## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOREWORD</td>
<td>4</td>
</tr>
<tr>
<td>ACCEPTED ABBREVIATIONS</td>
<td>5</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>7</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>9</td>
</tr>
<tr>
<td>IMPLEMENTATION AND USE OF CLINICAL PRACTICE GUIDELINES</td>
<td>10</td>
</tr>
<tr>
<td>CLINICAL PRACTICE GUIDELINES</td>
<td></td>
</tr>
<tr>
<td>INDEX</td>
<td>12</td>
</tr>
<tr>
<td>KEY/CODES EXPLANATION</td>
<td>14</td>
</tr>
<tr>
<td>SECTION 1 CARE PRINCIPLES</td>
<td>15</td>
</tr>
<tr>
<td>SECTION 2 PATIENT ASSESSMENT</td>
<td>16</td>
</tr>
<tr>
<td>SECTION 3 RESPIRATORY EMERGENCIES</td>
<td>21</td>
</tr>
<tr>
<td>SECTION 4 MEDICAL EMERGENCIES</td>
<td>26</td>
</tr>
<tr>
<td>SECTION 5 OBSTETRIC EMERGENCIES</td>
<td>54</td>
</tr>
<tr>
<td>SECTION 6 TRAUMA</td>
<td>60</td>
</tr>
<tr>
<td>SECTION 7 PAEDIATRIC EMERGENCIES</td>
<td>71</td>
</tr>
<tr>
<td>SECTION 8 PRE-HOSPITAL EMERGENCY CARE OPERATIONS</td>
<td>96</td>
</tr>
<tr>
<td>SECTION 9 TREAT &amp; REFERRAL</td>
<td>101</td>
</tr>
<tr>
<td>Appendix 1 Medication Formulary</td>
<td>104</td>
</tr>
<tr>
<td>Appendix 2 Medications &amp; Skills Matrix</td>
<td>161</td>
</tr>
<tr>
<td>Appendix 3 Critical Incident Stress Management</td>
<td>168</td>
</tr>
<tr>
<td>Appendix 4 CPG Updates for Advanced Paramedics</td>
<td>170</td>
</tr>
<tr>
<td>Appendix 5 Pre-Hospital Defibrillation Position Paper</td>
<td>178</td>
</tr>
</tbody>
</table>
The role of the Pre-Hospital Emergency Care Council (PHECC) is to protect the public by independently specifying, reviewing, maintaining and monitoring standards of excellence for the delivery of quality pre-hospital emergency care for people in Ireland. The contents of this clinical publication are fundamental to how we achieve this goal.

Clinical Practice Guidelines have been developed for responders and practitioners to aid them in providing world-class pre-hospital emergency care to people in Ireland.

I would like to thank the members of the Medical Advisory Committee, chaired by Dr Mick Molloy for their efforts and expertise in developing these guidelines. The council acknowledge the work of the PHECC Executive in researching and compiling these Guidelines, in particular Mr Brian Power, Programme Development Officer. I also commend the many responders and practitioners whose ongoing feedback has led to the improvement and creation of many of the Guidelines herein.

The publication of these Guidelines builds on the legacy of previous publications and marks yet another important milestone in the development of care delivered by responders and practitioners throughout Ireland. Despite the difficulties faced by responders and licensed service providers, I am proud that they continue to develop their skills and knowledge to provide safer and more effective patient care.

Mr Tom Mooney, Chair, Pre-Hospital Emergency Care Council
**Clinical Practice Guidelines**

**ADVANCED PARAMEDIC**

**ACCEPTED ABBREVIATIONS**

<table>
<thead>
<tr>
<th>Accepted abbreviations</th>
<th>AP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Paramedic</td>
<td>AP</td>
</tr>
<tr>
<td>Advanced Life Support</td>
<td>ALS</td>
</tr>
<tr>
<td>Airway, Breathing &amp; Circulation</td>
<td>ABC</td>
</tr>
<tr>
<td>All Terrain Vehicle</td>
<td>ATV</td>
</tr>
<tr>
<td>Altered Level of Consciousness</td>
<td>ALoC</td>
</tr>
<tr>
<td>Automated External Defibrillator</td>
<td>AED</td>
</tr>
<tr>
<td>Bag Valve Mask</td>
<td>BVM</td>
</tr>
<tr>
<td>Basic Life Support</td>
<td>BLS</td>
</tr>
<tr>
<td>Blood Glucose</td>
<td>BG</td>
</tr>
<tr>
<td>Blood Pressure</td>
<td>BP</td>
</tr>
<tr>
<td>Basic Tactical Emergency Care</td>
<td>BTEC</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>CO₂</td>
</tr>
<tr>
<td>Cardiopulmonary Resuscitation</td>
<td>CPR</td>
</tr>
<tr>
<td>Cervical Spine</td>
<td>C-spine</td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease</td>
<td>COPD</td>
</tr>
<tr>
<td>Clinical Practice Guideline</td>
<td>CPG</td>
</tr>
<tr>
<td>Degree</td>
<td>°</td>
</tr>
<tr>
<td>Degrees Centigrade</td>
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</tr>
<tr>
<td>Dextrose 10% in water</td>
<td>D₁₀₀W</td>
</tr>
<tr>
<td>Drop (gutta)</td>
<td>gtt</td>
</tr>
<tr>
<td>Electrocardiogram</td>
<td>ECG</td>
</tr>
<tr>
<td>Emergency Department</td>
<td>ED</td>
</tr>
<tr>
<td>Emergency Medical Technician</td>
<td>EMT</td>
</tr>
<tr>
<td>Endotracheal Tube</td>
<td>ETT</td>
</tr>
<tr>
<td>Foreign Body Airway Obstruction</td>
<td>FBAO</td>
</tr>
<tr>
<td>Fracture</td>
<td>#</td>
</tr>
<tr>
<td>General Practitioner</td>
<td>GP</td>
</tr>
<tr>
<td>Glasgow Coma Scale</td>
<td>GCS</td>
</tr>
<tr>
<td>Gram</td>
<td>g</td>
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<tr>
<td>Milligram</td>
<td>mg</td>
</tr>
<tr>
<td>Millilitre</td>
<td>mL</td>
</tr>
</tbody>
</table>
Millimole ................................................................. mmol
Minute ...................................................................... min
Modified Early Warning Score .................................. MEWS
Motor Vehicle Collision ......................................... MVC
Myocardial Infarction .............................................. MI
Nasopharyngeal airway ............................................. NPA
Milliequivalent ........................................................ mEq
Millimetres of mercury .......................................... mmHg
Nebulised ................................................................. NEB
Negative decadic logarithm of the H+ ion concentration ...... pH
Orally (per os) .......................................................... PO
Oropharyngeal airway .............................................. OPA
Oxygen .................................................................... O₂
Paramedic ................................................................. P
Peak Expiratory Flow ............................................... PEF
Per rectum ................................................................. PR
Percutaneous Coronary Intervention ............................... PCI
Personal Protective Equipment .................................. PPE
Pulseless Electrical Activity ...................................... PEA
Respiration rate ........................................................ RR
Return of Spontaneous Circulation .............................. ROSC
Revised Trauma Score ............................................. RTS
Saturation of arterial oxygen ..................................... SpO₂
ST Elevation Myocardial Infarction ................................. STEMI
Subcutaneous ............................................................. SC
Sublingual ................................................................. SL
Systolic Blood Pressure ............................................ SBP
Therefore ..................................................................... .
Total body surface area ............................................. TBSA
Ventricular Fibrillation ............................................ VF
Ventricular Tachycardia ............................................ VT
When necessary (pro re nata) .................................... prn
ACKNOWLEDGEMENTS

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

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HSE National Diabetes Programme
HSE National Clinical Programme for Emergency Medicine
HSE National Clinical Programme for Epilepsy
HSE National Clinical Programme for Paediatrics and Neonatology

A special thanks to all the PHECC team who were involved in this project. In particular Ms Deirdre Borland for her dedication in bringing this project to fruition.

EXTERNAL CLINICAL PROOFREADING

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Mr David Caplice, Advanced Paramedic
Clinical Practice Guidelines for pre-hospital care are under constant review as practices change, new therapies and medications are introduced, and as more pre-hospital clinical pathways are introduced such as Code STEMI and code stroke which are both leading to significant improved outcomes for patients. A measure of how far the process has developed can be gained from comparing the 29 Standard Operating Procedures for pre-hospital care in existence prior to the inception of the Pre-Hospital Emergency Care Council and the now more than 319 guidelines and growing.

The 2014 guidelines include such new developments as the use of intranasal fentanyl for advanced paramedics and harness induced suspension trauma for both practitioners and responders.

Clinical Practice Guidelines recognise that practitioners and responders provide care to the same patients but to different skill levels and utilising additional pharmaceutical interventions depending on the practitioner level.

This edition of the guidelines has introduced some new concepts such as the basic tactical emergency care standard at EFR and EMT level for appropriately employed individuals. As ever feedback on the guidelines from end users or interested parties is always welcomed and may be directed to the Director of PHECC or the Medical Advisory Committee who review each and every one of the guidelines before they are approved by the Council.

Dr Mick Molloy, Chair, Medical Advisory Committee.
Clinical Practice Guidelines (CPGs) and the practitioner

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

The CPGs herein may be implemented provided:

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

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

Definitions

<table>
<thead>
<tr>
<th>Adult</th>
<th>A patient of 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 presenting to the acute hospital a patient who has been supported in the very early phase of injury/illness and in whom the danger of deterioration has lessened by early appropriate clinical care interventions.

CPGs presume no intervention has been applied, nor medication administered, prior to the arrival of the practitioner. In the event of another practitioner or responder initiating care during an acute episode, the practitioner must be cognisant of interventions applied and medication doses already administered and act accordingly.

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

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

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

EMT-BTEC certifies registered EMTs with additional knowledge and skill set for providing pre-hospital emergency care in hostile or austere environments. EMT-BTEC training is restricted to EMTs who have the potential to provide emergency care in hostile or austere environments and who are working or volunteering on behalf of a Licensed CPG Provider with specific approval for BTEC provision.

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

EFR-BTEC is a new education and training standard published in 2014. 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. Entry to this course is restricted to people who have the potential to provide emergency first response in hostile or austere environments and who are working or volunteering on behalf of a Licensed CPG Provider with specific approval for BTEC provision.

**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;

- Advanced Paramedics should use manual defibrillation for all age groups.
- Paramedics may consider use of manual defibrillation for all age groups.
- EMTs and responders shall use AED mode for all age groups.
# INDEX

### ADVANCED PARAMEDIC CPGs

<table>
<thead>
<tr>
<th>SECTION 6</th>
<th>TRAUMA</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burns – Adult</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Crush Injury</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>External Haemorrhage – Adult</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>Harness Induced Suspension Trauma</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>Head Injury – Adult</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Heat Related Emergency</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Limb Injury – Adult</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>Shock from Blood Loss (trauma) – Adult</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Spinal Immobilisation – Adult</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>Submersion Incident</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>Traumatic Cardiac Arrest – Adult</td>
<td>70</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECTION 7</th>
<th>PAEDIATRIC EMERGENCIES</th>
<th>71</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Survey Medical – Paediatric</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Primary Survey Trauma – Paediatric</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>Secondary Survey – Paediatric</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>Pain Management – Paediatric</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td>Advanced Airway Management – Paediatric</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Inadequate Ventilations – Paediatric</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>Asthma – Paediatric</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>Stridor – Paediatric</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>Basic Life Support – Paediatric</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>Foreign Body Airway Obstruction – Paediatric</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>VF or Pulseless VT – Paediatric</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>Asystole/PEA – Paediatric</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>Symptomatic Bradycardia – Paediatric</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>Post Resuscitation Care – Paediatric</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>Adrenal Insufficiency – Paediatric</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Allergic Reaction/Anaphylaxis – Paediatric</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>Glycaemic Emergency – Paediatric</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Seizure/Convulsion – Paediatric</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>Septic Shock – Paediatric</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>Pyrexia – Paediatric</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Sickle Cell Crisis – Paediatric</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td>External Haemorrhage – Paediatric</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>Shock from Blood Loss – Paediatric</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>Spinal Immobilisation – Paediatric</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>Burns – Paediatric</td>
<td>95</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECTION 8</th>
<th>PRE-HOSPITAL EMERGENCY CARE OPERATIONS</th>
<th>96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Emergency – First Practitioners on site</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>Major Emergency – Operational Control</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>Triage Sieve</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>Triage Sort</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>Conducted Electrical Weapon (Taser)</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECTION 9</th>
<th>TREAT &amp; REFERRAL</th>
<th>101</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Care Pathway Decision – T &amp; R</td>
<td>101</td>
<td></td>
</tr>
<tr>
<td>Hypoglycaemia – T &amp; R</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>Isolated Seizure – T &amp; R</td>
<td>103</td>
<td></td>
</tr>
</tbody>
</table>
Clinical Practice Guidelines
ADVANCED PARAMEDIC

CLINICAL PRACTICE GUIDELINES for ADVANCED PARAMEDIC
(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
- **Medical Practitioner** (Level 7) for which the CPG pertains

### Sequence step
- A sequence (skill) to be performed

### Mandatory sequence step
- A mandatory sequence (skill) to be performed

### Decision process
- A decision process
  - The Practitioner must follow one route

### Consider treatment options
- Given the clinical presentation consider the treatment option specified
- Finding following clinical assessment, leading to treatment modalities
- Reassess the patient following intervention

### CPG numbering system
- 4/5/6 = clinical levels to which the CPG pertains
- 4/5/6.x.y = section in CPG manual, x = 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
- A medication which may be administered by a Paramedic or higher clinical level
  - The medication name, dose and route is specified
- A medication which may be administered by an Advanced Paramedic
  - The medication name, dose and route is specified

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

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

- 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
- Paramedic or lower clinical levels not permitted this route
- Transport to an appropriate medical facility and maintain treatment en-route
- Special authorisation
  - This authorises the Practitioner to perform an intervention under specified conditions
- An instruction box for information
  - Which the Practitioner must follow
- A skill or sequence that only pertains to Advanced Paramedic
  - Consider medical oversight

- Special instructions
  - This authorises the Practitioner to perform an intervention under specified conditions
  - An instruction box for information
SECTION 1

CARE PRINCIPLES

Care principles are goals of care that apply to all patients. Scene safety, standard precautions, patient assessment, primary and secondary surveys and the recording of interventions 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. Seek consent prior to initiating interventions and/or administering medications.
3. Identify and manage life-threatening conditions.
4. Ensure adequate ventilation and oxygenation.
5. Optimise tissue perfusion.
6. Provide appropriate pain relief.
7. Identify and manage other conditions.
8. Place the patient in the appropriate posture according to the presenting condition.
9. Ensure the maintenance of normal body temperature (unless a CPG indicates otherwise).
10. Provide reassurance at all times.
11. Monitor and record patient’s vital observations.
12. Maintain responsibility for patient care until handover to an appropriate practitioner.
13. Arrange transport to an appropriate medical facility as necessary and in an appropriate time frame.
14. Complete patient care records following an interaction with a patient.
15. Identify the clinical leader 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 leader as soon as practical.
SECTION 2
PATIENT ASSESSMENT

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

Assess responsiveness

A
Airway patent & protected

Yes
No
Head lift/ chin lift

B
Adequate ventilation

Yes
No

C
Adequate circulation

Yes

AVPU assessment

Life threatening
Clinical status decision
Non serious or life threat

Serious not life threat

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

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

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

Primary Survey Trauma – Adult

- Take standard infection control precautions
- Scavenge
- Jaw thrust
- Scene safety
  - Scene survey
  - Scene situation
- Control catastrophic external haemorrhage
- Mechanism of injury suggestive of spinal injury
  - Yes: C-spine control
  - No
- Assess responsiveness
  - A: Airway patent & protected
    - Yes
    - No: Suction, OPA, NPA
  - B: Adequate ventilation
    - Yes
    - No
  - C: Adequate circulation
    - Yes
    - AVPU assessment
- Treat life-threatening injuries only at this point

Primary Survey Trauma – Adult

- Life threatening
- Clinical status decision
- Non serious or life threat

Life threatening

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

Clinical status decision

- Serious not life threat
- Go to Secondary Survey CPG

Non serious or life threat

- Go to appropriate CPG
- Consider ALS

Reference: ILCOR Guidelines 2010
Secondary Survey Medical – Adult

Primary Survey

Record vital signs & GCS

Patient acutely unwell

Yes

Focus medical history of presenting complaint

SAMPLE history

Relevant family & social history

Check for medications carried or medical alert jewellery

Examine body systems as appropriate

Go to appropriate CPG

Identify positive findings and initiate care management

Markers identifying acutely unwell
Cardiac chest pain
Acute pain > 5

Request ALS

Go to appropriate CPG
SECTION 2
PATIENT ASSESSMENT

Secondary Survey Trauma – Adult

Primary Survey

Markers for multi-system trauma present
Yes

Examination of obvious injuries

Markers for multi-system trauma present
No

Go to appropriate CPG

Identify positive findings and initiate care management

Monitor and record vital signs & GCS

SAMPLE history

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

Check for medications carried or medical alert jewellery

Consider repeat primary survey


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

Revised Trauma Score

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<table>
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<table>
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<tr>
<td>3</td>
<td>0</td>
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RTS = Total score
SECTION 2
PATIENT ASSESSMENT

Pain Management – Adult

1. Pain

2. Pain assessment

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

4. Adequate relief of pain

5. Yes or best achievable

6. Go back to originating CPG

7. No

8. Reassess and move up the pain ladder if appropriate

9. Severe pain (≥ 7 on pain scale)

- Request ALS

- EMT

- AP

10. Moderate pain (4 to 6 on pain scale)

- Consider other non-pharmacological interventions

11. Mild pain (1 to 3 on pain scale)

- Paracetamol 1 g PO

- Ibuprofen 400 mg PO

- Nitrous Oxide & Oxygen, inh

- Cyclizine 50 mg IV

- Consider Fentanyl 0.1 mg IN

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

- Repeat Morphine at not < 2 min intervals if indicated.

- Max 10 mg

- For musculoskeletal pain Max 16 mg

- PHECC Pain Ladder

- Analogue Pain Scale

- 0 = no pain……10 = unbearable

- Special Authorisation:

- APs are authorised to administer Morphine, up to 10 mg IM, if IV not accessible, the patient is cardiovascularly stable and no cardiac chest pain present

- Reference: World Health Organization, Pain Ladder

- October 2014
**SECTION 3**

**RESPIRATORY EMERGENCIES**

**Clinical Practice Guidelines**

**ADVANCED PARAMEDIC**

**5/6.3.1**

*Version 3, 03/14*

**Advanced Airway Management – Adult**

**Apnoea or special clinical considerations**

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

- **Maintain adequate ventilation and oxygenation throughout procedures**

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

- **Following successful Advanced Airway management:-**
  1. Ventilate at 8 to 10 per minute.
  2. Unsynchronised chest compressions continuous at 100 to 120 per minute

- **Consider use of waveform capnography**

- **Ensure CO₂ detection device in ventilation circuit**

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

- **If ventilations maintained No**
  - **Consider FBAO**
  - **Supraglottic airway insertion or Endotracheal intubation**

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

- **Yes**
  - **Continue ventilation and oxygenation**
  - **Go to appropriate CPG**

- **Paramedic: Maximum two attempts at supraglottic airway insertion.**
- **Advanced paramedic: Maximum two attempts at ETT and maximum two attempts at supraglottic airway insertion (either as primary device or rescue from failed ETT)**
Inadequate Ventilations – Adult

Respiratory difficulty

Airway patent & protected

Yes

Check SpO2

No

Consider ETCO2

Oxygen therapy

Request ALS

Patient assessment

Consider positive pressure ventilations (Max 10 per minute)

Brain insult

Go to Head injury CPG

Respiratory failure

Go to Respiratory assessment

Substance intake

Go to Poison CPG

Other

Consider pain, posture & neuromuscular disorders

Bronchospasm/ known asthma

Go to Asthma CPG

Asymmetrical breath sounds

Go to Allergy/ Anaphylaxis CPG

Crepitations

Go to COPD CPG

Other

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

Consider collapse, consolidation & fluid

Tension Pneumothorax suspected

Yes

Needle decompression

No

100% O2 initially unless patient has known COPD. Titrate O2 to standard as clinical condition improves.

