillin allergy instruction box</td>
</tr>
<tr>
<td></td>
<td>Pre-alert ED updated with criteria; severe sepsis, septic shock, meningitis suspected or at risk of neutropenia</td>
</tr>
<tr>
<td></td>
<td>Indications for antibiotic; severe sepsis, septic shock, meningitis suspected or at risk of neutropenia</td>
</tr>
<tr>
<td></td>
<td>Signs of shock/poor perfusion updated to include; heart rate &gt; 130, RR &gt; 30, altered mental status and oligo or anuria</td>
</tr>
<tr>
<td></td>
<td><strong>Medication update</strong></td>
</tr>
</tbody>
</table>

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Pre-Hospital Emergency Care Council
<table>
<thead>
<tr>
<th>CPGs</th>
<th>The principal differences are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.3°C new temperature for consideration for Paracetamol</td>
<td></td>
</tr>
</tbody>
</table>
| CPG 4/5.4.29 Mental Health Emergency | The wording of the CPG entry point updated to read; ‘abnormal behaviour with a history of psychiatric illness’  
Added  
Capacity assessment updated to reflect Assisted Decision Making (Capacity) Act 2015 requirements                                                                                     |
| CPG 4/5/6.4.30 Behavioural Emergency | The algorithm flow through the CPG has been modified extensively  
Deleted  
‘Saloon of ambulance’ to reflect other modes of transport when considering two or more people accompanying the patient  
Added  
Capacity assessment updated to reflect Assisted Decision Making (Capacity) Act 2015 requirements  
Three potential causes of behavioural emergency; mental health, medical or traumatic causation and intoxication or withdrawal  
Decision diamond for patients ‘aggressive/violent and/or risk to self or others and uncooperative with practitioner’  
For patients who are aggressive/violent and/or risk to self or others and uncooperative with practitioner;  
• ensure practitioner safety (await Garda if any doubt)  
• request ALS  
• consider verbal de-escalation  
• hand-over to Garda care if the patient has capacity and declines care  
• hand-over to registered medical practitioner/Garda care if the patient has capacity and is ill  
• consider treating reversible causes with Garda assistance  
• AP to seek medical advice regarding sedation and document shared decision, if aggression continuing                                                                 |
| CPG 4.5.1                  | Pre-Hospital Emergency Childbirth                                                                                      | Added  
Clamp & cut cord  
‘Preference for skin to skin’ (when wrapping baby and presenting to mother)                                                                                          |
| 4.5.2                      | Basic Life Support – Neonate (< 4 weeks)                                                                             | Deleted  
Give supplementary O₂                                                                                                                                             |
|                            |                                                                                                                      | Added  
Record time of birth  
Following birth, all elements up to the ‘provision of 5 positive pressure ventilations’ to be completed within 60 seconds  
ECG monitor to assess heart rate  
‘Gasping breaths’ added to ‘apnoeic or HR < 100’                                                                                                   |
### CPG Updates for Emergency Medical Technicians