Raised ETCO2 + reduced SpO2:
Consider assisted ventilation

Raised ETCO2 + normal SpO2:
Encourage deep breaths
Exacerbation of COPD

Dyspnoea

History of COPD

Yes

Oxygen therapy

ECG & SpO₂ monitor

Measure Peak Expiratory Flow

Salbutamol 5 mg NEB

PEF < 50% predicted

Yes

Request ALS

Ipratropium bromide 0.5 mg NEB & salbutamol 5 mg NEB mixed

No

Deteriorates Unstable

Yes

Hydrocortisone 200 mg IV (in 100 mL NaCl) or IM

Adequate respirations

Yes

Go to Inadequate Ventilations CPG

No

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

An exacerbation of COPD is defined as;
An event in the natural course of the disease characterised by a change in the patient’s baseline dyspnoea, cough and/or sputum beyond day-to-day variability sufficient to warrant a change in management. (European Respiratory Society)
**SECTION 3**

**RESPIRATORY EMERGENCIES**

---

**Asthma – Adult**

1. **Assess and maintain airway**
2. **Respiratory assessment**
   - **Salbutamol, 5 mg, NEB**
   - **OR**
     - **Ipratropium bromide 0.5 mg NEB & salbutamol 5 mg NEB mixed**

   - **Resolved/improved**
     - Yes
     - **If no improvement Salbutamol aerosol, 0.1 mg may be repeated up to 5 times as required**
     - **ECG & SpO2 monitoring**
       - **Request**
         - **ALS**
   - **No**

---

**Mild Asthma**

1. **Salbutamol, 5 mg, NEB**
   - **Every 5 minutes prn**

---

**Moderate Asthma**

1. **Salbutamol, 5 mg, NEB**
   - **Resolved/improved**
     - Yes
     - **Hydrocortisone, 100 mg slow IV (infusion in 100 mL NaCl)**
   - **No**

---

**Severe Asthma**

1. **Salbutamol, 5 mg, NEB**
   - **Resolved/improved**
     - Yes

---

**Life-threatening Asthma**

1. **Consider**
   - **Magnesium Sulphate 2 g IV (infusion in 100 mL NaCl)**
   - **Salbutamol, 5 mg, NEB**
   - **Every 5 minutes prn**

---

SECTION 3
RESPIRATORY EMERGENCIES

Acute Pulmonary Oedema – Adult

Respiratory distress with Congestion / crepitations

Oxygen therapy

SpO2, ECG & BP monitoring

12 Lead ECG

Pulmonary oedema

Yes

GTN, 0.8 mg, SL
Repeat x 1 prn
Reassess

Oxygen therapy
Go to Inadequate Respirations CPG

No

O1N, 0.4 mg, SL
Repeat x 1 pm

Bradycardia

Yes

Furosemide, 40 mg, IV

CPAP
Commence with 5 cm H2O
Titrate up to 10 cm H2O as tolerated
Monitor clinical response
Titrate O2 to maintain SpO2 > 95%

No

Meets criteria for CPAP

Apply Continuous Positive Airway Pressure (CPAP) device

Yes

Systemic fluid retention

Furosemide, 40 mg, IV

Go to ACS CPG

No

Criteria for CPAP
Clinical signs of APO
RR > 25 per min
SpO2 < 90%

Exclusion Criteria
COPD / Asthma
Inability to sit up
Pneumothorax
Need for immediate intubation
SBP < 100 mmHg / cardiovascular collapse
Life-threatening arrhythmia
Reduced GCS (AVPU < V)
Unable to tolerate CPAP
Vomiting

SECTION 4  
MEDICAL EMERGENCIES

Basic Life Support – Adult

Cardiac Arrest

- Attach defibrillation pads
- Commence CPR while defibrillator is being prepared only if 2nd person available
- 30 Compressions : 2 ventilations.
- Shockable: VF or pulseless VT
- Non-Shockable: Asystole or PEA
- Chest compressions: Rate: 100 to 120/min, Depth: at least 5 cm
- Ventilations: Rate: 10/min (1 every 6 sec), Volume: 500 to 600 mL
- Give 1 shock
- Immediately resume CPR x 2 minutes
- Rhythm check *

**Immediate resuscitation steps**

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

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

**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.**

**Reference:** ILCOR Guidelines 2010

* +/- Pulse check: pulse check after 2 minutes of CPR if potentially perfusing rhythm
Clinical Practice Guidelines
ADVANCED PARAMEDIC

SECTION 4
MEDICAL EMERGENCIES

Foreign Body Airway Obstruction – Adult

Are you choking?

Severe (ineffective cough)

Mild (effective cough)

FBAO Severity

Encourage cough

1 to 5 back blows followed by 1 to 5 abdominal thrusts as indicated

Adequate ventilations

Yes

No

Yes

No

Effective

Effective

Inspect airway - Laryngoscopy

Visualise foreign body

Yes

No

Consider removal of foreign body with Magill forceps

Foreign body removed

No

Yes

Effective ventilations

Attempt intubation

Potential need for cricothyrotomy

Effective ventilations

Yes

No

Consider use of waveform capnography

Positive pressure ventilations maximum 10 per minute

Go to BLS Adult CPG

Oxygen therapy

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

6.4.2 Version 2, 01/13
VF or Pulseless VT – Adult

VF or VT arrest

Defibrillate

VF/VT

Rhythm check *

VF/VT

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

Epinephrine

Initial Epinephrine between 2nd and 4th shock

Sodium Bicarbonate (8.4%) 1 mEq/Kg IV/IO

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

VF or Pulseless VT – Adult

 VF or VT arrest

Immediate IO access if IV not immediately accessible

Go to Post Resuscitation Care CPG

ROSC

Go to PEA CPG

Go to Asystole CPG

Consider transport to ED if no change after 20 minutes resuscitation

If no ALS available

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

If no ALS available

Consider transport to ED if no change after 20 minutes resuscitation

If no ALS available

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

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

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

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

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

Consider fluid challenge:

NaCl 20 mL/Kg IV/IO

P = Associated

AP = Consider use of waveform capnography

With CPR ongoing maximum hands off time 10 seconds

Clinical leader to monitor quality of CPR

5/6.4.4
Version 2, 03/11

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

Consider mechanical CPR assist

Advanced airway management

Immediate IO access if IV not immediately accessible

From BLS Adult CPG

Go to Post Resuscitation Care CPG

Go to VF/Pulseless VT CPG

Go to PEA CPG

Rhythm check *

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

NaCl IV/IO 500 mL (use as flush)

August 2014

Reference: ILCOR Guidelines 2010
Asystole - Decision Tree

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

Witnessed arrest & CPR prior to arrival of EMS

Resuscitation continuous for at least 20 minutes in asystole

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

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

Consider ceasing resuscitation efforts

Record two rhythm strips x 10 sec duration

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

Inform Ambulance Control

If present, inform next of kin

Emotional support for relatives should be considered before leaving the scene

Complete PCR and flag for mandatory clinical audit

Follow local protocol for care of deceased

Continue BLS & or ALS

If no ALS available
**Pulseless Electrical Activity – Adult**

From BLS Adult CPG

- **Immediate IO access if IV not immediately accessible**
- **Go to Asystole CPG**
- **Go to VF / Pulseless VT CPG**

- **Rhythm check**
  - Yes
    - Go to VF / Pulseless VT CPG
  - No
    - Go to Post Resuscitation Care CPG

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

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

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

**Clinical leader to monitor quality of CPR**

**If Tricyclic Antidepressant Toxicity or harness induced suspension trauma consider**

Sodium Bicarbonate (8.4%) 1 mEq/Kg IV/IO

**Consider use of waveform capnography**

**Consider fluid challenge**

NaCl 20 mL/Kg IV/IO

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

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

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

**Reference:** ILCOR Guidelines 2010

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

**Emergency Treatment Manual**

4/5/6.4.6
Version 2, 03/11

**Advanced airway management**

**Consider mechanical CPR assist**

**Emergency Treatment Manual**
Post-Resuscitation Care – Adult

Return of Spontaneous Circulation

- Maintain Oxygen Therapy
  - Request ALS
    - Adequate Ventilation
      - Yes
        - 12 lead ECG
        - Monitor blood pressure and GCS
      - No
        - Positive pressure ventilations
          - Max 10 per minute
          - Go to ACS CPG
    - No
      - Return
- Symptomatic arrhythmia
  - Atriope 0.6 mg IV/IO
    - Repeat at 3 to 5 min intervals prn to max 3 mg
  - Ventricular Tachycardia
    - Consider Amiodarone, 150 mg IV/IO infusion
      (in 100 mL D5W)

Unresponsive

- Check blood glucose
  - Symptomatic hypoglycaemia
    - Commence cooling
      - (Target 32° to 34° C)
      - NaCl (4° C approx) 1L IV/IO
        - Repeat x 1 if required
    - Monitor vital signs
  - Consider causes and treat as appropriate:
    - Hydrogen ion acidosis
    - Hyper/ hypokalaemia
    - Hypothermia
    - Hypovolaemia
    - Hypoxia
    - Thrombosis – pulmonary
    - Tension pneumothorax
    - Thrombus – coronary
    - Tamponade – cardiac
    - Toxins
    - Trauma

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

- Maintain patient at rest
  - Monitor blood pressure and GCS
  - Maintain Oxygen therapy
    - Titrate O2 to 94% - 98%

- If persistent hypotensive consider
  - NaCl (0.9%) IV/IO
    - to maintain Sys BP > 90 mmHg

STEMI

- 12 lead ECG
- Go to ACS CPG

Cold packs

Equipment list

When ALS available consider transporting to primary PCI facility (follow local protocol)
**End of Life – DNR**

**End stage terminal illness**

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

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

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

**Agreement between caregivers present and Practitioners not to resuscitate**

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

**It is inappropriate to commence resuscitation**

**Inform Ambulance Control**

- **Pulse present**
  - **Yes**
  - **No**

**Consult with Ambulance Control re; ‘location to transport patient / deceased’**

- **Complete all appropriate documentation**
- **Keep next of kin informed, if present**
- **Provide supportive care until handover to appropriate Practitioner**

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

**Follow local protocol for care of deceased**

- **The dying patient, along with his/her family, is viewed as a single unit of care**
- **A planned ambulance transport is a scheduled discharge to home or an interfacility patient transport**
- **The dying patient, along with his/her family, is viewed as a single unit of care**
Recognition of Death – Resuscitation not Indicated

Apparent dead body

- Signs of Life
  - Yes: Go to Primary survey CPG
  - No:
    - Definitive indicators of Death
      - Yes: It is inappropriate to commence resuscitation
      - No: Inform Ambulance Control

Inform Ambulance Control

Complete all appropriate documentation

Inform next of kin, if present

Follow local protocol for care of deceased

Definitive indicators of death:
1. Decomposition
2. Obvious rigor mortis
3. Obvious pooling (hypostasis)
4. Incineration
5. Decapitation
6. Injuries totally incompatible with life
7. Unwitnessed traumatic cardiac arrest following blunt trauma (see CPG 5/6.6.11)
### Acute Coronary Syndrome

**Oxygen therapy**

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

**Indication for Thrombolysis**

1. Patient conscious, coherent and understands therapy
2. Patient consent obtained
3. Less than 75 years old
4. MI Symptoms > 20 Min & ≤ 6 hours
5. Confirmed STEMI
6. Time to PPCI centre > 90 minutes of STEMI confirmation on 12 lead ECG
7. No contraindications present

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

**Tenecteplase IV**

Followed by Enoxaparin 30 mg IV (> 75 yrs: Enoxaparin 0.75 mg/kg SC)

**Time critical commencement transport to nearest appropriate hospital ASAP**

**Transport to Primary PCI facility**

**Acquire & interpret 12 lead ECG**

GTN 0.4 mg SL

Repeat prn to max of 1.2 mg SL

**Transport to Primary PCI facility**

Followed by Apply 3 lead ECG & SpO2 monitor

**Oxygen therapy**

Aspirin 300 mg PO

Chest Pain

Yes

No

**Ticagrelor 180 mg PO**

Clopidogrel, 300 mg, PO (≥ 75 years, 75 mg PO)

- Pre-hospital thrombolysis available?
  - No
    - Go to Pain Mgt. CPG
  - Yes
    - Discuss with PPCI Physician

**Enoxaparin 30 mg IV**

(> 75 yrs: Enoxaparin 0.75 mg/kg SC)

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

**STEMI**

ST elevation in two or more contiguous leads (2 mm in leads V2 and V3, or 1 mm in any other leads) or LBBB with clinical symptoms of AMI.

**Reference:** HSE ACS Programme 2013, ILCOR Guidelines 2010, ECS Guidelines 2010
Symptomatic Bradycardia – Adult

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

Titrate Atropine to effect (HR > 60)

Atropine, 0.6 mg IV
Repeat at 3 to 5 min intervals prn to max 3 mg

12 lead ECG

NaCl (0.9%) 250 mL IV infusion
(Repeat x one prn)

Reference: ILCOR guidelines 2010
Tachycardia – Adult

**Clinical Practice Guidelines**

**ADVANCED PARAMEDIC**

**SECTION 4**

**MEDICAL EMERGENCIES**

**October 2014**

**5/6.4.12**

**Version 1, 02/14**

**Reference: ILCOR Guidelines 2010**

**Special Authorisation:**

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

**MEDICAL EMERGENCIES**

## Adrenal Insufficiency – Adult

**Diagnosed with Addison’s disease or Adrenal insufficiency**

- **Yes**
  - **Recent illness or injury**
    - **Yes**
      - **Check blood glucose**
    - **No**
      - **SBP < 90 mmHg**
        - **Yes**
          - **Request ALS**
        - **No**
          - **Hydrocortisone 100 mg IV (in 100 mL NaCl)**
          - **Request ALS**

- **No**

**Special Authorisation:**

Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation.
Clinical Practice Guidelines
ADVANCED PARAMEDIC

SECTION 4
MEDICAL EMERGENCIES

Altered Level of Consciousness – Adult

V, P or U on AVPU scale

Maintain airway

No

Consider recovery position

Yes

Consider Cervical Spine

Obtain SAMPLE history from patient, relative or bystander

ECG & SpO2 monitoring
Calculate GCS

Check temperature
Check pupillary size & response
Check for skin rash

Check for medications carried or medical alert jewellery

Check blood glucose

Differential Diagnosis

Go to CPG

Anaphylaxis

Go to CPG

Symptomatic Bradycardia

Go to CPG

Glycaemic emergency

Go to CPG

Hypothermia

Obtain SAMPLE history from patient, relative or bystander

ECG & SpO2 monitoring
Calculate GCS

Check temperature
Check pupillary size & response
Check for skin rash

Check for medications carried or medical alert jewellery

Check blood glucose

Differential Diagnosis

Go to CPG

Anaphylaxis

Go to CPG

Symptomatic Bradycardia

Go to CPG

Glycaemic emergency

Go to CPG

Hypothermia

Go to CPG

Poison

Go to CPG

Seizures

Go to CPG

Stroke

Go to CPG

Shock from blood loss

Go to CPG

Submersion incident

Go to CPG

Head injury

Go to CPG

Inadequate respirations

Go to CPG

Post resuscitation care

Go to CPG

Septic shock

Go to CPG

Taser gun

Go to CPG

October 2014

5/6.4.14
Version 1, 05/08
**SECTION 4**

**MEDICAL EMERGENCIES**

**Allergic Reaction/Anaphylaxis – Adult**

- **If bronchospasm consider nebuliser:** Salbutamol 5 mg NEB
- **Epinephrine administered pre arrival? (within 5 minutes):**
  - Yes: 
    - Epinephrine (1:1 000) 0.5 mg (500 mcg) IM
    - Repeat at 5 minute intervals if no improvement
    - Request ALS
  - No: 
    - Epinephrine (1:1 000) 0.5 mg (500 mcg) IM
    - Repeat at 5 minute intervals if no improvement
    - Request ALS

- **ECG & SpO2 monitor**
  - Deteriorates: Yes
  - No: Reassess

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

- **Hydrocortisone 200 mg IV (in 100 mL NaCl) or IM**

**Mild**
- Urticaria and or angio oedema

**Moderate**
- Mild symptoms + simple bronchospasm

**Severe/ anaphylaxis**
- Moderate symptoms + haemodynamic and or respiratory compromise
Decompression Illness (DCI)

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

**Complete primary survey**
- Commence CPR if appropriate.

**Treat in supine position**

**Oxygen therapy**
- 100% O₂

**Request ALS**

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

**Pain relief required**
- Yes
  - Go to Pain Mgt. CPG
- No
  - Nausea
    - Yes
      - Go to Nausea & Vomiting CPG
    - No

**Monitor ECG & SpO₂**

**NaCl (0.9%) 500 mL IV/IO**

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

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

Epistaxis

Apply digital pressure for 15 minutes

Advise patient to sit forward

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

Haemorrhage controlled

Yes

No

Consider insertion of a proprietary nasal pack

Hypovolaemic

Yes

Request ALS

No

Go to Shock CPG

Consider ALS

**Clinical Practice Guidelines**

**SECTION 4**

**MEDICAL EMERGENCIES**

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**Glycaemic Emergency – Adult**

- **Abnormal blood glucose level**
  - **< 4 mmol/L**
    - Dextrose 10% 250 mL IV/IO infusion
    - Or
    - Glucagon 1 mg IM
    - Or
    - Glucose gel 10-20 g buccal
    - Or
    - Sweetened drink
  - Allow 5 minutes to elapse following administration of medication
  - Blood Glucose < 4 mmol/L
    - Yes
    - Consider ALS
  - No
    - Reassess

- **11 to 20 mmol/L**
  - Repeat if indicated
  - Dextrose 10%, 250 mL IV/IO infusion
  - Or
  - Glucose gel 10-20 g buccal
  - Or
  - Sweetened drink
  - Reassess

- **≥ 20 mmol/L**
  - Consider ALS
  - NaCl (0.9%) 1 L IV/IO infusion
  - Reassess

---

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

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5/6.4.19
Version 1, 05/08

October 2014
**Hypothermia**

**Query**

- Hypothermia

**Immersion**

- Yes
- Remove patient horizontally from liquid (Provided it is safe to do so)

- No
- Protect patient from wind chill

**Equipment list**

- Low reading thermometer
- Survival bag
- Space blanket
- Hot pack

**Check and record core temperature**

- Mild (34 – 35.9°C)
  - Give hot sweet drinks
- Moderate (30 – 33.9°C)
  - Follow CPGs but:
    - no active re-warming
- Severe (< 30°C)
  - Follow CPGs but:
    - no active re-warming beyond 32°C

**If Cardiac Arrest**

- Pulse check for 30 to 45 seconds
- Unresponsive
  - Consider advanced airway
  - No

**If Bradycardiac**

- Follow CPGs but:
  - do not use Atropine until temperature > 34°C
  - No active re-warming beyond 32°C
  - NaCl warmed to 40°C approx
  - Adult: 250 mL IV, Repeat pm to max 1 L
  - Paediatric: 10 mL/kg IV, Repeat pm x 1

**Warm fluids to be administered over 30 minutes**

**Warm fluids to be administered over 30 minutes**

**Transport in head down position**

- Helicopter: head forward
- Boat: head aft

**Reference:**


October 2014
Poison source

Caution with oral intake

Poison type

Cholinergics

Sympathomimetics

Psychostimulant (symptomatic)

No

Yes

Patient psychologically deranged

Anticholinergics

Tricyclic OD with wide QRS arhythmia or seizure

Yes

No

Sodium Bicarbonate (8.4%), 1 mEq/Kg IV Max 50 mEq - 50 mL

Atropine, 1 mg IV Repeat at 5 min intervals prn

Bradycardia & salivation

Yes

No

Inadequate Respiration

Opiates

Opiate induced

Yes

No

Inadequate Ventilations

Alcohol

References:


October 2014
Seizure/Convulsion – Adult

Seizure / convulsion

Protect from harm

Oxygen therapy

Seizing currently

Seizure status

Post seizure

Consider

ALS

Or

Or

Or

Diazepam, 10 mg PR
Repeat by one prn

Midazolam 5 mg IM
Repeat by one prn

Midazolam 5 mg IN
Repeat by one prn

Or

Diazepam 5 mg IV/IO
Repeat by one prn

Midazolam 2.5 mg IV/IO
Repeat by one prn

Check blood glucose

Blood glucose < 4 or > 20 mmol/L

Yes

Go to Glycaemic Emergency CPG

No

Reason

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

Maximum two doses of anticonvulsant medication by Practitioner regardless of route

If pre-Eclampsia/ Eclampsia consider
Magnesium Sulphate, 4 g IV (infusion in 100 mL NaCl)


October 2014
### Sepsis – Adult

#### Section 4: Medical Emergencies

**If Sys BP < 100 mmHg**

**Consider aliquots**

**Sepsis – Adult**

**4/5/6.4.24**

**Version 3, 02/14**

**AP**

**Patient unwell**

- **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)**

**No**

**Yes**

**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)**

**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

**No**

**Yes**

**Oxygen therapy**

**ECG & SpO2 monitoring**

**Request ALS**

**Benzylpenicillin, 1,200 mg slow IV or IM**

**Pre alert ED if severe sepsis**

**Special Authorisation:**

Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation.
Control external haemorrhage

Oxygen therapy

Reassess

Request ALS

NaCl (0.9%), 500 mL IV/IO

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

Reassess

SpO₂ and ECG monitoring

Continue fluid therapy until handover at ED

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

**Significant Nausea & Vomiting – Adult**

- **Post Narcotic administration for pain relief**
  - Yes: Go to Pain management – Adult CPG
  - No: Consider Oxygen therapy

Consider:
- Ondansetron 4 mg IV slowly
- Cyclizine 50 mg IV slowly

ECG & SpO₂ monitor
Sickle Cell Crisis - Adult

**Sickle Cell crisis**

- Oxygen therapy
- Pain management required
  - Yes: Go to Pain CPG
  - No: Oxygen therapy

- Elevated temperature
  - Yes: Go to Sepsis CPG
  - No: 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
    - NaCl (0.9%) 1 L IV infusion
    - SpO2 & ECG monitor
  - No: Go to Pain CPG

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

SECTION 4

MEDICAL EMERGENCIES

Acute neurological symptoms

Obtain GCS

Positive FAST assessment

Yes

Maintain airway

Oxygen therapy

Check blood glucose

Yes

BG < 4 or > 20 mmol/L

No

ECG & SpO2 monitoring

Onset < 4.5 hours

Yes

Specialised Stroke Unit available

No

Transport patient to hospital with Specialised Stroke Unit (under local protocol)

Follow local protocol re notifying ED prior to arrival

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 to transport now if FAST positive

Reference

ILCOR Guidelines 2010
Prof R Boyle, 2006, Mending hearts and brains, Clinical case for change: Report by Prof R Boyle, National Director for Heart Disease and Stroke, NHS AHA, 2005, Part 9 Adult Stroke, Circulation 2005; 112; 111-120
A. Mohd Nor, et al, Agreement between ambulance paramedic-and physician- recorded neurological signs with Face Arm Speech Test (FAST) in acute stroke patients, Stroke 004; 35;1355-1359
Mental Health Emergency

**Behaviour abnormal with previous psychiatric history**

- Exclude medical causes of abnormal behaviour prior to implementing this CPG
- 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**

- Comative with hallucinations or Paranoia & risk to self or others
- Potential to harm self or others

**Reassure patient**

- Explain what is happening at all times
- Avoid confrontation

**Attempt verbal de-escalation**

- Patient agrees to travel

**Co-operate as appropriate with medical or nursing team**

**Transport patient to an Approved Centre**

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

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

**Go to Poisons CPG**

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

**Aid to Capacity Evaluation**

1. Patient verbalises/ communicates understanding of clinical situation?
2. Patient verbalises/ communicates appreciation of applicable risk?
3. Patient verbalises/ communicates ability to make alternative plan of care?

If no to any of the above consider Patient Incapacity
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.

**Behavioural Emergency**

- Behaviour abnormal
  - Obtain a history from patient and or bystanders present as appropriate
  - Indications of medical cause of illness
    - Yes → Go to appropriate CPG
    - No → Potential to harm self or others
      - Yes → Request control to inform Gardaí
      - No → Reassure patient
        - Explain what is happening at all times
        - Avoid confrontation
        - Attempt verbal de-escalation
          - Patient agrees to travel
            - Yes → Injury or illness potentially serious or likely to cause lasting disability
              - Yes → Inform patient of potential consequences of treatment refusal
                - Request control to inform Gardaí and or Doctor
                  - Is patient competent to make informed decision
                    - Yes → Offer to treat and or transport patient
                      - Treatment only
                        - Yes → Request control to inform Gardaí and or Doctor
                          - Is patient competent to make informed decision
                            - Yes → Advise alternative care options and to call ambulance again if there is a change of mind
                              - Document refusal of treatment and or transport to ED
                                - Await arrival of doctor or Gardaí or receive implied consent
          - No → Offer to treat and or transport patient
            - Treatment only
              - No → Go to appropriate CPG
              - Yes → Aid to Capacity Evaluation
                1. Patient verbalises/communicates understanding of clinical situation?
                2. Patient verbalises/communicates appreciation of applicable risk?
                3. Patient verbalises/communicates ability to make alternative plan of care?
                - No to any of the above consider Patient Incapacity

Reference: HSE Mental Health Services
Pre-Hospital Emergency Childbirth

Query labour

Take SAMPLE history

Patient in labour

No

Birth imminent or travel time too long

No

Yes

No

Yes

Breech birth

No

Support baby throughout delivery

Yes

Gestation < 28 weeks

No

Dry baby and check ABCs

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

Go to BLS & ALS Neonate CPG

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

Go to Umbilical Cord Complications CPG

Go to Breech Birth CPG

If placenta delivers, bring to hospital with mother

Reference: ILCOR Guidelines 2010
**Basic & Advanced Life Support – Neonate (< 4 weeks)**

**From Childbirth CPG**

- **Birth**
  - Gestation < 28 weeks
    - No
    - Yes

- **< 4 Weeks old**
  - Cover newborn in polythene wrap/bag up to neck without drying first
    - Yes
    - No

- Provide warmth
  - Position; Clear airway (if necessary)
  - Stimulate, reposition

- Provide warmth
  - Position; Clear airway (if necessary)
  - Dry, stimulte, reposition

- Request ALS
  - Assess respirations, heart rate & colour
  - Breathing, HR > 100 & Pink
  - Breathing, HR > 100 but Cyanotic
    - Give Supplementary O₂
    - Persistent Cyanosis
      - Yes
      - No

- Provide positive pressure ventilation for 30 sec
  - HR < 60
    - Assess Heart Rate
    - HR 60 to 100
  - HR 60 to 100
    - Assess Heart Rate
    - Breathing, HR > 100
  - Breathing well, HR > 100
  - HR < 60
    - Continue CPR

- CPR (ratio 3:1) for 30 sec

- Epinephrine (1:10 000) 0.01 mg/kg IV/IO
  - Every 3 to 6 minutes pm

- If mother is opiate user consider
  - Naloxone, 0.01 mg/kg IV/IO

- Naloxone, 0.01 mg/kg IM

- Consider
  - NaCl (0.9%), 10 mL/kg IV/IO

**CPR 3 : 1**

- Compressions : Ventilations
- Use two thumbs encircling technique when two practitioners present

**Reference:** ILCOR Guidelines 2010
Haemorrhage in Pregnancy Prior to Delivery

Query pregnant
≥ 24 weeks
Early pregnancy haemorrhage

Pregnancy
≥ 24 weeks
Antepartum haemorrhage

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

Oxygen therapy

Yes

Patient is haemodynamically unstable

Request ALS
Go to Shock CPG

No

Reassess

Postpartum Haemorrhage

2nd stage of labour complete

Apply absorbent pad to perineum area

Oxygen therapy

Syntometrine, 1 mL IM (if not already administered)

Mother is haemodynamically unstable

Estimate blood loss

No

External massage of the uterus

Yes

Request ALS

Elevate lower limbs

Check/mother to multiple births prior to administration of Syntometrine

Consider inserting a urinary catheter

Go to Shock CPG

Umbilical Cord Complications

Cord complication

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

Oxygen therapy

Cord around baby’s neck

Attempt to slip the cord over the baby’s head

Yes

Successful

No

Clamp cord in two places and cut between both clamps

Ease the cord from around the neck

Go to Childbirth CPG

Cord rupture

Apply additional clamps to cord

Apply direct pressure with sterile dressing

Prolapsed cord

Mother to adopt knee chest 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

In labour

No

Yes

Consider Nifedipine, 20 mg, PO

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

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

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

Breech birth presentation

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

- Oxygen therapy

- Mother to adapt the lithotomy position

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

- Nape of neck anteriorly visible at vulva

- Successful delivery
  - Yes
  - No

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

- Grasp both baby’s ankles in other hand

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

- Successful delivery after 5 contractions
  - Yes
  - No

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

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

- Consider Nitrous Oxide & Oxygen

- Go to Childbirth CPG

- Request ALS

- Version 1, 05/08
Burns – Adult

**Burn or Scald**

1. **Cease contact with heat source**
   - *Inhalation and/or facial injury*
     - Yes: **Airway management**
     - No: Continue with burn care
   - *Isolated superficial injury (excluding FFHFP)*
     - Yes: **Commence local cooling of burn area**
     - No: Continue with burn care

**Dressing/covering of burn area**

- **Remove burned clothing & jewellery (unless stuck)**
  - **Go to Pain Mgt.**
    - Yes: **Pain > 2/10**
    - No: **Isolated superficial injury (excluding FFHFP)**
      - Yes: **Request ALS**
      - No: **TBSA burn > 10%**
        - Yes: **Consider**
          - **(NaCl 0.9%, 500 mL, IV/IO)**
        - No: **Monitor body temperature**

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

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

**Caution:**
- Elderly
- Circumferential & electrical burns

**Reference:**
**SECTION 6
TRAUMA**

**Crush Injury**

- **Patient trapped**
- **Co-ordinate with rescue personnel on release timing**
- **Maintain AcBC**
  - **Oxygen therapy**
  - **Significant compression force maintained**
    - No
    - Yes
      - **Consider Mobile Surgical Team**
        - (for amputation)
      - **NaCl (0.9%) 20 mL/Kg IV/IO**
      - **Consider pain relief**
      - **ECG & SPO2 monitoring**
      - **Prepare all required patient carrying devices and have on standby following extrication**
      - **If possible commence IV fluids prior to release**
      - **Apply standard trauma care during and post extrication**
      - **Go to appropriate CPG**

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

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

1. Open wound
   - Active bleeding: Yes
     - Catastrophic haemorrhage: Yes
       - Consider applying a dressing impregnated with haemostatic agent
       - Apply tourniquet if limb injury
     - Haemorrhage controlled: Yes
       - Apply additional dressing(s)
       - Haemorrhage controlled: Yes
         - Depress proximal pressure point
         - Haemorrhage controlled: No
           - Apply tourniquet
         - Haemorrhage controlled: Yes
           - Go to Shock CPG
   - Active bleeding: No
     - Haemorrhage controlled: Yes
     - Oxygen therapy
     - Go to Shock CPG
   - Active bleeding: No
     - Haemorrhage controlled: No
       - Consider applying a dressing impregnated with haemostatic agent
     - Haemorrhage controlled: No
       - Go to Shock CPG

Equipment list:
- Sterile dressing (various sizes)
- Crepe bandage (various sizes)
- Conforming bandage (various sizes)
- Triangular bandage
- Trauma tourniquet
- Dressing impregnated with haemostatic agent

Reference:

4/5/6.6.3
Version 3, 02/14

Special Authorisation:
EMTs, having completed the BTEC course, may be privileged by a licensed CPG provider to apply a tourniquet on its behalf.
Fall arrested by harness/rope

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%) 20 mg/Kg aliquots IV to maintain Sys BP > 90 mmHg

Special Authorisation:

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

Reference:
Adish A et al, 2009, Evidence-based review of the current guidance on first aid measures for suspension trauma, Health and Safety Executive (UK) Research report RR708
Australian Resuscitation Council, 2009, Guideline 9.1.5 Harness Suspension Trauma first aid management.
Head Injury – Adult

- **Head trauma**
  - Maintain Airway (Consider Advanced airway)
    - Oxygen therapy
    - Control external haemorrhage
    - Maintain in-line immobilisation
    - Consider spinal injury
      - SpO2 & ECG monitoring

- **GCS ≤ 12**
  - Yes
    - Consider Vacuum mattress
  - No
    - GCS ≤ 8
      - Yes
        - Minimise increases in Intra Cranial Pressure
        - Pain Management
        - Control nausea & vomiting
        - 10° upward head tilt
        - Check collar tension
        - Avoid hypotension
        - Check blood glucose
        - Patient seizing
        - Consider Vacuum mattress
        - See Pain Mgt CPG
        - See N&V CPG
        - See Shock CPG
        - See Glycaemic Emergency CPG
        - See Seizures / Convulsions CPG
        - Request ALS

- **GCS > 8**
  - No
    - Maintain Airway
    - Control external haemorrhage
    - Maintain in-line immobilisation
    - Consider spinal injury
      - SpO2 & ECG monitoring
    - SpO2 & ECG monitoring

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

**Reference:**
Heat Related Emergency – Adult

Collapse from heat related condition

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

Yes

Alert

No

Give cool fluids to drink

Maintain airway

Mild Hyperthermia (heat stress)

Exercise related dehydration should be treated with oral fluids. (caution with over hydration with water)

Moderate Hyperthermia (Heat exhaustion)

SpO₂ & ECG monitor

Consider

Cool patient

Consider

NaCl (0.9%) 1 L IV

Severe Hyperthermia (Heat stroke) > 40°C

Elevate oedematous limbs

Do not over cool

Cooling may be achieved by:
Removing clothing
Fanning
Tepid sponging
Ice packs

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

Reference:
ILCOR Guidelines 2010,
European Resuscitation Guidelines 2010.
RFDS, 2011, Primary Clinical Care Manual
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

Other

Neck of femur

Mid shaft of femur

Yes

Request ALS

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

Clinical Practice Guidelines
ADVANCED PARAMEDIC

SECTION 6
TRAUMA

Control external haemorrhage

Oxygen therapy

Request

ALS

Patient trapped

No

Yes

NaCl (0.9%), 500 mL IV/IO

Suspected significant internal/external haemorrhage

Yes

Tranexamic acid 1 g IV/IO (in 100 mL NaCl)

No

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

With polytrauma consider application of a pelvic splint

Head injury with GCS ≤ 8

Yes

No

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

Maintain normo-temperature

Continue fluid therapy until handover at ED

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

Clinical Practice Guidelines

SECTION 6
TRAUMA

Spinal Immobilisation – Adult

Trauma Initial indications for spinal immobilisation

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

Remove helmet (if worn)

Neck or back pain or midline spinal tenderness

Yes

Dangerous mechanism of injury or significant distracting injury

Yes

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

Yes

Apply cervical collar

No

Life Threatening

Yes

Rapid extrication with long board and cervical collar

No

Use extrication device

Load onto vacuum mattress or long board

Consider Vacuum mattress

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

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

Immobilisation may not be indicated

Go to appropriate CPG

Use clinical judgement if in doubt, immobilise

Do not forcibly restrain a patient that is combative

**Submersion Incident**

1. **Remove patient from liquid** (Provided it is safe to do so).
2. **Remove horizontally if possible** (consider C-spine injury).
3. **Complete primary survey** (Commence CPR if appropriate).
4. **Adequate ventilations**
   - Yes: Go to Inadequate Ventilations CPG
   - No: Oxygen therapy
5. **SpO2 & ECG monitoring**
6. **Indications of respiratory distress**
   - Yes: Monitor Pulse, Respirations & BP
   - No: Patient is hypothermic
5. **Check blood glucose**
6. **Transport to ED for investigation of secondary drowning insult**

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

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

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

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

**Do not delay on site**
- Continue algorithm en route

---

Traumatic Cardiac Arrest – Adult

EMS Unwitnessed Traumatic Arrest

- Apnoic, Pulseless and Asystolic
  - Yes: Blunt trauma
    - Yes: <18 years
      - Hypothermia
        - No
      - Drowning
        - No
      - Lightning strike
        - No
      - Electrical injury
        - No
    - No: Low energy incident
      - Yes: Go to appropriate CPG
      - No: Go to Recognition of Death CPG

EMS Witnessed Traumatic Arrest

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

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

**Primary Survey Medical – Paediatric (≤ 15 Years)**

- **Medical issue**
  - Take standard infection control precautions
  - Consider pre-arrival information
  - Scene safety
  - Scene situation
  - Paediatric Assessment Triangle
  - Airway patent & protected
  - No
  - Yes
  - Adequate ventilation
  - No
  - Yes
  - Pulse < 60 & signs of poor perfusion
  - No
  - Yes
  - AVPU assessment
  - Head tilt/chin lift
  - Suction, OPA, NPA
  - Give 5 Ventilations
  - Oxygen therapy
  - Life threatening
  - Clinical status decision
  - Non serious or life threat
  - Serious not life threat
  - Request ALS
  - Go to appropriate CPG

**Normal ranges**

<table>
<thead>
<tr>
<th>Age</th>
<th>Pulse</th>
<th>Respirations</th>
</tr>
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<tbody>
<tr>
<td>Infant</td>
<td>100 – 160</td>
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<td>90 – 150</td>
<td>24 – 40</td>
</tr>
<tr>
<td>Pre school</td>
<td>80 – 140</td>
<td>22 – 34</td>
</tr>
<tr>
<td>School age</td>
<td>70 – 120</td>
<td>18 – 30</td>
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Reference:
- Pediatric Education for Prehospital Professionals, 2011
- Department of Children and Youth Affairs, 2011, Children First
- National Guidance for the Protection and Welfare of Children
The primary survey is focused on establishing the patient’s clinical status and only applying interventions when they are essential to maintain life. It should be completed within one minute of arrival on scene.

**Primary Survey Trauma – Paediatric (≤ 15 years)**

1. Consider pre-arrival information
   - Scene safety
   - Scene survey
   - Scene situation

2. Paediatric Assessment Triangle
   - Appearance
   - Work of breathing
   - Circulation to skin

3. Control catastrophic external haemorrhage

4. No Mechanism of injury suggestive of spinal injury
   - Yes C-spine control

5. Jaw thrust (Head tilt/ chin lift)
   - Yes
   - No

6. Give 5 Ventilations
   - Oxygen therapy
   - Yes Adequate ventilation
   - No

7. AVPU assessment
   - Yes Pulse < 60 & signs of poor perfusion
   - No

8. Expose & check obvious injuries

9. Treat life threatening injuries only

10. Life threatening
    - Go to appropriate CPG
    - Request ALS

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

12. Normal ranges
   - Age Pulse Respirations
   - Infant 100 - 160 30 – 60
   - Toddler 90 – 150 24 – 40
   - Pre school 80 – 140 22 – 34
   - School age 70 – 120 18 – 30

Reference:
- ILCOR Guidelines 2010, American Academy of Pediatrics, 2000, Pediatric Education for Prehospital Professionals
- Department of Children and Youth Affairs, 2011, Children First: National Guidance for the Protection and Welfare of Children
Secondary Survey – Paediatric (≤ 15 years)

Primary Survey

Make appropriate contact with patient and or guardian if possible

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

Use age appropriate language for patient

Children and adolescents should always be examined with a chaperone (usually a parent) where possible

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

Identify patient’s weight

Normal ranges

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Recheck vital signs

Check for current medications

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

If child protection concerns are present

Identify positive findings and initiate care management

Go to appropriate CPG

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’
SECTION 7
PAEDIATRIC EMERGENCIES

Pain Management – Paediatric (≤ 15 years)

Practitioners, depending on his/her scope of practice, may make a clinical judgement and commence pain relief on a higher rung of the pain ladder.

Pain assessment

Administer pain medication based on pain assessment and pain ladder recommendations

Yes or best achievable

Adequate relief of pain

No

Go back to originating CPG

Reassess and move up the pain ladder if appropriate

Severe pain (≥ 7 on pain scale)

Paracetamol 20 mg/Kg PO

Morphine 0.05 mg/Kg PO (or IV)

Max 10 mg

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

Nitrous Oxide & Oxygen, inh

Repeat Morphine IV at not < 2 min intervals prn to Max: 0.1 mg/kg IV

Consider Fentanyl 0.0015 mg/Kg IN (1.5 mcg/Kg)

Repeat every 1 hr

And/or

Morphine 0.5 mg/Kg PO

and/or

Morphine 0.05 mg/Kg IV

MIX 0.1 mg/Kg

and/or

Fentanyl IN

Consider Ondansetron 0.3 mg/Kg IV slowly (Max 4 mg)

Repeat Fentanyl IN, once only, at not < 10 min after initial dose.