#### APPENDIX 4 - CPG Updates for Emergency Medical Technicians

<table>
<thead>
<tr>
<th>CPGs</th>
<th>The principal differences are:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5.2 Basic Life Support – Neonate (&lt; 4 weeks) (Contd.)</td>
<td><em>(room air)</em> - Provide 5 positive pressure ventilations 30 second PPV (40 - 60 breaths per minute) - until breathing well, HR &gt; 100 If ongoing CPR consider supplemental O&lt;sub&gt;2&lt;/sub&gt; (≤ 30%) 'Monitor heart rate’ decision diamond changed from ‘assess heart rate’ ‘Use two thumbs encircling technique when two practitioners present’ – information box Contact ambulance control for direction</td>
</tr>
<tr>
<td>CPG 4/5/6.6.6 Heat Related Emergency – Adult</td>
<td>Deleted ‘Exercise related dehydration should be treated with oral fluids (caution with over-hydration with water)’</td>
</tr>
<tr>
<td>CPG 4.6.9 Spinal Injury Management</td>
<td>Renamed from ‘Spinal Immobilisation – Adult’ to ‘Spinal Injury Management’ incorporating both adult and paediatric patients This CPG has had significant alterations with a change in philosophy from ‘spinal rule out’ to ‘spinal rule in’ Deleted ‘with any of the above’ after both age 65 years and age 2 years in the high risk factors. ‘Manual in line stabilisation’ in 1&lt;sup&gt;st&lt;/sup&gt; box. ‘manual’ in the definition of active spinal motion restriction Added ‘Active spinal motion restriction’ in 1&lt;sup&gt;st&lt;/sup&gt; box ‘Assess risk factors’ decision after ‘Remove helmet’ Practitioners are referred to Appendix 6 – Spinal Injury Management Recommendations for supporting information Full PHECC policy statement available at <a href="http://www.phecc.ie">www.phecc.ie</a></td>
</tr>
<tr>
<td>CPG 4/5/6.7.4 Secondary Survey – Paediatric (≤ 15 years)</td>
<td>Deleted ‘Check for normal patterns of feeding, toilet, sleeping, interaction with guardian’ Head-to-toe examination list Added Take SAMPLE history Irish Children’s Triage System normal range of vital signs</td>
</tr>
<tr>
<td>CPG 4/5/6.7.5 Pain Management – Paediatric (≤ 15 years)</td>
<td>The CPG layout has been changed significantly Deleted ‘And/or - for Paracetamol and Ibuprofen for moderate pain Scores depicting severe, moderate and mild pain Added ‘Consider medical support’ Pathway to nausea &amp; vomiting CPG Management of severe pain classified into 1&lt;sup&gt;st&lt;/sup&gt;, 2&lt;sup&gt;nd&lt;/sup&gt; and 3&lt;sup&gt;rd&lt;/sup&gt; line administration of</td>
</tr>
</tbody>
</table>
### CPGs

<table>
<thead>
<tr>
<th>CPGs</th>
<th>The principal differences are:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>analgesia</strong>&lt;br&gt;Request ALS if pain management is not resolved&lt;br&gt;Methoxyflurane 3 mL INH for moderate pain (≥ 5 year olds)</td>
</tr>
<tr>
<td></td>
<td><strong>Medication updates</strong>&lt;br&gt;Ibuprofen 10 mg/Kg PO for mild pain&lt;br&gt;Ibuprofen 10 mg/Kg PO in conjunction with Paracetamol 20 mg/Kg PO for moderate pain</td>
</tr>
<tr>
<td>CPG 4/5/6.7.12 Asthma – Paediatric (≤ 15 years)</td>
<td><strong>Added</strong>&lt;br&gt;‘Consider FEFR prior to Salbutamol administration’ – advice box</td>
</tr>
<tr>
<td>CPG 4/5/6.7.13 Stridor – Paediatric (≤ 15 years)</td>
<td>‘Humidified O₂’ and ‘Do not distress’ moved to earlier in the treatment algorithm&lt;br&gt;<strong>Added</strong>&lt;br&gt;‘Request ALS’&lt;br&gt;‘Check temperature and if &gt; 38.5°C - go to Sepsis CPG’</td>
</tr>
<tr>
<td>CPG 4/5/6.7.20 Basic Life Support – Paediatric (≤ 15 years)</td>
<td><strong>Deleted</strong>&lt;br&gt;‘Minimum interruption of chest compressions’ - information box&lt;br&gt;‘Continue CPR while defibrillator is charging’ - information box&lt;br&gt;‘Minimal interruptions of chest compressions and maximum hands-off time 10 seconds’ - information box&lt;br&gt;<strong>Added</strong>&lt;br&gt;‘Chest compression depth of 5 cm for a child and 4 cm for a small child or infant’ - information box&lt;br&gt;‘4 J/Kg’ - Shockable rhythms</td>
</tr>
<tr>
<td>CPG 4/5/6.7.22 VF or pVT – Paediatric (≤ 15 years)</td>
<td>Renamed from ‘VF or Pulseless VT – Paediatric (≤ 15 years)’ to ‘VF or pVT – Paediatric (≤ 15 years)’&lt;br&gt;<strong>Deleted</strong>&lt;br&gt;‘With CPR ongoing maximum hands-off chest 10 seconds and CPR during charging’ - information box&lt;br&gt;‘Transport to ED if no change after 10 minutes resuscitation if no ALS available’&lt;br&gt;Driving graphic&lt;br&gt;‘Mechanical CPR device’ - information box&lt;br&gt;<strong>Added</strong>&lt;br&gt;‘100% Oxygen’&lt;br&gt;‘Transport to ED if no change after 20 minutes resuscitation if no ALS available’</td>
</tr>
</tbody>
</table>
### CPG Updates for Emergency Medical Technicians