Reference: World Health Organization, Pain Ladder

Moderate pain (4 to 6 on pain scale)

Paracetamol 20 mg/Kg PO

Ibuprofen 10 mg/Kg PO

Nitrous Oxide & Oxygen, inh

Repeat Fentanyl IN, once only, at not < 10 min after initial dose.

Consider Ondansetron 0.3 mg/Kg IV slowly (Max 4 mg)

Repeat Morphine IV at not < 2 min intervals prn to Max: 0.1 mg/kg IV

Mild pain (1 to 3 on pain scale)

Paracetamol 20 mg/Kg PO

Ibuprofen 10 mg/Kg PO

Nitrous Oxide & Oxygen, inh

Consider Ondansetron 0.3 mg/Kg IV slowly (Max 4 mg)

Repeat Fentanyl IN, once only, at not < 10 min after initial dose.

Decisions to give analgesia must be based on clinical assessment and not directly on a linear scale
Advanced Airway Management – Paediatric (≤ 15 years)

1. **Prolonged CPR**
   - Ventilations maintained
     - Yes
     - Continue ventilation and oxygenation
     - Check placement of advanced airway after each patient movement or if any patient deterioration
     - Minimum age for advanced airway ≥ 2 years old
     - Maintain adequate ventilation and oxygenation throughout procedures
     - Following successful Advanced Airway management:
       - i) Ventilate at 12 to 20 per minute.
       - ii) Unsynchronised chest compressions continuous at 100 to 120 per minute

2. Ventilations maintained
   - No
     - Consider FBAO
     - Minimum interruptions of chest compressions. Maximum hands off time 10 seconds.

3. Ventilations maintained
   - Yes
     - Supraglottic airway insertion
     - or
     - Endotracheal intubation
     - Successful
       - Yes
       - Go to appropriate CPG
     - No
       - Revert to basic airway management
       - Ensure CO₂ detection device in ventilation circuit
       - Check placement of advanced airway after each patient movement or if any patient deterioration
       - Continue ventilation and oxygenation

Reference: ILCOR Guidelines 2010, Paediatric basic and advanced life support
If suspected narcotic OD Consider

- Naloxone, 0.01 mg/Kg IM/SC
- Naloxone, 0.02 mg/Kg IN
- Naloxone, 0.01 mg/Kg IV/IO
- Repeat Naloxone prn to Max 0.1 mg/Kg or 2 mg

Respiratory difficulty

Airway patent & protected

Yes

Check SpO2

Consider ETCO2

Oxygen therapy

Request ALS

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 Consider

- Naloxone, 0.01 mg/Kg IV/IO
- Naloxone, 0.01 mg/Kg IM/SC
- Naloxone, 0.02 mg/Kg IN

Substance intake

Go to Narco CPG

Other

Consider pain, posture & neuromuscular disorders

Go to Anaphylaxis CPG

Go to Sepsis CPG

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

Bronchospasm/known asthma

Go to Asthma CPG

Go to Anaphylaxis CPG

Asymmetrical breath sounds

Consider collapse, consolidation & fluid

Tension Pneumothorax suspected

Yes

Needle decompression

No

Respiratory assessment

Crepitations

Go to Sepsis CPG

Other

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

100% O2 initially

Titrated O2 to standard as clinical condition improves

Raised ETCO2 + reduced SpO2:

- Consider assisted ventilation

Raised ETCO2 + normal SpO2:

- Encourage deep breaths

100% O2 initially

Titrated O2 to standard as clinical condition improves

100% O2 initially

Titrated O2 to standard as clinical condition improves

Inadequate Ventilations – Paediatric (≤ 15 years)
Assess and maintain airway

Respiratory assessment

ECG & SpO2 monitoring

 Oxygen therapy

Request ALS

Resolved/improved

Yes

No

Salbutamol, age-specific dose, NEB

Resolved/improved

Yes

No

Hydrocortisone (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

Every 5 minutes pm

If no improvement salbutamol aerosol, 0.1 mg may be repeated; for < 5 year olds up to 3 times, for ≥ 5 year olds up to 5 times, as required

Stridor – Paediatric (≤ 15 years)

Stridor

Consider FBAO

Assess & maintain airway

Croup or epiglottitis suspected

Yes

Do not insert anything into the mouth

No

Do not distress
Transport in position of comfort

Humidified O₂ – as high a concentration as tolerated

Oxygen therapy

ECG & SpO₂ monitoring
Clinical Practice Guidelines
ADVANCED PARAMEDIC

SECTION 7
PAEDIATRIC EMERGENCIES

4/5/6.7.20
Version 2, 12/13

Basic Life Support – Paediatric (≤ 15 Years)

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

Give 5 rescue ventilations
Oxygen therapy

Request
ALS

Comence chest Compressions
Continue CPR (30:2) until defibrillator is attached

Yes
< 8 years
No

Apply paediatric system AED pads
Apply adult defibrillation pads

Shockable
VF or pulseless VT
Give 1 shock

Immediately resume CPR
x 2 minutes

Rhythm check *

Go to VF / Pulseless VT
CPG

Asystole / PEA

Go to Asystole / PEA CPG

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

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

Reference: ILCOR Guidelines 2010

October 2014
Clinical Practice Guidelines
ADVANCED PARAMEDIC

SECTION 7
PAEDIATRIC EMERGENCIES

Foreign Body Airway Obstruction – Paediatric (≤ 15 years)

Are you choking?

- Severe (ineffective cough)
  - No
    - Conscious: Yes
    - No
      - Effective: Yes
      - No
        - Encourage cough
        - Adequate ventilations
          - Yes
          - Oxygen therapy
          - No
            - Positive pressure ventilations (12 to 20/ min)

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

- FBAO Severity
  - No
    - Conscious: Yes
    - No
      - Effective: Yes
      - No
        - FBAO Severity
          - No
            - Attempt removal of foreign body with Magill forceps
              - Foreign body removed: Yes
              - No
                - Attempt intubation
                  - Effective ventilations
                    - No
                      - Consider use of waveform capnography
                      - Consider use of waveform capnography
                    - Yes
                      - Attempt needle cricothyotomy
                        - Effective ventilations
                          - No
                            - Paediatric CPG
                            - No
                              - Oxygen therapy
                              - Yes
                              - Positive pressure ventilations (12 to 20/ min)

- Visualise foreign body
  - Foreign body removed: Yes
  - No
    - Attempt removal of foreign body with Magill forceps
      - Foreign body removed: Yes
      - No
        - Attempt intubation
          - Effective ventilations
            - No
              - Go to BLS
              - Paediatric CPG
            - Yes
              - Oxygen therapy

After each cycle of CPR open mouth and look for object, if visible attempt once to remove it
VF or Pulseless VT – Paediatric (≤ 15 years)

Immediate IO access if IV not immediately accessible

From BLS Paediatric CPG

VF or VT arrest

GO TO Defibrillate (4 joules/Kg)

Rhythm check *

VF/VT

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

Check blood glucose

Following successful Advanced Airway management:

i) Ventilate at 12 to 20 per minute.
ii) Unsynchronised chest compressions continuous at 100 to 120 per minute

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

Clinical leader to monitor quality of CPR

Transport to ED if no change after 10 minutes resuscitation

If no ALS available

Consider use of waveform capnography

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

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

Refractory VF/VT post Epinephrine

Amiodarone, 5 mg/kg, IV/IO

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

Reference: ILCOR Guidelines 2010

4/5/6.7.22
Version 3, 12/13
Asystole/PEA – Paediatric (≤ 15 years)

Check blood glucose

Advanced airway management

Check blood glucose

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

Rhythm check *

Yes

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

VF/VT

Rhythm check *

No

VF/VT CPG

ROSC

Transport to ED if no change after 10 minutes resuscitation

With CPR ongoing maximum hands off time 10 seconds

Immediate IO access if IV not immediately accessible

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

Advanced airway management

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

Clinical leader to monitor quality of CPR

Following successful Advanced airway management:
(i) Ventilate at 12 to 20 per minute.
(ii) Unsynchronised chest compressions continuous at 100 to 120 per minute

Consider use of waveform capnography

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

Reference: ILCOR Guidelines 2010
**SECTION 7**
**PAEDIATRIC EMERGENCIES**

**Symptomatic Bradycardia – Paediatric (≤ 15 years)**

- **Oxygen therapy**
  - **Yes**: Consider positive pressure ventilations (12 to 20/ min)
  - **No**: Reassess

- **Unresponsive Signs of Inadequate perfusion & HR < 60**
  - **Yes**: CPR
  - **No**: Continue CPR

- **ECG & SpO₂ monitoring**

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

- **Epinephrine (1-10 000) 0.01 mg/kg (10 mcg/kg) IV/IO**
  - Every 3 – 5 min prn

- **Check blood glucose**

- **Persistent bradycardia**
  - **Yes**: Continue CPR
  - **No**: Reassess

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

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

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

Post-Resuscitation Care – Paediatric (≤ 15 years)

1. Maintain Oxygen therapy
2. If Unresponsive:
   - Yes: Positive pressure ventilations. Max 12 to 20 per minute
   - No: Adequate ventilation
3. Commence active cooling
4. Maintain patient at rest
5. ECG & SpO2 monitoring
6. Monitor blood pressure and GCS
7. Check blood glucose
8. Monitor vital signs
9. Transport quietly and smoothly

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

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

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

Titrate O₂ to 96% - 98%

If persistent poor perfusion consider:
- NaCl (0.9%) 20 mL/Kg IV/IO

Reference: ILCOR Guidelines 2010
Adrenal Insufficiency – Paediatric (≤ 15 years)

Diagnosed with Addison’s disease or Adrenal insufficiency

- Recent illness or injury
  - Yes
  - Check blood glucose
  - Poor perfusion
    - Yes
    - Request ALS
    - No
    - Hydrocortisone IV
      - 6 mth ≤ 5 years: 50 mg
      - > 5 years: 100 mg
      - If IV not available

Consider:
- Hydrocortisone IM
  - 6 mth ≤ 5 years: 50 mg
  - > 5 years: 100 mg

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

Allergic Reaction/Anaphylaxis – Paediatric (≤ 15 years)

- **Mild**
  - Urticaria and or angioedema

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

- **Severe**
  - Moderate symptoms + simple bronchospasm
  - Severe symptoms + simple bronchospasm

**Epinephrine**

- **< 6 months**
  - 0.05 mg (50 mcg) IM

- **6 months to 5 years**
  - 0.125 mg (125 mcg) IM

- **6 to 8 years**
  - 0.25 mg (250 mcg) IM

- **> 8 years**
  - 0.5 mg (500 mcg) IM

**Salbutamol NEB**

- **< 5 yrs**: 2.5 mg
- **≥ 5 yrs**: 5 mg

**Hydrocortisone**

- **< 1 yr**: 25 mg IV or IM
- **1-5 yrs**: 50 mg IV or IM
- **> 5 yrs**: 100 mg IV or IM

**Special Authorisation:**
Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation.
Glycaemic Emergency – Paediatric (≤ 15 years)

Abnormal blood glucose level

< 4 mmol/L

Consider
Glucose gel
≤ 8 years 5-10 g Buccal
> 8 years 10-20 g Buccal

No

Yes

Glucagon
≤ 8 years 0.5 mg IM
> 8 years 1 mg IM

Blood Glucose

11 to 20 mmol/L

Request ALS

> 20 mmol/L

Dehydration

No

Yes

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

Dextrose 10% 5 mL/Kg IV/IO bolus

Repeat x 1 pm

Reassess

Dehydration

Reference: Dehydration- Paramedic Textbook 2nd Ed p 1229

Special Authorisation:
Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation
Seizure/Convulsion – Paediatric (≤ 15 years)

Protect from harm

Seizing currently

Seizure status

Seizure / convulsion

Yes

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

No

Post seizure

Protect from harm

Oxygen therapy

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

Yes

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

No

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

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

Or

Midazolam 0.2 mg/Kg IN
Repeat by one prn

Or

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

Pyrexia

Yes

Go to Pyrexia CPG

No

Check blood glucose

Reassess
Clinical Practice Guidelines
ADVANCED PARAMEDIC

SECTION 7
PAEDIATRIC EMERGENCIES

Septic Shock – Paediatric (≤ 15 years)

Clinical signs of shock

Oxygen therapy

Request ALS

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

Meningococcal disease suspected

Yes

Benzylpenicillin IV/IO over 3 to 5 minutes or IM

< 1 year 300 mg

1 – 8 years 600 mg

> 8 years 1 200 mg (1.2 g)

No

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

ECG & SpO2 monitoring

Ensure appropriate PPE worn; Mask and goggles

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

Special Authorisation:
Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation
Pyrexia – Paediatric (≤ 15 years)

- Child with elevated temperature
  - Remove/protect from hot environment (providing it is safe to do so)
  - Alert
  - Cool patient
  - Recovery position (maintain airway)
  - Give cool fluids to drink

- SpO2 & ECG monitor
- Check blood glucose

- Yes
  - Cool patient

- No
  - 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
- Go to Septic Shock CPG

Reference: ILCOR Guidelines 2010
RFDS, 2011, Primary Clinical Care Manual
Sickle Cell Crisis – Paediatric (≤ 15 years)

Sickle Cell crisis

Oxygen therapy

Pain management required

Yes

No

Go to Pain CPG

Elevated temperature

Yes

Go to Pyrexia CPG

No

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

NaCl (0.9%) 10 mL/Kg IV

SpO2 & ECG monitor

100% O2


Special Authorisation: Paramedics are authorised to continue the established infusion in the absence of an Advanced Paramedic or Doctor during transportation
External Haemorrhage – Paediatric (≤ 15 years)

**Open wound**
- Active bleeding: Yes → **Catastrophic haemorrhage**
- No → Posture, Elevation, Examination, Pressure
  - Posture
  - Elevation
  - Examination
  - Pressure

- **Yes** → **Posture, Elevation, Examination, Pressure**
  - **Yes** → **Apply tourniquet if limb injury**
  - **No** → **Consider applying a dressing impregnated with haemostatic agent**

- **No** → **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**

- **Catastrophic haemorrhage**: Yes → Consider applying a dressing impregnated with haemostatic agent

**Equipment list**
- Sterile dressing (various sizes)
- Crepe bandage (various sizes)
- Conforming bandage (various sizes)
- Triangular bandage
- Trauma tourniquet
- Dressing impregnated with haemostatic agent

**Reference:**
- ILCOR Guidelines 2010,
**Clinical signs of shock**

- Control external hemorrhage
- Oxygen therapy

- **Patient trapped**
  - **No**
  - **Yes**

  - **NaCl (0.9%) 10 mL/Kg IV/IO**
  - **Reassess**

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

  - Continue fluid therapy until handover at ED

**ECG & SpO2 monitoring**

**Signs of inadequate perfusion**

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

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

Reference:
American Academy of Pediatrics, 2000, Pediatric Education for Prehospital Professionals, Jones and Bartlett.
Spinal Immobilisation – Paediatric (≤ 15 years)

Trauma

Initial indications for spinal immobilisation

- Return head to neutral position unless on movement there is increase in Pain, Resistance or Neurological symptoms
- Do not forcibly restrain a patient that is combative

Remove helmet (if worn)

- Neck or back pain or midline spinal tenderness
  - Yes
  - Life Threatening
  - Apply cervical collar

- Dangerous mechanism of injury or significant distracting injury
  - Yes
  - Are all of the factors listed present:
    - GCS = 15
    - Communication effective (not intoxicated with alcohol or drugs)
    - Presence of low risk factors which allow safe assessment of range of motion
    - Patient voluntarily able to rotate neck 45° left & right without pain
    - Patient can walk without pain
  - Immobilisation may not be indicated

- Rapid extrication with long board/paediatric board and cervical collar

- Use extrication device

- Load onto vacuum mattress, paediatric board or long board

- Consider Vacuum mattress

- Immobilise in child seat

- Immobilisation may not be indicated

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

Use clinical judgement if in doubt, immobilise

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

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

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

Rapid extrication with long board/paediatric board and cervical collar

Patient in sitting position

- Yes
- Load onto vacuum mattress, paediatric board or long board
- Consider Vacuum mattress

Patient in undamaged child seat

- Yes
- Immobilise in child seat
- Go to appropriate CPG

Patient in sitting position

- No
- Use extrication device

Patient in undamaged child seat

- No
- Immobilise in child seat
- Go to appropriate CPG

Life Threatening

- No
- Apply cervical collar

Patient can walk without pain

- Yes
- Go to appropriate CPG

Patient voluntarily able to rotate neck 45° left & right without pain

- Yes
- Go to appropriate CPG

Patient not intoxicated with alcohol or drugs

- Yes
- Go to appropriate CPG

Presence of low risk factors which allow safe assessment of range of motion

- Yes
- Go to appropriate CPG

Absence of numbness, tingling or weakness in extremities

- Yes
- Go to appropriate CPG

Communication effective (not intoxicated with alcohol or drugs)

- Yes
- Go to appropriate CPG

GCS = 15

- Yes
- Go to appropriate CPG
Burns - Paediatric (≤ 15 years)

1. Cease contact with heat source
2. Airway management
   - Respiratory distress
     - Yes: Go to Inadequate Ventilations CPG
     - No: Consider humidified Oxygen therapy
3. Commence local cooling of burn area
4. Remove burned clothing & jewellery (unless stuck)
5. Dressing/covering of burn area
6. ECG & SpO2 monitoring
7. NaCl (0.9%), IV/IO
   - > 10% TBSA and/or time from injury to ED > 1 hour
     - Yes: 5 to 10 years = 250 mL
     - No: 10 years = 500 mL
8. Pain > 2/10
   - Yes: Go to Pain Mgt. CPG
   - No: Monitoring body temperature

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

Major Emergency (Major Incident) – First Practitioners on site

**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

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

Possible Major Emergency

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

**METHANE message**

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

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

**Major Emergency (Major Incident) – Operational Control**

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

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

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

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

Please note that Controller of Operations may be other than ambulance or fire officers, depending on the nature of the emergency.


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

**Triage Sieve**

**Multiple casualty incident**

- Can casualty walk?
  - Yes: **Priority 3 (Delayed)**, **GREEN**
  - No: Is casualty breathing?
    - Yes: Open airway, one attempt
      - Yes: Respiratory rate < 10 or > 29
        - Yes: **Priority 1 (Immediate)**, **RED**
        - No: Capillary refill > 2 sec or Pulse > 120
          - Yes: **Priority 2 (Urgent)**, **YELLOW**
          - No: **DEAD**
      - No: Breathing now?
        - Yes: **Priority 3 (Delayed)**, **GREEN**
        - No: **DEAD**
    - No: **DEAD**
## Pre-Hospital Emergency Care Operations

### Triage Sort

<table>
<thead>
<tr>
<th>Cardiopulmonary Function</th>
<th>Measured Value</th>
<th>Score</th>
<th>Insert Score</th>
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</thead>
<tbody>
<tr>
<td><strong>Respiratory Rate</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 – 29 / min</td>
<td>4</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>&gt; 29 / min</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 – 9 / min</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 – 5 / min</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Systolic Blood Pressure</strong></td>
<td></td>
<td></td>
<td>B</td>
</tr>
<tr>
<td>≥ 90 mm Hg</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>76 – 89 mm Hg</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 – 75 mm Hg</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 – 49 mm Hg</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No BP</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Glasgow Coma Scale</strong></td>
<td></td>
<td></td>
<td>C</td>
</tr>
<tr>
<td>13 – 15</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 – 12</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 – 8</td>
<td>2</td>
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<tr>
<td>4 – 5</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Triage Revised Trauma Score** = A + B + C

### Glasgow Coma Scale

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

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

<table>
<thead>
<tr>
<th>Motor Response</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obey commands</td>
<td>6</td>
</tr>
<tr>
<td>Localises pain</td>
<td>5</td>
</tr>
<tr>
<td>Withdraw (pain)</td>
<td>4</td>
</tr>
<tr>
<td>Flexion (pain)</td>
<td>3</td>
</tr>
<tr>
<td>Extension (pain)</td>
<td>2</td>
</tr>
<tr>
<td>None</td>
<td>1</td>
</tr>
</tbody>
</table>

| Glasgow Coma Scale   |       |

---

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.