#### APPENDIX 4

<table>
<thead>
<tr>
<th>CPGs</th>
<th>The principal differences are:</th>
</tr>
</thead>
</table>
| CPG 4/5/6.7.23  
Asystole/PEA – Paediatric  
(≤ 15 years) | **Deleted**  
‘With CPR ongoing maximum hands-off chest 10 seconds and CPR during charging - information box’  
‘Transport to ED if no change after 10 minutes resuscitation if no ALS available’  
Driving graphic  
Mechanical CPR device - information box  
**Added**  
‘100% Oxygen’  
‘Transport to ED if no change after 20 minutes resuscitation if no ALS available’ |
| CPG 4.7.25  
Post-Resuscitation Care  
– Paediatric  
(≤ 15 years) | **Deleted**  
Consider active cooling if unresponsive  
Recovery position  
**Added**  
‘Prevent warming’  
Contact NAS ambulance control for direction |
| CPG 4/5/6.7.31  
Allergic Reaction/Anaphylaxis  
– Paediatric  
(≤ 15 years) | The algorithm flow through the CPG has been modified extensively  
**Deleted**  
‘Angio-oedema’ from mild allergic signs  
**Added**  
EMT level – all three practitioner levels now combined  
‘Effective’ to pre-arrival Epinephrine decision diamond  
‘Angio-oedema’ to moderate allergic signs  
**New Medications**  
Epinephrine (1:1,000) (age specific dose) IM  
Chlorphenamine (age specific dose) PO/IM |
| CPG 4/5/6.7.32  
Glycaemic Emergency –  
Paediatric  
(≤ 15 years) | The algorithm flow through the CPG has been modified  
**Deleted**  
‘A or V on AVPU’ – decision diamond  
*Indication for Glucagon for < 1 year*  
**Added**  
EMT level – all three practitioner levels now combined  
‘Conscious/able to swallow’ – decision diamond  
Yes - Glucose gel 10 - 20 g buccal, sweetened drink  
No - Dextrose or Glucagon 1 mg IM |
**APPENDIX 4 - CPG Updates for Emergency Medical Technicians**

<table>
<thead>
<tr>
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<tr>
<td></td>
<td>‘Advise a carbohydrate meal (sandwich)’</td>
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<tr>
<td></td>
<td>An advisory box: ‘Check for presence of an insulin pump; turn off or remove if present’</td>
</tr>
<tr>
<td>CPG 4/5/6.7.35 Pyrexia – Paediatric</td>
<td>Deleted</td>
</tr>
<tr>
<td></td>
<td>Temperature ≥ 38°C – decision diamond</td>
</tr>
<tr>
<td></td>
<td>Added</td>
</tr>
<tr>
<td></td>
<td>Temperature &gt; 38.5°C – decision diamond</td>
</tr>
<tr>
<td>CPG 4/5/6.7.50 External Haemorrhage –</td>
<td>Added</td>
</tr>
<tr>
<td>Paediatric (≤ 15 years)</td>
<td>‘Consider wound closure clips for temporary closure if still bleeding’ – AP, P &amp; EMT-BTEC level</td>
</tr>
</tbody>
</table>
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 2015 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.

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 360 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. If the defibrillation pads are oblong the pad should be placed in the horizontal line of the body.

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.

8. Cardioversion

8.1 Advanced Paramedics are authorised to use synchronised cardioversion for unresponsive patients with a tachyarrhythmia greater than 150.