October 2014

99
**Clinical Practice Guidelines**

**ADVANCED PARAMEDIC**

**SECTION 8**

**PRE-HOSPITAL EMERGENCY CARE OPERATIONS**

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**Conducted Electrical Weapon (Taser)**

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

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

**Behavioural emergency**

- Yes
  - Go to Behavioural emergency CPG
- No
  - Patient care takes precedent over removal of barb
  - Remove barbs
  - Clean and dress wounds

**Monitor**

- GCS, temperature & vital signs
- Monitor for signs of Excited Delirium
- Consider Oxygen therapy
- Ensure Garda accompanies patient at all times

---

**Note:**

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

---

**Reference:**


United States Government Accountability Office, 2005, The use of Taser by selected law enforcement agencies

Manitoba Health Emergency Medical Services, 2007 Taser Dart Removal Protocol
Clinical Practice Guidelines

SECTION 9

TREAT & REFERRAL

**Clinical Care Pathway Decision – Treat & Referral**

- **Non serious or non life threat**
  - Patient responds to intervention(s)
    - Yes
    - Conduct complete patient assessment
      - Focused history
      - Systematic physical examination
    - All generic inclusion criteria present
      - Yes
      - Practitioner satisfied with non ED care
        - No
        - CPG for treat & referral available for condition
          - Yes
          - An adult carer, both capable & willing to accept responsibility, available
            - Yes
            - Explain clinical pathway options to patient and carer
              - Patient & carer accepts non ED care
                - Yes
                - Go to appropriate T&R CPG
          - No
          - CPG for treat & referral not available
            - No
            - Practitioner satisfied with non ED care
              - Yes
              - An adult carer, both capable & willing to accept responsibility, available
                - Yes
                - Explain clinical pathway options to patient and carer
                  - Patient & carer accepts non ED care
                    - Yes
                    - Go to appropriate T&R CPG
    - No

**Generic patient inclusion**
1. ≥ 18 years & ≤ 60 years.
2. Not pregnant.
3. Social support available.
4. Demonstrates capacity and willing to engage.
5. Reliable history.
6. Vital signs within normal range (following care).
7. Compliant with treatment, including own medications.
8. Clinical status of Non serious or non life threat (following care).
10. No observed significant relevant co-morbidity.
11. 1st call for same condition within 30 days.
12. Registered with general practitioner.
If in any doubt about generic inclusions the practitioner should transport to ED

**Clinical Care Pathway options**
- CP1 Treat & Transport to an Emergency Department
- CP2 Treat & Referral for follow up care within 2 hours (arranged with local practitioner)
- CP3 Treat & Referral for follow up care within 48 hours or as soon as practicable
- CP4 Treat & Referral to self care with after care instructions

**Vital sign**
- **Normal range**
  - **Respiratory Rate**: 12 – 20
  - **SpO₂**: ≥ 96%
  - **Inspired O₂**: Room air
  - **Systolic BP**: 111 - 150
  - **Pulse (BPM)**: 51 - 90
  - **AVPU/CNS Response**: Alert
  - **Temperature (°C)**: 36 – 37.5

**Reference:** Ambulance Service of NSW, 2008, CARE Clinical Pathways
HSE Acute Medicine Programme, 2011, Guiding Framework and Policy for the National Early Warning Score System to Recognise and Respond to Clinical Deterioration

October 2014
Clinical Practice Guidelines
ADVANCED PARAMEDIC

SECTION 9
TREAT & REFERRAL

Reference:
- Ambulance Service of NSW, 2008, CARE Clinical Pathways

Hypoglycaemia – Treat & Referral

1. Complete after care Instructions and give a copy to the patient or carer
2. Complete the PCR and mark for Clinical Audit

Ensure patient takes in both quick (lucozade, fruit juice or sweets) and longer acting (bread, toast, biscuit) carbohydrates

Flush line with 10 mL NaCl following removal of 10% Dextrose infusion

If the patient expresses a wish to attend an Emergency Department then arrangements shall be made to transport him/her there
Isolated seizure – Treat & Referral

Specific seizure exclusion:
1. First seizure.
2. Anticonvulsant administered.
3. Concurrent acute illness (including abnormal temperature).
4. History of multi seizure presentations.
5. History of recent head injury.
6. Increased frequency of seizures.
7. Seizure involving submersion or injury.
8. Seizure type or pattern differing to usual presentation.
10. Unwitnessed seizure.
11. Two or more seizures within 24 hours.
12. Glucose < 4 mmol/L.
13. Recent medication change or additional medications prescribed (within 30 days).

If in any doubt about 1 to 13 above the practitioner should transport to ED.

1. Complete after care Instructions and give a copy to the patient or carer
2. Complete the PCR and mark for Clinical Audit

Known epileptic

Isolated seizure:
- Lasting < 5 minutes
- Similar to previous events

Reference:
- HSE Epilepsy Programme 2012
- Ambulance Service of NSW, 2008, CARE Clinical Pathways
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 the 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

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 patients 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>Category</th>
<th>Weight</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</td>
<td>(age x 2) + 8 Kg</td>
</tr>
<tr>
<td>Greater than 5</td>
<td>(age x 3) + 7 Kg</td>
</tr>
</tbody>
</table>

Reviewed on behalf of PHECC by Prof Peter Weedle, Adjunct Professor of Clinical Pharmacy, School of Pharmacy, University College Cork.

This version contains 40 medications.
Amendments to the 2012 Edition

The paediatric age range has been increased to reflect the HSE National Clinical Programme for Paediatrics and Neonatology age profile:

A paediatric patient is defined as a patient up to the eve of his/her 16th birthday (≤ 15 years).

Water for injection shall be used when diluting medications, however if not available NaCl (0.9%) may be used if not contraindicated.

The paediatric weight estimation formulae have been modified.

New Medications introduced:
- Dextrose 5%
- Fentanyl
- Ticagrelor
- Tranexamic Acid

Medications withdrawn for Advanced Paramedic use but continued for pre-hospital medical practitioner use:
- Enoxaparin Sodium Solution
- Tenecteplase Powder for injection

### Amiodarone

<table>
<thead>
<tr>
<th>HEADING</th>
<th>ADD</th>
<th>DELETE</th>
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</thead>
<tbody>
<tr>
<td>Indications</td>
<td>Symptomatic Tachycardia (&gt; 150)</td>
<td></td>
</tr>
<tr>
<td>Usual Dosages</td>
<td>Symptomatic Tachycardia: 150 mg IV (infusion in 100 mL D_W)</td>
<td></td>
</tr>
<tr>
<td>Additional information</td>
<td>(for infusion use 100 mL D_W) For cardiac arrest do not dilute, administer directly followed by a flush</td>
<td></td>
</tr>
</tbody>
</table>
### Atropine

<table>
<thead>
<tr>
<th>HEADING</th>
<th>ADD</th>
<th>DELETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indications</td>
<td>Cholinergic poison with bradycardia and salivation</td>
<td>Paediatric (CPG not published) Organophosphate poison.</td>
</tr>
<tr>
<td>Contraindications</td>
<td>Post-cardiac transplantation.</td>
<td></td>
</tr>
<tr>
<td>Usual Dosages</td>
<td>Symptomatic Bradycardia: 0.6 mg (600 mcg) IV</td>
<td>Symptomatic Bradycardia – 0.5 mg (500 mcg) IV</td>
</tr>
<tr>
<td>Additional information</td>
<td></td>
<td>Organophosphate poison</td>
</tr>
</tbody>
</table>

### Benzylpenicillin

<table>
<thead>
<tr>
<th>HEADING</th>
<th>ADD</th>
<th>DELETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indications</td>
<td>Severe sepsis - Adult Suspected or confirmed meningococcal sepsis - Paediatric</td>
<td></td>
</tr>
</tbody>
</table>

### Clopidogrel

<table>
<thead>
<tr>
<th>HEADING</th>
<th>ADD</th>
<th>DELETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indications</td>
<td>ST Elevation Myocardial Infarction (STEMI) if the patient is not suitable for PPCI</td>
<td>Identification of ST Elevation Myocardial Infarction (STEMI)</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td>300 mg PO ≥ 75 years</td>
<td>600 mg PO &gt; 75 years</td>
</tr>
<tr>
<td>Additional information</td>
<td></td>
<td>Paramedics are authorised to administer Clopidogrel PO following identification of STEMI and medical practitioner instruction</td>
</tr>
</tbody>
</table>

### Enoxaparin Sodium Solution

<table>
<thead>
<tr>
<th>HEADING</th>
<th>ADD</th>
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</thead>
<tbody>
<tr>
<td>Clinical Level</td>
<td>[MP]</td>
<td>[AP]</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td>Adult Dosage (&gt; 75 years: 0.75 mg/Kg SC)</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX 1
MEDICATION FORMULARY

<table>
<thead>
<tr>
<th>Epinephrine (1:1,000)</th>
<th>ADD</th>
<th>DELETE</th>
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<tbody>
<tr>
<td>Usual Dosages</td>
<td>Auto-injector</td>
<td>EpiPen® Jr</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Furosemide</th>
<th>ADD</th>
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</thead>
<tbody>
<tr>
<td>Usual Dosages</td>
<td>Slow IV</td>
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</table>

<table>
<thead>
<tr>
<th>Hartmann's Solution</th>
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<th>DELETE</th>
</tr>
</thead>
</table>
| Usual Dosages       | See NaCl | Adult:
|                     | | Anaphylaxis; 1000 mL IV/IO infusion, repeat x one
|                     | | Decompression illness; 500 mL IV/IO infusion.
|                     | | Shock; 500 mL IV/IO infusion. Repeat in aliquots of 250 mL prn to maintain systolic BP of;
|                     | | 100 mmHg (hypovolaemia or septic).
|                     | | 90 – 100 mmHg (head injury GCS > 8)
|                     | | 120 mmHg (head injury GCS ≤ 8 mmHg)
|                     | | Paediatric:
|                     | | Anaphylaxis; 20 mL/Kg IV/IO infusion, repeat x one
|                     | | Haemorrhagic shock; 10 mL/Kg IV/IO, repeat prn if signs of inadequate perfusion. |

October 2014
<table>
<thead>
<tr>
<th></th>
<th>HEADING</th>
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</thead>
<tbody>
<tr>
<td><strong>Indications</strong></td>
<td>Adrenal insufficiency</td>
<td></td>
<td>Patients with asthma following an anaphylactic reaction</td>
</tr>
<tr>
<td></td>
<td>Asthma refractory to Salbutamol and Ipratropium Bromide</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anaphylactic reaction and Exacerbation of COPD (AP);</td>
<td>200 mg IV (infusion in 100 mL NaCl) or IM</td>
<td>Adult:</td>
</tr>
<tr>
<td></td>
<td>Asthma (AP) and Adrenal insufficiency (P &amp; AP);</td>
<td>100 mg IV (infusion in 100 mL NaCl) or IM</td>
<td>200 mg IM or slow IV (over 1 to 10 minutes)</td>
</tr>
<tr>
<td></td>
<td>Paediatric:</td>
<td></td>
<td>Paediatric:</td>
</tr>
<tr>
<td></td>
<td>Anaphylactic reaction and Asthma (AP);</td>
<td></td>
<td>&lt; 1 year: 25 mg IM or slow IV (over 1 to 10 minutes)</td>
</tr>
<tr>
<td></td>
<td>&lt; 1 year: 25 mg IV (infusion in 100 mL NaCl) or IM</td>
<td></td>
<td>1 to 5 years: 50 mg IM or slow IV (over 1 to 10 minutes)</td>
</tr>
<tr>
<td></td>
<td>1 to 5 years: 50 mg IV (infusion in 100 mL NaCl) or IM</td>
<td></td>
<td>6 to 12 years: 100 mg IM or slow IV (over 1 to 10 minutes)</td>
</tr>
<tr>
<td></td>
<td>&gt; 5 years: 100 mg IV (infusion in 100 mL NaCl) or IM</td>
<td></td>
<td>&gt;12 years: 130 mg IM or slow IV (over 1 to 10 minutes)</td>
</tr>
<tr>
<td></td>
<td><strong>Adrenal insufficiency (P &amp; AP);</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 mths to ≤ 5 years: 50 mg IV (infusion in 100 mL NaCl) or IM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 5 years: 100 mg IV (infusion in 100 mL NaCl) or IM</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pharmacology/action</strong></td>
<td></td>
<td></td>
<td>The half life is 90 minutes.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>IV is the preferred route for adrenal crisis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Ibuprofen

<table>
<thead>
<tr>
<th>Heading</th>
<th>ADD</th>
<th>DELETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Level</td>
<td>EMT</td>
<td></td>
</tr>
<tr>
<td>Presentation</td>
<td>400 mg tablet</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>It is an anti-inflammatory analgesic</td>
<td>It is used to reduce mild to moderate pain</td>
</tr>
<tr>
<td>Additional information</td>
<td>Caution with significant burns or poor perfusion due to risk of kidney failure</td>
<td>Caution if concurrent NSAIDs use</td>
</tr>
</tbody>
</table>

## Ipratropium Bromide

<table>
<thead>
<tr>
<th>Heading</th>
<th>ADD</th>
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<tbody>
<tr>
<td>Clinical Level</td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Administration</td>
<td>CPG: 4/5/6.3.3, 4/5/6.3.4, 4/5/6.7.18</td>
<td>CPG: 5/6.3.2, 5/6.7.5</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td>Paediatric&lt;br&gt;&lt; 12 years: 0.25 mg NEB&lt;br&gt;≥ 12 years: 0.5 mg NEB</td>
<td>Paediatric&lt;br&gt;0.25 mg NEB</td>
</tr>
</tbody>
</table>

## Lidocaine

<table>
<thead>
<tr>
<th>Heading</th>
<th>ADD</th>
<th>DELETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indications</td>
<td>...for VF/VT arrests</td>
<td></td>
</tr>
</tbody>
</table>
### Magnesium Sulphate

<table>
<thead>
<tr>
<th>Indications</th>
<th>Adults:</th>
<th>ADD</th>
<th>DELETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seizure associated with eclampsia</td>
<td>Torsades de pointes: 2 g IV/IO (infusion in 100 mL NaCl)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Persistent bronchospasm: 2 g IV/IO (infusion in 100 mL NaCl)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Seizure: 4 g IV (infusion in 100 mL NaCl)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Usual Dosages</th>
<th>Adults:</th>
<th>ADD</th>
<th>DELETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torsades de pointes: 2 g IV/IO infusion over 15 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persistent bronchospasm: 1.5 g IV/IO infusion over 20 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dilute in 100 mL NaCl for infusion</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Midazolam Solution

<table>
<thead>
<tr>
<th>Indications</th>
<th>Adults:</th>
<th>ADD</th>
<th>DELETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatitive with hallucinations or paranoia and risk to self or others.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hallucinations or paranoia</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Usual Dosages</th>
<th>Adults:</th>
<th>ADD</th>
<th>DELETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seizure &amp; Combative Patient:</td>
<td>0.5 mg/Kg buccal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 1 year: 2.5 mg buccal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 year to &lt; 5 years: 5 mg buccal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 years to &lt; 10 years: 7.5 mg buccal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 10 years: 10 mg buccal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paediatric:</td>
<td>Seizure: 0.5 mg/Kg buccal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychostimulant overdose:</td>
<td>2.5 mg IV or 5 mg IM (Repeat x 2 prn).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hallucinations or paranoia:</td>
<td>5 mg IV/IM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional information</th>
<th>Adults:</th>
<th>ADD</th>
<th>DELETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>No more than two doses by practitioners. Practitioners should take into account the dose administered by caregivers prior to arrival of practitioner</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The maximum dose of Midazolam includes that administered by caregiver prior to arrival of Practitioner</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Morphine Sulphate

<table>
<thead>
<tr>
<th><strong>HEADING</strong></th>
<th><strong>ADD</strong></th>
<th><strong>DELETE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contraindications</strong></td>
<td>Acute intoxication</td>
<td>Brain injury, Acute alcoholism, Migraine</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td>Adult: Severe pain (≥ 7 on pain scale)</td>
<td>Adult: Severe pain (≥ 5 on pain scale)</td>
</tr>
<tr>
<td></td>
<td>Paediatric: Severe pain (≥ 7 on pain scale)</td>
<td>Paediatric: Severe pain (≥ 6 on Wong Baker scale)</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Caution with reduced GCS</td>
<td>Not recommended for headache</td>
</tr>
</tbody>
</table>

## Naloxone

<table>
<thead>
<tr>
<th><strong>HEADING</strong></th>
<th><strong>ADD</strong></th>
<th><strong>DELETE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical level</strong></td>
<td>EMT</td>
<td></td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intranasal (IN), CPG: 6.4.23, 4/5.4.23, 4/5/6.7.5</td>
<td>CPG: 5/6.3.2, 5/6.7.5</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Inadequate respiration and/or ALoC following known or suspected narcotic overdose.</td>
<td>Respiratory rate &lt; 10 secondary to known or suspected narcotic overdose</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td>Adult: 0.8 mg (800 mcg) IN (EMT)</td>
<td>(Paramedic repeats by one prn)</td>
</tr>
<tr>
<td></td>
<td>Paediatric: 0.02 mg/Kg (20 mcg/Kg) IN (EMT)</td>
<td></td>
</tr>
</tbody>
</table>

## Nitrous Oxide 50% and Oxygen 50% (Entonox®)

<table>
<thead>
<tr>
<th><strong>HEADING</strong></th>
<th><strong>ADD</strong></th>
<th><strong>DELETE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Additional information</strong></td>
<td>Caution when using Entonox for greater than one hour for Sickle Cell Crisis</td>
<td></td>
</tr>
</tbody>
</table>
### Oxygen

<table>
<thead>
<tr>
<th>HEADING</th>
<th>ADD</th>
<th>DELETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contraindications</td>
<td></td>
<td>Paraquat poisoning</td>
</tr>
<tr>
<td>Indications</td>
<td>Sickle Cell Disease - 100%</td>
<td></td>
</tr>
<tr>
<td>Additional Information</td>
<td>Caution with paraquat poisoning, administer oxygen if SpO$_2$ &lt; 92%</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>250 mg in 5 mL</td>
<td></td>
</tr>
<tr>
<td>Indications</td>
<td>Pyrexia</td>
<td>Pyrexia following seizure for paediatric patients</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advanced Paramedics may administer Paracetamol, in the absence of a seizure for the current episode, provided the paediatric patient is pyrexial and has a previous history of febrile convulsions</td>
</tr>
<tr>
<td>Contraindications</td>
<td>&lt; 1 month old</td>
<td></td>
</tr>
<tr>
<td>Usual Dosages</td>
<td>&gt; 1 month &lt; 1 year - 90 mg PR</td>
<td>&lt; 1 year - 60 mg PR</td>
</tr>
</tbody>
</table>

### Salbutamol

<table>
<thead>
<tr>
<th>HEADING</th>
<th>ADD</th>
<th>DELETE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td></td>
<td>Advanced Paramedics may repeat Salbutamol x 3</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td><strong>Adult:</strong></td>
<td>Adult:</td>
</tr>
<tr>
<td></td>
<td>.. (or 0.1 mg metered aerosol spray x 5)</td>
<td>Repeat at 5 min prn (APs x 3 and Ps x 1)</td>
</tr>
<tr>
<td></td>
<td>Repeat at 5 min prn</td>
<td>(EMTs &amp; EFRs: 0.1 mg metered aerosol spray x 2)</td>
</tr>
<tr>
<td></td>
<td><strong>Paediatric:</strong></td>
<td>Paediatric:</td>
</tr>
<tr>
<td></td>
<td>&lt; 5 yrs...(or 0.1 mg metered aerosol spray x 3)</td>
<td>Repeat at 5 min prn (APs x 3 and Ps x 1)</td>
</tr>
<tr>
<td></td>
<td>≥ 5 yrs...(or 0.1 mg metered aerosol spray x 5)</td>
<td>(EMTs &amp; EFRs: 0.1 mg metered aerosol spray x 2)</td>
</tr>
<tr>
<td></td>
<td>Repeat at 5 min prn</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>(EFRs:</strong> 0.1 mg metered aerosol spray x 2)</td>
<td></td>
</tr>
</tbody>
</table>
## Sodium Bicarbonate

<table>
<thead>
<tr>
<th>Headings</th>
<th>Add</th>
<th>Delete</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indications</strong></td>
<td>Cardiac arrest following harness induced suspension trauma</td>
<td></td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td>Max 50 mEq (50 mL 8.4%)</td>
<td></td>
</tr>
</tbody>
</table>

## Sodium Chloride 0.9%

<table>
<thead>
<tr>
<th>Headings</th>
<th>Add</th>
<th>Delete</th>
</tr>
</thead>
</table>
| **Usual Dosages**| **Adult:**  
Suspension Trauma, PEA or Asystole: 20 mL/Kg IV/IO infusion  
Adrenal insufficiency: 1,000 mL IV/IO infusion  
Heat Related Emergency: 1,000 mL IV/IO infusion  
Hypothermia, Sepsis, # neck of femur and Bradycardia: ...Repeat to max 1 L  
Post-resuscitation care: 1,000 mL IV/IO infusion  
Shock from blood loss; ... to maintain systolic BP of 90 – 100 mmHg  
Sickle Cell Crisis: 1,000 mL IV/IO infusion  
# neck of femur, sepsis, symptomatic Bradycardia: 250 mL IV infusion  
Sepsis with poor perfusion: 500 mL IV/IO infusion  
Paediatric:  
Glycaemic emergency: 10 mL/Kg IV/IO infusion  
Hypothermia: 10 mL/Kg IV/IO infusion ... Repeat prn x 1  
Adrenal insufficiency, Septic shock, Symptomatic Bradycardia, Asystole/PEA: 20 mL/Kg IV/IO infusion  
Burns: .... > 1 hour ..... | **Adult:**  
Post-resuscitation care: 500 mL IV/IO infusion  
Shock: 500 mL IV/IO infusion. Repeat in aliquots of 250 mL pm to maintain systolic BP of; 100 mmHg (hypovolaemia or septic).  
90 – 100 mmHg (head injury GCS > 8)  
Paediatric:  
Glycaemic emergency: 20 mL/Kg IV/IO infusion  
Hypothermia: 20 mL/Kg IV/IO infusion  
Shock: 20 mL/Kg IV/IO infusion |
## APPENDIX 1
### MEDICATION FORMULARY

<table>
<thead>
<tr>
<th>Tenecteplase Powder for Injection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HEADING</strong></td>
</tr>
<tr>
<td>Clinical level</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Indications</strong></td>
</tr>
</tbody>
</table>

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### APPENDIX 1

#### MEDICATION FORMULARY

**LIST OF MEDICATIONS**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amiodarone</td>
<td>116</td>
</tr>
<tr>
<td>Aspirin</td>
<td>117</td>
</tr>
<tr>
<td>Atropine</td>
<td>118</td>
</tr>
<tr>
<td>Benzylpenicillin</td>
<td>119</td>
</tr>
<tr>
<td>Clopidogrel</td>
<td>120</td>
</tr>
<tr>
<td>Cyclizine</td>
<td>121</td>
</tr>
<tr>
<td>Dextrose 10% Solution</td>
<td>122</td>
</tr>
<tr>
<td>Dextrose 5% Solution</td>
<td>123</td>
</tr>
<tr>
<td>Diazepam Injection</td>
<td>124</td>
</tr>
<tr>
<td>Diazepam Rectal Solution</td>
<td>125</td>
</tr>
<tr>
<td>Enoxaparin Sodium Solution</td>
<td>126</td>
</tr>
<tr>
<td>Epinephrine (1:10,000)</td>
<td>127</td>
</tr>
<tr>
<td>Epinephrine (1:1,000)</td>
<td>128</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>129</td>
</tr>
<tr>
<td>Furosemide Injection</td>
<td>130</td>
</tr>
<tr>
<td>Glucagon</td>
<td>131</td>
</tr>
<tr>
<td>Glucose gel</td>
<td>132</td>
</tr>
<tr>
<td>Glyceryl Trinitrate (GTN)</td>
<td>133</td>
</tr>
<tr>
<td>Hartmann's Solution</td>
<td>134</td>
</tr>
<tr>
<td>Hydrocortisone</td>
<td>135</td>
</tr>
<tr>
<td>Ibuprofen</td>
<td>137</td>
</tr>
<tr>
<td>Ipratropium Bromide</td>
<td>138</td>
</tr>
<tr>
<td>Lidocaine</td>
<td>139</td>
</tr>
<tr>
<td>Lorazepam</td>
<td>140</td>
</tr>
<tr>
<td>Magnesium Sulphate injection</td>
<td>141</td>
</tr>
<tr>
<td>Midazolam Solution</td>
<td>143</td>
</tr>
<tr>
<td>Morphine Sulphate</td>
<td>145</td>
</tr>
<tr>
<td>Naloxone</td>
<td>146</td>
</tr>
<tr>
<td>Nifedipine</td>
<td>147</td>
</tr>
<tr>
<td>Nitrous Oxide 50% and Oxygen 50% (Entonox®)</td>
<td>148</td>
</tr>
<tr>
<td>Ondansetron</td>
<td>149</td>
</tr>
<tr>
<td>Oxygen</td>
<td>150</td>
</tr>
<tr>
<td>Paracetamol</td>
<td>151</td>
</tr>
<tr>
<td>Salbutamol</td>
<td>152</td>
</tr>
<tr>
<td>Sodium Bicarbonate injection BP</td>
<td>153</td>
</tr>
<tr>
<td>Sodium Chloride 0.9% (NaCl)</td>
<td>155</td>
</tr>
<tr>
<td>Syntometrine</td>
<td>156</td>
</tr>
<tr>
<td>Tenecteplase Powder for injection</td>
<td>158</td>
</tr>
<tr>
<td>Ticagrelor</td>
<td>159</td>
</tr>
<tr>
<td>Tranexamic Acid</td>
<td>160</td>
</tr>
<tr>
<td>Medication</td>
<td>Amiodarone</td>
</tr>
<tr>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Class</strong></td>
<td>Antiarrhythmic agent</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Class III antiarrhythmic agent used to treat ventricular arrhythmias</td>
</tr>
</tbody>
</table>
| **Presentation** | 150 mg in 3 mL solution  
Pre-filled syringes 10 mL (30 mg/mL) |
| **Administration** | Intravenous (IV)  
Intraosseous (IO)  
(CPG: 4/5/6.4.3, 5/6.4.7, 5/6.4.12, 4/5/6.7.22) |
| **Indications** | Ventricular Fibrillation (VF) and Pulseless Ventricular Tachycardia (VT)  
Symptomatic Tachycardia (> 150) |
| **Contraindications** | Known severe adverse reaction  
Known hypersensitivity to Iodine |
| **Usual Dosages** | **Adult: (CPG)**  
VF/VT: 5 mg/Kg IV/IO. (Loading dose for cardiac arrest; 300 mg and one supplemental dose 150 mg)  
Symptomatic tachycardia: 150 mg IV (in 100 mL D5W) |
| | **Paediatric: (CPG)**  
VF/VT: 5 mg/Kg IV/IO |
| **Pharmacology/Action** | Antiarrhythmic  
Prolongs the action potential  
Prolongs the refractory period  
Prolongs atrioventricular conduction  
Prolongs QT interval |
| **Side effects** | Inflammation of peripheral veins  
Bradycardia  
AV conducting abnormalities |
| **Additional information** | If diluted mix with Dextrose 5% (for infusion use 100 mL D5W)  
May be flushed with NaCl  
For adult cardiac arrest do not dilute, administer directly followed by a flush.  
For ease of use in paediatric calculations when using 150 mg in 3 mL, add 2 mL D5W, making the concentration 150 mg in 5 mL |
### Aspirin

<table>
<thead>
<tr>
<th>Class</th>
<th>Platelet aggregation inhibitor</th>
</tr>
</thead>
</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 |
| Contraindications | Active symptomatic gastrointestinal (GI) ulcer  
Bleeding disorder (e.g. haemophilia)  
Known severe adverse reaction  
Patients < 16 years old |
| 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 |
| 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 anticoagulants 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. |
## APPENDIX 1
### MEDICATION FORMULARY

<table>
<thead>
<tr>
<th>Medication</th>
<th>Atropine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Anticholinergic (parasympatholytic)</td>
</tr>
<tr>
<td><strong>Descriptions</strong></td>
<td>Parasympatholytic (Anticholinergic) that is derived from parts of the Atropa belladonna plant</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Pre-filled disposable syringe 1 mg/10 mL Ampoule 0.6 mg in 1 mL</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV) Intraosseous (IO) (CPG: 5/6.3.5, 5/6.4.7, 4/5/6.4.11, 6.4.22)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Adult: Symptomatic bradycardia Cholinergic poison with bradycardia and salivation</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Known severe adverse reaction Post-cardiac transplantation</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td>Adult: <strong>Cholinergic poison with bradycardia and salivation:</strong> 1 mg IV, Repeat at 5 min intervals to ensure minimal salivary secretions <strong>Symptomatic Bradycardia:</strong> 0.6 mg (600 mcg) IV Repeat at 3–5 min intervals to Max 3 mg Paediatric: Not indicated</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Anticholinergic agent Blocks acetylcholine receptors - enhances SA node automaticity - enhance AV node conduction - increases heart rate</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Tachycardia Dry mouth Dilated pupils</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Accidental exposure to the eye causes blurred vision</td>
</tr>
</tbody>
</table>
## Benzylpenicillin

<table>
<thead>
<tr>
<th><strong>Class</strong></th>
<th>Antibiotic, Antibacterial</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Benzylpenicillin is an antibiotic agent</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>600 mg powder in vial for reconstitution</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV) or Intraosseous (IO) May give by intramuscular (IM) injection if no IV access</td>
</tr>
<tr>
<td></td>
<td><strong>IV/IO:</strong> Reconstitute each 600 mg vial with 4 mL of water for injection and give by slow IV injection (i.e. over 3-5 min)</td>
</tr>
<tr>
<td></td>
<td><strong>IM:</strong> Reconstitute each 600 mg vial with 2 mL of water for injection (CPG: 4/5/6.4.24, 5/6.7.34)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Severe sepsis - Adult Suspected or confirmed meningococcal sepsis - Paediatric</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Known severe adverse reaction</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 1,200 mg IV, IO or IM</td>
</tr>
<tr>
<td></td>
<td><strong>Paediatric:</strong> &gt; 8 yrs: 1,200 mg IV, IO or IM 1-8 yrs: 600 mg IV, IO or IM &lt; 1 yr: 300 mg IV, IO or IM</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Antibacterial Gram positive cocci antibiotic</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Gastro intestinal disturbances Hypersensitivity reactions</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Also called Penicillin G</td>
</tr>
</tbody>
</table>
### APPENDIX 1
### MEDICATION FORMULARY

**CLINICAL LEVEL:** P AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Clopidogrel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Platelet aggregation inhibitor</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>An inhibitor of platelet function</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>300 mg tablet  75 mg tablet</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Orally (PO)  (CPG: 5/6.4.10)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>ST Elevation Myocardial Infarction (STEMI) if the patient is not suitable for PPCI</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Known severe adverse reaction  Active pathological bleeding  Severe liver impairment</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 300 mg PO  ≥ 75 years; 75 mg PO  <strong>Paediatric:</strong> Not indicated</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Clopidogrel selectively inhibits the binding of adenosine diphosphate (ADP) to its platelet receptor, and the subsequent ADP-mediated activation of the GPⅡb/Ⅲa complex, thereby inhibiting platelet aggregation. Biotransformation of Clopidogrel is necessary to produce inhibition of platelet aggregation. Clopidogrel acts by irreversibly modifying the platelet ADP receptor.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Abdominal pain  Dyspepsia  Diarrhoea</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>If a patient has been loaded with an anti-platelet medication (other than aspirin), prior to the arrival of the practitioner, the patient should not have Clopidogrel administered.</td>
</tr>
</tbody>
</table>
# APPENDIX 1
## MEDICATION FORMULARY

**CLINICAL LEVEL:** AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Cyclizine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Antiemetic</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Used in management of nausea &amp; vomiting</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Ampoule 50 mg in 1 mL</td>
</tr>
</tbody>
</table>
| **Administration** | Intravenous (IV)  
Intraosseous (IO)  
(CPG: 4/5/6.2.6, 6.4.26) |
| **Indications** | Management, prevention and treatment of nausea & vomiting. |
| **Contraindications** | Known severe adverse reaction |
| **Usual Dosages** | **Adult:** 50 mg slow IV  
**Paediatric:** Not indicated |
| **Pharmacology/Action** | Anti-emetic |
| **Side effects** | Tachycardia  
Dry Mouth  
Sedation |
## APPENDIX 1
### MEDICATION FORMULARY

**CLINICAL LEVEL:**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dextrose 10% Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Carbohydrate</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Dextrose is used to describe the six-carbon sugar d-glucose, which is the principal form of carbohydrate used by the body. D10W is a hypertonic solution.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Soft pack for infusion 250 mL and 500 mL</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV) infusion/bolus Intraosseous (IO) <strong>Paramedic:</strong> maintain infusion once commenced (CPG: 5/6.4.19, 5/6.7.32)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Hypoglycaemic emergency Blood glucose level &lt; 4 mmol/L</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Known severe adverse reaction</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 250 mL IV/IO infusion Repeat x 1 prn <strong>Paediatric:</strong> 5 mL/Kg IV/IO Repeat X 1 prn</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Hypertonic glucose solution Dextrose is a readily utilisable energy source</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Necrosis of tissue around IV access</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Also called Glucose Cannula patency will reduce the effect of tissue necrosis</td>
</tr>
</tbody>
</table>
## Medication Formulary

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dextrose 5% Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Carbohydrate</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Dextrose is used to describe the six-carbon sugar d-glucose, which is the principal form of carbohydrate used by the body. D5W is a hypertonic solution and is used as an infusion medium for Amiodarone.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Soft pack for infusion 100 mL and 500 mL</td>
</tr>
</tbody>
</table>
| **Administration** | Intravenous (IV) infusion  
Intraosseous (IO) infusion  
*Paramedic*: maintain infusion once commenced  
(CPG: May be used for medication dilution on CPGs) |
| **Indications** | Use as a diluant for Amiodarone infusion |
| **Contraindications** | Known severe adverse reaction |
| **Usual Dosages** | **Adult**: Dilute appropriate dose of Amiodarone in 100 mL or 500 mL  
**Paediatric**: Not indicated |
| **Pharmacology/Action** | Dextrose 5% (D5W) is used as an infusion medium for the administration of Amiodarone |
| **Side effects** | Necrosis of tissue around IV access |
| **Additional information** | Paramedics are authorised to continue the established infusion in the absence of an advanced paramedic or doctor during transportation. |
## APPENDIX 1
### MEDICATION FORMULARY

**Clinical Practice Guidelines**

**ADVANCED PARAMEDIC**

### Medication: Diazepam Injection

<table>
<thead>
<tr>
<th>Class</th>
<th>Benzodiazepine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>It is a benzodiazepine that is used to terminate seizures</td>
</tr>
<tr>
<td>Presentation</td>
<td>Ampoule 10 mg in 2 mL</td>
</tr>
</tbody>
</table>
| Administration | Intravenous (IV)  
|              | Intraosseous (IO)  
|              | (CPG: 5/6.4.23, 5/6.7.33) |
| Indications  | Seizure |
| Contraindications | Known severe adverse reaction  
|                 | Respiratory depression  
|                 | Shock  
|                 | Depressed vital signs or alcohol-related altered level of consciousness |
| Usual Dosages | Adult: 5 mg IV/IO  
|              | Adult: Repeat x 1 prn  
|              | Paediatric: 0.1 mg/Kg IV/IO  
|              | Paediatric: Repeat X 1 prn |
| Pharmacology/Action | Benzodiazepine sedative  
|                    | Inhibits the firing of hyperexcitable neurones through enhancement of the action of the inhibitory transmitter, GABA.  
|                    | This results in CNS depressant, anticonvulsant, sedative and skeletal muscle relaxant effects. |
| Side Effects    | Hypotension  
|                 | Respiratory depression  
|                 | Drowsiness and lightheadedness (the next day) |
| Long-term side effects | Confusion and ataxia (especially in the elderly), amnesia, dependence, paradoxical increase in aggression and muscle weakness. |
| Additional Information | Diazepam IV should be titrated to effect  
|                        | The maximum dose of Diazepam includes that administered by carer prior to arrival of Practitioner |
### Medication Formulary

**Clinical Practice Guidelines**  
**APPENDIX 1**  
**MEDICATION FORMULARY**

**CLINICAL LEVEL:** AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Diazepam Rectal Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Benzodiazepine</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>It is a benzodiazepine that is used to terminate seizures</td>
</tr>
</tbody>
</table>
| **Presentation** | Rectal tube  
Available as:  
- 2.5 mg/1.25 mL (2 mg/mL)  
- 5 mg/2.5 mL (2 mg/mL)  
- 10 mg/2.5 mL (4 mg/mL) |
| **Administration** | Per Rectum (PR)  
(CPG: 5/6.4.23, 5/6.7.33) |
| **Indications** | Seizure |
| **Contraindications** | Known severe adverse reaction  
Respiratory depression  
Shock  
Depressed vital signs or alcohol-related altered level of consciousness |
| **Usual Dosages** | **Adult:**  
10 mg PR  
Repeat x 1 prn  
Max 20 mg PR  
**Paediatric:**  
- < 3 years: 2.5 mg PR  
- 3 to 7 years: 5 mg PR  
- ≥ 8 years: 10 mg PR  
Repeat all x 1 after 5 mins if seizure persists or reoccurs |
| **Pharmacology/Action** | Benzodiazepine sedative  
Inhibits the firing of hyperexcitable neurones through enhancement of the action of the inhibitory transmitter, GABA.  
This results in CNS depressant, anticonvulsant, sedative and skeletal muscle relaxant effects. |
| **Side effects** | Hypotension  
Respiratory depression  
Drowsiness and lightheadedness (the next day) |
| **Long-term side effects** | Confusion and ataxia (especially in the elderly), amnesia, dependence, paradoxical increase in aggression and muscle weakness. |
| **Additional information** | Be aware of modesty of patient. Should be administered in the presence of a 2<sup>nd</sup> person.  
Egg and soya proteins are used in the manufacture of diazepam rectal solution; allergies to these proteins may be encountered. The maximum dose of Diazepam includes that administered by carer prior to arrival of Practitioner. |

Pe-Hospital  
Emergency Care  
Council
Clinical Practice Guidelines

APPENDIX 1
MEDICATION FORMULARY

CLINICAL LEVEL: MP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Enoxaparin Sodium Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Anticoagulant</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Enoxaparin is a Low Molecular Weight Heparin used in conjunction with a thrombolytic agent for the treatment of STEMI</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Pre-filled Syringes (100 mg/mL)</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV)</td>
</tr>
<tr>
<td></td>
<td>(CPG: 5/6.4.10)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Acute ST-segment Elevation Myocardial Infarction (STEMI) immediately following the administration of a thrombolytic agent.</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Active major bleeding disorders and conditions with a high risk of uncontrolled haemorrhage, including recent haemorrhagic stroke or subdural haematoma; in jaundice; active gastric or duodenal ulceration; hiatal ulceration; threatened abortion, or retinopathy. Hypersensitivity to Enoxaparin or other Low Molecular Weight Heparins. Known severe adverse reaction</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td>Adult: 30 mg IV bolus</td>
</tr>
<tr>
<td></td>
<td>(&gt; 75 years: 0.75 mg/Kg SC)</td>
</tr>
<tr>
<td></td>
<td>Paediatric: Not indicated</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>It binds to the natural inhibitor of coagulation, antithrombin III and makes certain clotting factors inactive. This results in an increase in the clotting time.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Pain, haematoma and mild local irritation may follow the subcutaneous injection.</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Do not store above 25°C</td>
</tr>
<tr>
<td></td>
<td>Do not refrigerate or freeze</td>
</tr>
<tr>
<td></td>
<td><strong>Medical Practitioners:</strong> Due to the significant increased risk of intra-cerebral bleed for patients aged &gt;75 years do not administer IV Enoxaparin. <strong>Enoxaparin 0.75 mg/Kg SC</strong> (Max 75 mg SC) is the recommended dose and route.</td>
</tr>
</tbody>
</table>
### Clinical Practice Guidelines