8.2 For narrow complexes commence cardioversion at 50 joules.

8.3 For wide complexes commence cardioversion at 100 joules.

8.4 If unsuccessful with cardioversion escalate energy by 50 joules.
APPENDIX 6 - Spinal Injury Management Recommendations

Pre-Hospital Spinal Injury Management – PHECC standard

Introduction
The Pre-Hospital Emergency Care Council (PHECC) has a unique position internationally in pre-hospital emergency care as it sets not only practitioner standards but also responder standards. A seminar was hosted by PHECC in 2015 at which international and national speakers gave their perspective on pre-hospital spinal injury management. The Centre for Prehospital Research (C.P.R.) at the University of Limerick (UL) was tasked to complete a systematic literature review on pre-hospital spinal injury management, the results of which were presented at the seminar. The seminar was followed by surveys of PHECC Facilitators, Tutors, Assistant Tutors, Consultants in Emergency Medicine and Chief Fire Officers on pre-hospital spinal injury management. The information collated helped to inform the Medical Advisory Committee in making the recommendations on pre-hospital spinal injury management to Council.

The recommendations set out in this Appendix relate to EMTs. The full details are published in STN024 and are available on the PHECC website www.phecc.ie.

As all recommendations do not apply to EMTs only the EMT recommendations are published herein.

Recommendations
Practitioners at Emergency Medical Technician (EMT) level

Recommendation 1

| Change terminology from ‘spinal immobilisation’ to ‘spinal motion restriction’ when referring to the management of pre-hospital spinal injuries. |

The aim of this recommendation is to instigate a change of culture and allow practitioners to consider alternative methods of patient extrication and packaging.

Recommendation 2

<table>
<thead>
<tr>
<th>Following trauma should any of the following factors be present:</th>
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<tbody>
<tr>
<td>• dangerous mechanism of injury</td>
</tr>
<tr>
<td>• fall from a height of greater than 1 metre or 5 steps</td>
</tr>
<tr>
<td>• axial load to the head or base of the spine – for example diving, high-speed motor vehicle collision, rollover motor accident, ejection from a motor vehicle, accident involving motorised recreational vehicle, bicycle collision, horse riding accident, pedestrian v vehicle</td>
</tr>
<tr>
<td>• Impaired awareness (alcohol/drug intoxication, confused/uncooperative or ALoC)</td>
</tr>
<tr>
<td>• age 65 years or older</td>
</tr>
<tr>
<td>• age 2 years or younger incapable of verbal communication,</td>
</tr>
<tr>
<td>the patient should be regarded as ‘high risk’ and have active spinal motion restriction applied until assessment is complete</td>
</tr>
</tbody>
</table>

There are two aims to this recommendation: the first is to ensure that ‘high risk’ patients minimise movement until a detailed assessment occurs: the second allows an informed decision about the most appropriate method of patient extrication and packaging, even though the patient has initially presented as ‘high risk’.
Recommendation 4

Following a trauma assessment, should a patient present with any of the following ‘spinal injury rule in’ considerations:

- any significant distracting injuries
- impaired awareness (alcohol/drug intoxication, confused/uncooperative or ALoC)
- immediate onset of spinal/midline back pain
- hand or foot weakness (motor issue)
- altered or absent sensation in the hands or feet (sensory issue)
- priapism
- history of spinal problems, including previous spinal surgery or conditions that predispose to instability of the spine
- unable to actively rotate their neck 45 degrees to the left and right (P & AP only)

or an appropriate assessment cannot be completed, a ‘spinal injury rule in’ shall apply. Active spinal motion restriction shall thereafter be implemented until arrival at ED.

The aims of recommendation 4 are to identify the ‘spinal injury rule in’ considerations for active spinal motion restriction and to increase awareness that appropriate patient assessment may not be feasible in all circumstances when making the decision on spinal motion restriction.

Recommendation 5

Uncooperative patients shall not be forced into active spinal motion restriction as this is a greater risk to the patient.

The aim of recommendation 5 is to ensure that additional unnecessary motion is not applied to a potentially unstable injury through forced spinal motion restriction.

Recommendation 7

If a decision is made, after the primary survey is complete and significant injuries stabilised, to continue active spinal motion restriction, a rigid cervical collar may be considered at this point prior to lifting/moving the patient.

The aim of recommendation 7 is to ensure that ‘high risk’ patients and ‘low risk’ patients with ‘spinal injury rule in’ considerations present have minimised cervical spine movement during initial assessment and that cervical collar application is a secondary process.

Recommendation 10

If a patient with a suspected spinal injury is ambulatory following trauma, request the patient lies down on the trolley stretcher if he/she is able to do so. If unable to comply, consider alternative methods.

The aim of recommendation 10 is to remove ‘standing take down’ as the standard of care for ambulatory patients.
APPENDIX 6 - Spinal Injury Management Recommendations

Recommendation 11

Supine patients with suspected spinal injuries, where active spinal motion restriction is being continued, should be lifted with a split device in preference to a log roll.

The aim of recommendation 11 is to minimise unnecessary patient movement, particularly on multisystem trauma/pelvic injury patients to avoid clot disruption, for packaging.

Recommendation 12

A long board is primarily an extrication device and should be used primarily for this purpose.

The aim of recommendation 12 is to minimise secondary injury and discomfort for patients by strongly discouraging the practice of transport on long board.

Recommendation 13

The preferred mode for the transport of a patient with active spinal motion restriction is on a vacuum mattress. It is acknowledged that other devices may be utilised.

The aim of recommendation 13 is, following international evidence, to promote the use of vacuum mattress as the preferred option for transport of patients with query spinal injury.

Recommendation 14

Patients presenting with penetrating trauma and without neurological signs should not have spinal motion restriction applied. Rapid transport to ED is essential to reduce mortality.

The aim of recommendation 14 is to minimise on-scene times for treatment and packaging of penetrating trauma patients.

Recommendation 15

For patients with non-standard spinal anatomy e.g. ankylosing spondylitis, permit them to find a position where they are comfortable with manual spinal motion restriction. Non-standard methods such as rolled blankets may be utilised to accomplish spinal motion restriction.

The aim of recommendation 15 is to enable practitioners to use their judgement to package the patient appropriately for the patient’s individual needs and particularly to reduce the incidence of inappropriate use of rigid cervical collars and other spinal injury devices on patients with non-standard spinal anatomy.

Recommendation 17

Paediatric patients following trauma should be assessed for spinal injury using the 'spinal injury rule in' considerations.

The aim of recommendation 17 is to enable the practitioner to assess and package the paediatric trauma patient using the adult criteria for spinal motion restriction. However, clinical judgement should err on the side of caution due to difficulties with assessment of paediatric trauma.
Recommendation 18

The preferred mode for the transport of a paediatric patient with active spinal motion restriction is on a vacuum mattress or appropriately sized vacuum device. It is acknowledged that other options may be used.

Non-standard methods such as rolled blankets may be utilised to accomplish spinal motion restriction.

The aim of recommendation 18 is to enable vacuum mattress to be used as the primary option for spinal motion restriction for paediatric patients.

Recommendation 19

Uncooperative paediatric patients shall not be forced into active spinal motion restriction as this is a greater risk to the patient.

The aim of recommendation 19 is to ensure that distressed or uncooperative paediatric patients are supported in a position of comfort and not have forced active spinal motion restriction applied.

Recommendation 20

Very young conscious paediatric patients with suspected spinal injury may have spinal motion restriction applied using the child’s own car seat if it is intact following a collision, however they should not be forced into this position.

The aim of recommendation 20 is to enable undamaged child car seats to be used for spinal motion restriction for appropriately aged paediatric patients.

Recommendation 21

EMTs shall provide active spinal motion restriction for all patients with ‘high risk’ or ‘low risk’ factors present even in the absence of any of the ‘spinal injury rule in’ considerations.

The aim of recommendation 21 is to differentiate the scope of practice between EMTs and other PHECC practitioners.

<table>
<thead>
<tr>
<th>EMT level</th>
<th>Mechanism of injury</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Risk</td>
</tr>
<tr>
<td>‘Spinal injury rule in’ considerations</td>
<td>Active SMR</td>
</tr>
<tr>
<td>No ‘spinal injury rule in’ considerations</td>
<td>Active SMR</td>
</tr>
</tbody>
</table>