**APPENDIX 1**

**MEDICATION FORMULARY**

**CLINICAL LEVEL:** AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Epinephrine (1:10,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Sympathetic agonist</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Naturally occurring catecholamine. It is a potent alpha and beta adrenergic stimulant; however, its effect on beta receptors is more profound.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Pre-filled syringe 1 mg/10 mL (1:10,000) as 0.1 mg/mL</td>
</tr>
</tbody>
</table>
| **Administration**  | Intravenous (IV)  
                     | Intraosseous (IO) (CPG: 4/5/6.4.3, 5/6.4.4, 4/5/6.4.6, 5/6.5.2, 4/5/6.7.22, 4/5/6.7.23, 4/5/6.7.24) |
| **Indications**     | Cardiac arrest  
                     | Paediatric bradycardia unresponsive to other measures |
| **Contraindications** | Known severe adverse reaction |
| **Usual Dosages**   | **Adult:** Cardiac arrest: 1 mg (1:10,000) IV/IO  
                     | Repeat every 3-5 mins  
                     | Paediatric: Cardiac arrest: 0.01 mg/Kg (10 mcg/Kg) (0.1 mL/Kg of 1:10,000) IV/IO  
                     | Repeat every 3-5 mins  
                     | Bradycardia: 0.01 mg/Kg (10 mcg/Kg) (0.1 mL/Kg of 1:10,000) IV/IO  
                     | Repeat every 3-5 mins |
| **Pharmacology/Action** | **Alpha and beta adrenergic stimulant**  
                     | Increases heart rate – Chronotropic effect  
                     | Increases myocardial contractions – Inotropic effect  
                     | Increases BP  
                     | Increases electrical activity in the myocardium  
                     | Increases cerebral & coronary blood flow  
                     | Dilation of bronchioles |
| **Side effects**    | In non-cardiac arrest patients:  
                     | - Palpitations  
                     | - Tachyarrhythmias  
                     | - Hypertension |
| **Additional information** | N.B. Double check concentrations on pack before use |

October 2014
## Clinical Practice Guidelines
### APPENDIX 1
### MEDICATION FORMULARY

**CLINICAL LEVEL:**

<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>Description</strong></td>
<td>Naturally occurring catecholamine. It is a potent alpha and beta adrenergic stimulant; however, its effect on beta receptors is more profound.</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Pre-filled syringe, ampoule or Auto injector (for EMT use) 1 mg/1 mL (1:1,000)</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intramuscular (IM) (CPG: 5/6.4.15, 4.4.15, 2/3.4.16, 5/6.7.31, 4.7.31, 2/3.7.31)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Severe anaphylaxis</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>None known</td>
</tr>
</tbody>
</table>
| **Usual Dosages** | **Adult:** 0.5 mg (500 mcg) IM (0.5 mL of 1:1,000)  
EMT & (EFR assist patient) 0.3 mg (Auto injector)  
Repeat every 5 minutes prn  
**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)  
EMT & (EFR assist patient):  
6 months < 10 years; 0.15 mg (Auto injector)  
≥ 10 years; 0.3 mg (Auto injector)  
Repeat every 5 minutes prn |
| **Pharmacology/Action** | Alpha and beta adrenergic stimulant  
Reversal of laryngeal oedema & 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 |
### Medication Formulary: Fentanyl

<table>
<thead>
<tr>
<th>Class</th>
<th>Narcotic analgesic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Synthetic narcotic analgesic with a rapid onset and short duration of action. It has a half-life of 6.5 minutes when IN route is used.</td>
</tr>
<tr>
<td>Presentation</td>
<td>Ampoule 100 micrograms in 2 mL (0.1 mg in 2 mL)</td>
</tr>
<tr>
<td>Administration</td>
<td>Intranasal (IN) (CPG: 4/5/6.2.6, 4/5/6.7.5)</td>
</tr>
<tr>
<td>Indications</td>
<td>Acute severe pain in patients greater than and equal to 1 year old (≥ 1 year)</td>
</tr>
</tbody>
</table>
| Contraindications | Known fentanyl hypersensitivity  
ALoC  
Bilateral occluded nasal passage  
Nasal trauma  
Epistaxis  
Hypovolaemia |
| Usual Dosages  | **Adult:** 0.1 mg IN  
Repeat by one after 10 minutes if severe pain persists  
**Paediatric:** 0.0015 mg/Kg (1.5 mcg/Kg) IN  
Repeat by one after 10 minutes if severe pain persists |
| Pharmacology/Action | Fentanyl provides some of the effects typical of other opioids through its agonism of the opioid receptors. Its strong potency in relation to that of morphine is largely due to its high lipophilicity. Because of this, it can more easily penetrate the CNS. Fentanyl binds to µ-opioid G-protein-coupled receptors, which inhibit pain neurotransmitter release by decreasing intracellular Ca²⁺ levels. |
| Side effects   | Sedation  
Nausea |
| Long-term side effects | Vomiting  
Respiratory depression |
| Additional information | Caution if patient has transdermal Fentanyl patch  
Include an additional 0.1 mL, to allow for dead space in the mucosal atomisation device (MAD), in the calculated volume required.  
Administer 50% volume in each nostril if more than 1 mL |
<table>
<thead>
<tr>
<th>Medication</th>
<th>Furosemide Injection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Diuretic</td>
</tr>
<tr>
<td>Description</td>
<td>A loop diuretic</td>
</tr>
<tr>
<td>Presentation</td>
<td>Ampoule 10 mg per mL</td>
</tr>
<tr>
<td></td>
<td>2 mL, 5 mL and 25 mL per ampoule</td>
</tr>
<tr>
<td>Administration</td>
<td>Intravenous (IV)</td>
</tr>
<tr>
<td></td>
<td>(CPG: 5/6.3.5)</td>
</tr>
<tr>
<td>Indications</td>
<td>Pulmonary oedema</td>
</tr>
<tr>
<td>Contraindications</td>
<td>Pregnancy, hypokalaemia</td>
</tr>
<tr>
<td></td>
<td>Known severe adverse reaction</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td><strong>Adult:</strong> 40 mg slow IV</td>
</tr>
<tr>
<td></td>
<td><strong>Paediatric:</strong> Not indicated</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>Acts on the ascending loop of Henle by inhibiting the reabsorption of chloride and sodium ions into the interstitial fluid. This results in a relative hypertonic state. Water is therefore retained in the loop and eliminated via the bladder. It also causes venodilation which reduces venous return to the heart.</td>
</tr>
<tr>
<td>Side effects</td>
<td>Headache, dizziness, hypotension, arrhythmias, transient deafness, diarrhoea, nausea &amp; vomiting.</td>
</tr>
<tr>
<td>Long-term side effects</td>
<td>Hyperuricaemia, gout, hypokalaemia and hyperglycaemia.</td>
</tr>
<tr>
<td>Additional information</td>
<td>Furosemide should be protected from light</td>
</tr>
</tbody>
</table>
## APPENDIX 1
MEDICATION FORMULARY

**CLINICAL LEVEL:**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Glucagon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Hormone and Antihypoglycaemic</td>
</tr>
<tr>
<td>Description</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>Presentation</td>
<td>1 mg vial powder and solution for reconstitution (1 mL)</td>
</tr>
<tr>
<td>Administration</td>
<td>Intramuscular (IM) (CPG: 5/6.4.19, 4.4.19, 5/6.7.32, 4.7.32)</td>
</tr>
<tr>
<td>Indications</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>Contraindications</td>
<td>Known severe adverse reaction Phaeochromocytoma</td>
</tr>
</tbody>
</table>
| Usual Dosages| **Adult:** 1 mg IM  
**Paediatric:** ≤ 8 years 0.5 mg (500 mcg) IM  
> 8 years 1 mg IM |
| Pharmacology/Action| Glycogenolysis Increases plasma glucose by mobilising glycogen stored in the liver |
| Side effects| Rare, may cause hypotension, dizziness, headache, nausea & vomiting. |
| Additional information| May be ineffective in patients with low stored glycogen e.g. prior use in previous 24 hours, alcoholic patients with liver disease. Store in refrigerator Protect from light |
### Medication Formulary

<table>
<thead>
<tr>
<th>Medication</th>
<th>Glucose gel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Antihypoglycaemic</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Synthetic glucose paste</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Glucose gel in a tube or sachet</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Buccal administration: Administer gel to the inside of the patient's cheek and gently massage the outside of the cheek (CPG: 5/6.4.19, 4.4.19, 2/3.4.19, 5/6.7.32, 4.7.32)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Hypoglycaemia Blood glucose &lt; 4 mmol/L <strong>EFR</strong> – Known diabetic with confusion or altered levels of consciousness</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Known severe adverse reaction</td>
</tr>
</tbody>
</table>
| **Usual Dosages** | **Adult:** 10 – 20 g buccal Repeat prn  
**Paediatric:** ≤ 8 years; 5 – 10 g buccal > 8 years: 10 – 20 g buccal Repeat prn |
| **Pharmacology/Action** | Increases blood glucose levels |
| **Side effects** | May cause vomiting in patients under the age of five if administered too quickly |
| **Additional information** | Glucose gel will maintain glucose levels once raised but should be used secondary to Dextrose to reverse hypoglycaemia  
**Proceed with caution:** Patients with airway compromise Altered level of consciousness |
### Medication Formulary

**Glyceryl Trinitrate (GTN)**

<table>
<thead>
<tr>
<th>Class</th>
<th>Nitrate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</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 0.4 mg (400 mcg)</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Sublingual (SL): Hold the pump spray vertically with the valve head uppermost. Place as close to the mouth as possible and spray under the tongue. The mouth should be closed after each dose. (CPG: 5/6.3.5, 4.4.10, 5/6.4.10)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Angina, Suspected Myocardial Infarction (MI), EFRs may assist with administration, Advanced Paramedic and Paramedic – Pulmonary oedema</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>SBP &lt; 90 mmHg, Viagra or other phosphodiesterase type 5 inhibitors (Sildenafil, Tadalafil and Vardenafil) used within previous 24 hours, Known severe adverse reaction</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> Angina or MI: 0.4 mg (400 mcg) Sublingual. Repeat at 3-5 min intervals, Max: 1.2 mg (EFRs 0.4 mg sublingual max assist patient). Pulmonary oedema: 0.8 mg (800 mcg) sublingual. Repeat x 1. <strong>Paediatric:</strong> Not indicated</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Vasodilator. Releases nitric oxide which acts as a vasodilator. Dilates coronary arteries particularly if in spasm increasing blood flow to myocardium. Dilates systemic veins reducing venous return to the heart (pre load) and thus reduces the heart’s workload. Reduces BP</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Headache, Transient Hypotension, Flushing, Dizziness</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>If the pump is new or has not been used for a week or more, the first spray should be released into the air.</td>
</tr>
<tr>
<td>Medication</td>
<td>Hartmann’s Solution</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Class</td>
<td>Isotonic crystalloid solution</td>
</tr>
<tr>
<td>Description</td>
<td>Hartmann’s solution is an isotonic crystalloid solution containing Sodium chloride 0.6%, Sodium lactate 0.25%, Potassium chloride 0.04%, Calcium chloride 0.027%</td>
</tr>
<tr>
<td>Presentation</td>
<td>Soft pack for infusion 500 mL &amp; 1000 mL</td>
</tr>
</tbody>
</table>
| Administration| Intravenous (IV) infusion  
Intraosseous (IO) infusion  
**Paramedic:** maintain infusion once commenced |
| Indications | When NaCl is unavailable it may be substituted with Hartmann’s Solution IV/IO, except for crush injuries, burns, renal failure and hyperglycaemia. |
| Contraindications | Known severe adverse reaction |
| Usual Dosages | **Adult:** See NaCl  
**Paediatric:** See NaCl |
| Pharmacology/Action | Increases extracellular volume |
| Side effects | If administered in large amounts may cause oedema |
| Additional information | Observe caution with patients with history of heart failure  
Also called: Sodium Lactate Intravenous Solution or Compound Ringer Lactate Solution for Injection  
Warm fluids prior to administration if possible |
### Medication Formulary

**APPENDIX 1**

**MEDICATION FORMULARY**

**CLINICAL LEVEL:**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Hydrocortisone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Corticosteroid and anti-inflammatory</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Hydrocortisone is a potent corticosteroid with anti-inflammatory properties</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Powder and solvent for solution for injection or infusion. Vial containing off-white powder and vial containing water for injections. Prepare the solution aseptically by adding not more than 2 mL of Sterile Water for Injections to the contents of one 100 mg vial, shake and withdraw for use.</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV) infusion Intramuscular (IM) The preferred route for initial emergency use is intravenous (CPG: 4/5/6.3.3, 4/5/6.3.4, 5/6.4.13, 5/6.4.15, 4/5/6.7.12, 5/6.7.30, 5/6.7.31)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Severe or recurrent anaphylactic reactions Asthma refractory to Salbutamol and Ipratropium Bromide Exacerbation of COPD (Advanced Paramedic) Adrenal insufficiency (Paramedic)</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>No major contraindications in acute management of anaphylaxis</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> Anaphylactic reaction and Exacerbation of COPD (AP): 200 mg IV (infusion in 100 mL NaCl) or IM Asthma (AP): 100 mg IV (infusion in 100 mL NaCl) Adrenal insufficiency (P &amp; AP): 100 mg IV (infusion in 100 mL NaCl) or IM <strong>Paediatric:</strong> Anaphylactic reaction (AP): &lt; 1 year 25 mg IV (infusion in 100 mL NaCl) or IM 1 to 5 years 50 mg IV (infusion in 100 mL NaCl) or IM &gt; 5 years 100 mg IV (infusion in 100 mL NaCl) or IM Asthma (AP): &lt; 1 year 25 mg IV (infusion in 100 mL NaCl) 1 to 5 years 50 mg IV (infusion in 100 mL NaCl) &gt; 5 years 100 mg IV (infusion in 100 mL NaCl) Adrenal insufficiency (P &amp; AP): 6 mths to ≤ 5 years: 50 mg IV (AP) (infusion in 100 mL NaCl) or IM (P) &gt; 5 years: 100 mg IV (AP) (infusion in 100 mL NaCl) or IM (P)</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Potent anti-inflammatory properties and inhibits many substances that cause inflammation</td>
</tr>
</tbody>
</table>
## Clinical Practice Guidelines

### APPENDIX 1

### MEDICATION FORMULARY

**CLINICAL LEVEL:** P AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Hydrocortisone (contd.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Side effects</strong></td>
<td>CCF, hypertension, abdominal distension, vertigo, headache, nausea, malaise and hiccups.</td>
</tr>
<tr>
<td><strong>Long-term side effect</strong></td>
<td>Adrenal cortical atrophy develops during prolonged therapy and may persist for months after stopping treatment</td>
</tr>
</tbody>
</table>
| **Additional information** | Intramuscular injection should avoid the deltoid area because of the possibility of tissue atrophy  
Dosage should not be less than 25 mg  
IV is the preferred route for adrenal crisis |
<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>Description</strong></td>
<td>It is an anti-inflammatory analgesic</td>
</tr>
</tbody>
</table>
| **Presentation** | Suspension 100 mg in 5 mL  
200 mg tablet, 400 mg tablet |
| **Administration** | Orally (PO)  
(CPG: 4/5/6.2.6, 4/5/6.7.5) |
| **Indications** | Mild to moderate pain |
| **Contraindications** | Not suitable for children under 3 months  
Patient with history of asthma exacerbated by aspirin  
Pregnancy  
Peptic ulcer disease  
Known severe adverse reaction |
| **Usual Dosages** | **Adult:** 400 mg PO  
**Paediatric:** 10 mg/Kg PO |
| **Pharmacology/Action** | Suppresses prostaglandins, which cause pain via the inhibition of cyclooxygenase (COX).  
Prostaglandins are released by cell damage and inflammation. |
| **Side effects** | Skin rashes, gastrointestinal intolerance and bleeding |
| **Long-term side effects** | Occasionally gastrointestinal bleeding and ulceration occurs. May also cause acute renal failure, interstitial nephritis and NSAID-associated nephropathy. |
| **Additional information** | If Ibuprofen administered in previous 6 hours, adjust the dose downward by the amount given by other sources resulting in a maximum of 10 mg/Kg.  
Caution with significant burns or poor perfusion due to risk of kidney failure  
Caution if concurrent NSAIDs use |
<table>
<thead>
<tr>
<th>Medication</th>
<th>Ipratropium Bromide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Anticholinergic</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>It is a parasympatholytic bronchodilator that is chemically related to Atropine</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Nebuliser Solution 0.25 mg (250 micrograms) in 1 mL</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Nebulised (NEB) mixed with age-specific dose of Salbutamol (CPG: 4/5/6.3.3, 4/5/6.3.4, 4/5/6.7.12)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Acute moderate asthma or exacerbation of COPD not responding to initial Salbutamol dose</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Known severe adverse reaction</td>
</tr>
</tbody>
</table>
| **Usual Dosages** | **Adult:** 0.5 mg NEB  
**Paediatric:** < 12 years: 0.25 mg NEB  
≥ 12 years: 0.5 mg NEB |
| **Pharmacology/Action** | It blocks muscarinic receptors associated with parasympathetic stimulation of the bronchial air passageways. This results in bronchial dilation and reduced bronchial secretions. |
| **Side effects** | Transient dry mouth, blurred vision, tachycardia and headache. |
# APPENDIX 1
## MEDICATION FORMULARY

**CLINICAL LEVEL:** AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Lidocaine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Antiarrhythmic</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Ventricular antiarrhythmic agent</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Lidocaine Injection Mini jet 1% w/v 100 mg per 10 mL</td>
</tr>
</tbody>
</table>
| **Administration** | Intravenous (IV)  
Intraosseous (IO)  
(CPG: 4/5/6.4.3) |
| **Indications** | When Amiodarone is unavailable it may be substituted with Lidocaine for VF/VT arrests |
| **Contraindications** | No contraindications for cardiac arrest |
| **Usual Dosages** | **Adult:**  
1 – 1.5 mg/Kg IV / IO  
Max: 3 mg/Kg  
**Paediatric:**  Not indicated |
| **Pharmacology/Action** | Reduces automaticity by decreasing the rate of diastolic depolarisation. Stabilises the neuronal membrane and prevents the initiation and transmission of nerve impulses, action is rapid and blockade may last up to 2 hours. |
| **Side effects** | Drowsiness, dizziness, twitching, paraesthesia, convulsions.  
Bradycardia  
Respiratory depression |
| **Additional information** | Lidocaine may not be administered if Amiodarone has been administered |
### Medication Formulary

**Lorazepam**

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

<table>
<thead>
<tr>
<th>Medication</th>
<th>Magnesium Sulphate injection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Electrolyte and Tocolytic agent</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>It is a salt that is an essential element in numerous biochemical reactions that occur within the body</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Ampoule 5 g in 10 mL</td>
</tr>
</tbody>
</table>
| **Administration** | Intravenous (IV)   
                             Intraosseous (IO)   
                             (CPG: 4/5/6.3.4, 4/5/6.4.3, 5/6.4.12, 5/6.4.23) |
| **Indications** | Torsades de pointes  
                             Persistent bronchospasm  
                             Seizure associated with eclampsia |
| **Contraindications** | None in cardiac arrest  
                             Known severe adverse reaction |
| **Usual Dosages** | Adults:  
                             Pulseless torsades de points: 2 g IV/IO  
                             Torsades de pointes: 2 g IV (infusion in 100 mL NaCl)  
                             Persistent bronchospasm: 2 g IV (infusion in 100 mL NaCl)  
                             Seizure: associated with pre-eclampsia: 4 g IV (infusion in 100 mL NaCl) |
|               | Paediatric: Not indicated |
| **Pharmacology/Action** | It acts as a physiological calcium channel blocker and blocks neuromuscular transmission |
| **Side effects** | Decreased deep tendon reflexes, respiratory depression, bradycardia and hypothermia. |
APPENDIX 1
MEDICATION FORMULARY

CLINICAL LEVEL:

<table>
<thead>
<tr>
<th>Medication</th>
<th>Midazolam Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Benzodiazepine</td>
</tr>
<tr>
<td>Description</td>
<td>It is a potent sedative agent. Clinical experience has shown Midazolam to be 3 to 4 times more potent per mg as Diazepam.</td>
</tr>
<tr>
<td>Presentation</td>
<td>Ampoule 10 mg in 2 mL or ampoule 10 mg in 5 mL. Buccal liquid 50 mg in 5 mL. Pre-filled syringe 2.5 mg in 0.5 mL. Pre-filled syringe 5 mg in 1 mL. Pre-filled syringe 7.5 mg in 1.5 mL. Pre-filled syringe 10 mg in 2 mL. Pre-filled syringe 10 mg in 1 mL.</td>
</tr>
<tr>
<td>Indications</td>
<td>Seizures. Combative with hallucinations or paranoia and risk to self or others.</td>
</tr>
<tr>
<td>Contraindications</td>
<td>Shock. Depressed vital signs or alcohol-related altered level of consciousness. Respiratory depression. Known severe adverse reaction.</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td>Adults: Seizure or combative patient. 2.5 mg IV/IO (AP) or 5 mg IM or 10mg buccal or 5 mg intranasal (P &amp; AP) (Repeat x 1 prn) Paramedic: IM, buccal or IN only. Paediatric: Seizure: &lt; 1 year: 2.5 mg buccal 1 year to &lt; 5 years: 5 mg buccal 5 years to &lt; 10 years: 7.5 mg buccal ≥ 10 years: 10 mg buccal or 0.2 mg/Kg intranasal or 0.1 mg/Kg IV/IO (Repeat x 1 prn) Paramedic: buccal or IN only</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>It affects the activity of a chemical that transmits impulses across nerve synapses called Gamma-AminoButyric Acid (GABA). GABA is an inhibitory neurotransmitter. Midazolam works</td>
</tr>
</tbody>
</table>
## Midazolam Solution (contd)

<table>
<thead>
<tr>
<th>Medication</th>
<th>Midazolam Solution (contd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>by increasing the effects of GABA at these receptors.</td>
<td></td>
</tr>
</tbody>
</table>

### Side effects
- Respiratory depression, headache, hypotension & drowsiness

### Additional information
- Midazolam IV should be titrated to effect.
- Ensure oxygen and resuscitation equipment are available prior to administration.
- No more than two doses by practitioners.
- Practitioners should take into account the dose administered by carers prior to arrival of practitioner.
- Contraindications, other that KSAR, refer to non seizing patients.
# Medication Formulary

## Clinical Practice Guidelines

### APPENDIX 1

## MEDICATION FORMULARY

**CLINICAL LEVEL:** AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Morphine Sulphate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Narcotic analgesic</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>CNS depressant and a potent analgesic with haemodynamic properties that make it extremely useful in emergency medicine</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Ampoule 10 mg in 1 mL (dilute in 9 mL of NaCl) Suspensions 10 mg in 5 mL</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV) Intraosseous (IO) Orally (PO) Intramuscular (IM) (CPG: 4/5/6.2.6, 4/5/6.7.5)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td><strong>Adult:</strong> Severe pain (≥ 7 on pain scale) <strong>Paediatric:</strong> Severe pain (≥ 7 on pain scale)</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>PO &lt; 1 year old Known severe adverse reaction Labour pains Acute respiratory depression Acute intoxication Systolic BP &lt; 90 mmHg</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 2 mg IV/IO Repeat at not &lt; 2 minute intervals prn to Max 10 mg For musculoskeletal pain Max 16 mg Up to 10 mg IM (if no cardiac chest pain and no IV access) <strong>Paediatric:</strong> 0.3 mg/Kg (300 mcg/Kg) PO (Max 10 mg) 0.05 mg/Kg (50 mcg/Kg) IV/IO Repeat at not &lt; 2 min prn to Max of 0.1 mg/Kg IV/IO</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Opiate Analgesic Acts on Central Nervous System to reduce pain &amp; anxiety Vasodilatation resulting in reduced pre-load to myocardium</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Respiratory depression Drowsiness Nausea &amp; vomiting Constipation</td>
</tr>
<tr>
<td><strong>Long-term side effects</strong></td>
<td>Long-term use may lead to dependence</td>
</tr>
</tbody>
</table>

October 2014
## Medication Formulary

<table>
<thead>
<tr>
<th>Medication</th>
<th>Morphine Sulphate <em>(contd)</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Additional information</strong></td>
<td>Use with extreme caution particularly with elderly/young</td>
</tr>
<tr>
<td></td>
<td>Caution with acute respiratory distress</td>
</tr>
<tr>
<td></td>
<td>Caution with reduced GCS</td>
</tr>
<tr>
<td></td>
<td>Not recommended for headache</td>
</tr>
<tr>
<td></td>
<td>N.B. Controlled under Misuse of Drugs Act (1977, 1984)</td>
</tr>
</tbody>
</table>
### Medication Naloxone

<table>
<thead>
<tr>
<th>Class</th>
<th>Narcotic antagonist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</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>Intravenous (IV) Intramuscular (IM) Subcutaneous (SC) Intraosseous (IO) Intrasanal (IN) (CPG: 6.4.22, 4/5.4.22, 5/6.5.2, 4/5/6.7.11)</td>
</tr>
<tr>
<td>Indications</td>
<td>Inadequate respiration and/or ALoC following known or suspected narcotic overdose</td>
</tr>
<tr>
<td>Contraindications</td>
<td>Known severe adverse reaction</td>
</tr>
</tbody>
</table>
| Usual Dosages | **Adult:** 0.4 mg (400 mcg) IV/IO (AP) 0.4 mg (400 mcg) IM or SC (P) 0.8 mg (800 mcg) IN (EMT) Repeat after 3 min prn to a Max 2 mg  
**Paediatric:** 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 |
| Pharmacology/Action | **Narcotic antagonist** Reverse the respiratory depression and analgesic effect of narcotics |
| Side effects  | Acute reversal of narcotic effect ranging from nausea & vomiting to agitation and seizures |
| Additional information | 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 |
## Medication Formulary

<table>
<thead>
<tr>
<th>Medication</th>
<th>Nifedipine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Tocolytic agent and calcium channel blocker</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Dihydropyridine calcium channel blocker</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>20 mg tablet</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Orally (PO) (CPG: 5/6.5.5)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Prolapsed cord</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Hypotension Known severe adverse reaction</td>
</tr>
</tbody>
</table>
| **Usual Dosages** | Adults: 20 mg PO  
Paediatric: Not indicated |
| **Pharmacology/Action** | Inhibits muscle contraction by interfering with the movement of calcium ions through the slow channels of active cell membrane |
| **Side effects** | Hypotension  
Headache  
Bradycardia  
Nausea & vomiting |
| **Additional information** | Close monitoring of maternal pulse & BP is required and continuous foetal monitoring should be carried out if possible |
### Medication Formulary

**Medication**: Nitrous Oxide 50% and Oxygen 50% (Entonox®)

<table>
<thead>
<tr>
<th>Class</th>
<th>Analgesic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Potent analgesic gas contains a mixture of both nitrous oxide and oxygen</td>
</tr>
<tr>
<td>Presentation</td>
<td>Cylinder, coloured blue with white and blue triangles on cylinder shoulders Medical gas: 50% Nitrous Oxide &amp; 50% Oxygen</td>
</tr>
<tr>
<td>Administration</td>
<td>Self administered Inhalation by demand valve with face-mask or mouthpiece (CPG: 4/5/6.2.6, 5/6.5.1, 4.5.1, 5/6.5.6, 4/5/6.7.5)</td>
</tr>
<tr>
<td>Indications</td>
<td>Pain relief</td>
</tr>
<tr>
<td>Contraindications</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>
<tr>
<td>Usual Dosages</td>
<td>Adult: Self-administered until pain relieved Paediatric: Self-administered until pain relieved</td>
</tr>
<tr>
<td>Pharmacology/Action</td>
<td>Analgesic agent gas: - CNS depressant - Pain relief</td>
</tr>
<tr>
<td>Side effects</td>
<td>Disinhibition Decreased level of consciousness Lightheadedness</td>
</tr>
<tr>
<td>Additional information</td>
<td>Do not use if patient unable to understand instructions In cold temperatures warm cylinder and invert to ensure mix of gases Advanced Paramedics may use discretion with minor chest injuries Brand name: Entonox® Has an addictive property Caution when using Entonox for greater than one hour for Sickle Cell Crisis</td>
</tr>
</tbody>
</table>
Clinical Practice Guidelines
ADVANCED PARAMEDIC

APPENDIX 1
MEDICATION FORMULARY

CLINICAL LEVEL: AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Ondansetron</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Antiemetic</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Used in management of nausea &amp; vomiting</td>
</tr>
<tr>
<td></td>
<td>Potent, highly selective 5 HT3 receptor-antagonist</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Ampoule 2 mL (4 mg in 2 mL)</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV)</td>
</tr>
<tr>
<td></td>
<td>(CPG: 6.4.26, 4/5/6.2.6, 4/5/6.7.5)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Management, prevention and treatment of nausea &amp; vomiting.</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Known severe adverse reaction</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 4 mg slow IV</td>
</tr>
<tr>
<td></td>
<td><strong>Paediatric:</strong> 0.1 mg/Kg IV slowly to a Max of 4 mg</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Precise mode of action in the control of nausea &amp; vomiting is not known</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Headache</td>
</tr>
<tr>
<td></td>
<td>Sensation of warmth</td>
</tr>
<tr>
<td></td>
<td>Flushing</td>
</tr>
<tr>
<td></td>
<td>Hiccups</td>
</tr>
</tbody>
</table>
APPENDIX 1
MEDICATION FORMULARY

CLINICAL LEVEL:

<table>
<thead>
<tr>
<th>Medication</th>
<th>Oxygen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Gas</td>
</tr>
<tr>
<td>Description</td>
<td>Odourless, tasteless, colourless gas necessary for life.</td>
</tr>
</tbody>
</table>
| Presentation| D, E or F cylinders, coloured black with white shoulders  
CD cylinder; white cylinder  
Medical gas |
| Administration| Inhalation via:  
High concentration reservoir (non-rebreather) mask  
Simple face mask  
Venturi mask  
Tracheostomy mask  
Nasal cannulae  
Bag Valve Mask  
(CPG: Oxygen is used extensively throughout the CPGs) |
| Indications| Absent/inadequate ventilation following an acute medical or traumatic event  
SpO₂ < 94% adults and < 96% paediatrics  
SpO₂ < 92% for patients with acute exacerbation of COPD |
| Contraindications| 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%  
All other acute medical and trauma titrate O₂ to achieve SpO₂ of 96% - 98% |
| Pharmacology/Action| Oxygenation of tissue/organs |
| Side effects| Prolonged use of O₂ with chronic COPD patients may lead to reduction in ventilation stimulus |
| Additional information| A written record must be made of what oxygen therapy is given to every patient.  
Documentation recording oximetry measurements should state whether the patient is breathing air or a specified dose of supplemental oxygen.  
Consider humidifier if oxygen therapy for paediatric patients is > 30 minute duration.  
Caution with paraquat poisoning, administer oxygen if SpO₂ < 92%.  
Avoid naked flames, powerful oxidising agent. |
APPENDIX 1

MEDICATION FORMULARY

CLINICAL LEVEL: EMT P AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Paracetamol</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Analgesic and antipyretic</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Paracetamol is used to reduce pain and body temperature</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Rectal suppository 180 mg, 90 mg and 60 mg Suspension 120 mg in 5 mL or 250 mg in 5 mL 500 mg tablet</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Per Rectum (PR) Orally (PO) (CPG: 4/5/6.2.6, 4/5/6.4.24, 4/5/6.7.5, 4/5/6.7.35)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Pyrexia Minor or moderate pain (1 - 6 on pain scale) for adult and paediatric patients</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Known severe adverse reaction Chronic liver disease &lt; 1 month old</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td><strong>Adult:</strong> 1 g PO <strong>Paediatric:</strong> PR (AP) &gt; 1 mth &lt; 1 year – 90 mg PR 1-3 years – 180 mg PR, 4-8 years – 360 mg PR PO (AP, P et EMT) 20 mg/Kg PO</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>Analgesic – central prostaglandin inhibitor Antipyretic – prevents the hypothalamus from synthesising prostaglandin E, inhibiting the body temperature from rising further.</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Long-term side effects</strong></td>
<td>Long-term use at high dosage or over dosage can cause liver damage and less frequently renal damage</td>
</tr>
<tr>
<td><strong>Additional information</strong></td>
<td>Note: Paracetamol is contained in Paracetamol Suspension and other over-the-counter drugs. Consult with parent/guardian in relation to medication prior to arrival on scene. For PR use be aware of modesty of patient, should be administered in presence of a 2nd person. If Paracetamol administered in previous 4 hours, adjust the dose downward by the amount given by other sources resulting in a maximum of 20 mg/Kg.</td>
</tr>
</tbody>
</table>
## Medication Formulary

### Clinical Practice Guidelines

**APPENDIX 1**

**MEDICATION FORMULARY**

**CLASSICAL LEVEL:**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Salbutamol</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Sympathetic agonist</td>
</tr>
<tr>
<td><strong>Description</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** | Nebuliser (NEB)  
Inhalation via aerosol inhaler  
(CPG: 4/5/6.3.3, 4/5/6.3.4, 3.3.4, 5/6.4.15, 4.4.15, 2/3.4.16, 4/5/6.6.10, 4/5/6.7.12, 3.7.12, 5/6.7.31, 4.7.31, 2/3.7.31) |
| **Indications** | Bronchospasm  
Exacerbation of COPD  
Respiratory distress following submersion incident |
| **Contraindications** | Known severe adverse reaction |
| **Usual Dosages** | **Adult:**  
5 mg NEB (or 0.1 mg metered aerosol spray x 5)  
Repeat at 5 min prn  
(EFRs: 0.1 mg metered aerosol spray x 5, assist patient)  
**Paediatric:**  
< 5 yrs - 2.5 mg NEB (or 0.1 mg metered aerosol spray x 3)  
≥ 5 yrs - 5 mg NEB (or 0.1 mg metered aerosol spray x 5)  
Repeat at 5 min prn  
(EFRs: 0.1 mg metered aerosol spray x 2, assist patient) |
| **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 volumizer in conjunction with an aerosol inhaler when administering Salbutamol.  
If an oxygen driven nebuliser is used to administer Salbutamol for a patient with acute exacerbation of COPD it should be limited to 6 minutes maximum. |
**APPENDIX 1**

**MEDICATION FORMULARY**

**CLINICAL LEVEL:** AP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Sodium Bicarbonate injection BP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Alkalinising agent</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>A salt that is an alkalinizing agent and electrolyte supplement</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Glass vial 8.4% in 100 mL</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV), Intraosseous (IO) (CPG: 4/5/6.4.3, 5/6.4.4, 4/5/6.4.6, 6.4.22, 4/5/6.6.4)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Wide complex QRS arrhythmias and/or seizures following Tricyclic antidepressant (TCA) overdose Cardiac arrest following Tricyclic overdose Cardiac arrest following harness induced suspension trauma</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Known severe adverse reaction</td>
</tr>
<tr>
<td><strong>Usual Dosages</strong></td>
<td>Adult: 1 mEq/Kg (1mL/Kg 8.4% solution), Max 50 mEq (50 mL 8.4%)</td>
</tr>
<tr>
<td><strong>Paediatric:</strong></td>
<td>Not indicated</td>
</tr>
<tr>
<td><strong>Pharmacology/Action</strong></td>
<td>TCA excretion from the body is enhanced by making the urine more alkaline (raising the pH)</td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td>Nil when used for emergencies</td>
</tr>
</tbody>
</table>
# Sodium Chloride 0.9% (NaCl)

<table>
<thead>
<tr>
<th>Class</th>
<th>Isotonic crystalloid solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Solution of sodium and chloride, also known as normal saline (NaCl)</td>
</tr>
<tr>
<td>Presentation</td>
<td>Soft pack for infusion 100 mL, 500 mL &amp; 1,000 mL Ampoules 10 mL</td>
</tr>
<tr>
<td>Administration</td>
<td>Intravenous (IV) infusion, Intravenous (IV) flush, Intraosseous (IO)</td>
</tr>
<tr>
<td></td>
<td><strong>Paramedic:</strong> maintain infusion once commenced</td>
</tr>
<tr>
<td></td>
<td>(CPG: Sodium Chloride 0.9% is used extensively throughout the CPGs)</td>
</tr>
<tr>
<td>Indications</td>
<td>IV/IO fluid for pre-hospital emergency care</td>
</tr>
<tr>
<td>Contraindications</td>
<td>Known severe adverse reaction</td>
</tr>
<tr>
<td>Usual Dosages</td>
<td><strong>ADULT</strong></td>
</tr>
<tr>
<td></td>
<td>Keep vein open (KVO) or medication flush for cardiac arrest prn</td>
</tr>
<tr>
<td></td>
<td><strong>Crush injury, Suspension Trauma, PEA or Asystole:</strong> 20 mL/Kg IV/IO infusion</td>
</tr>
<tr>
<td></td>
<td><strong>Hypothermia:</strong> 250 mL IV/IO infusion (warmed to 40°C approx) Repeat to max 1 L</td>
</tr>
<tr>
<td></td>
<td><strong># neck of femur, sepsis, symptomatic bradycardia:</strong> 250 mL IV infusion</td>
</tr>
<tr>
<td></td>
<td><strong>Decompression illness, sepsis with poor perfusion:</strong> 500 mL IV/IO infusion</td>
</tr>
<tr>
<td></td>
<td><strong>Shock from blood loss:</strong> 500 mL IV/IO infusion. Repeat in aliquots of 250 mL prn to maintain systolic BP of; 90 – 100 mmHg 120 mmHg (head injury GCS ≤ 8)</td>
</tr>
<tr>
<td></td>
<td><strong>Burns:</strong> &gt; 25% TBSA and/or 1 hour from time of injury to ED, 1000 mL IV/IO infusion &gt; 10% TBSA consider 500 mL IV/IO infusion</td>
</tr>
<tr>
<td></td>
<td><strong>Adrenal insufficiency, Glycaemic emergency, Heat-related Emergency, Sickle Cell Crisis:</strong> 1,000 mL IV/IO infusion</td>
</tr>
<tr>
<td></td>
<td><strong>Anaphylaxis:</strong> 1,000 mL IV/IO infusion, repeat x one prn</td>
</tr>
<tr>
<td></td>
<td><strong>Post-resuscitation care:</strong> 1,000 mL IV/IO infusion (at 4°C approx). If persistent hypotension maintain Sys BP &gt; 90 mmHg</td>
</tr>
</tbody>
</table>
### Medication Formulary: Sodium Chloride 0.9% (NaCl) (contd)

<table>
<thead>
<tr>
<th>Usual Dosages</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PAEDIATRIC</strong></td>
<td>Keep vein open (KVO) or medication flush for cardiac arrest prn</td>
</tr>
<tr>
<td>Glycaemic emergency, Neonatal resuscitation, Sickle Cell Crisis:</td>
<td>10 mL/Kg IV/IO infusion</td>
</tr>
<tr>
<td>Hypothermia:</td>
<td>10 mL/Kg IV/IO infusion (warmed to 40°C approx). Repeat prn x 1</td>
</tr>
<tr>
<td>Haemorrhagic shock;</td>
<td>10 mL/Kg IV/IO, repeat prn if signs of inadequate perfusion</td>
</tr>
<tr>
<td>Anaphylaxis;</td>
<td>20 mL/Kg IV/IO infusion, repeat x one prn</td>
</tr>
<tr>
<td>Adrenal insufficiency, Crush injury, Septic shock, Suspension Trauma, Symptomatic Bradycardia, Asystole/PEA:</td>
<td>20 mL/Kg IV/IO infusion</td>
</tr>
<tr>
<td>Post-resuscitation care:</td>
<td>20 mL/Kg IV/IO infusion if persistent poor perfusion</td>
</tr>
<tr>
<td>Burns:</td>
<td>&gt; 10% TBSA and/or &gt; 1 hour from time of injury to ED:</td>
</tr>
<tr>
<td></td>
<td>5 – 10 years: 250 mL IV/IO</td>
</tr>
<tr>
<td></td>
<td>&gt; 10 years: 500 mL IV/IO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pharmacology/Action</th>
<th>Isotonic crystalloid solution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fluid replacement</td>
</tr>
</tbody>
</table>

| Side effects | Excessive volume replacement may lead to heart failure |

<table>
<thead>
<tr>
<th>Additional information</th>
<th>NaCl is the IV/IO fluid of choice for pre-hospital emergency care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For KVO use 500 mL pack only</td>
</tr>
<tr>
<td>Medication</td>
<td>Syntometrine</td>
</tr>
<tr>
<td>------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Class</td>
<td>Synthetic hormone</td>
</tr>
<tr>
<td>Description</td>
<td>Ergometrine maleate 0.5 mg and synthetic oxytocin 5 units per mL</td>
</tr>
<tr>
<td>Presentation</td>
<td>Ampoule 1 mL</td>
</tr>
<tr>
<td>Administration</td>
<td>Intramuscular (IM) (CPG: 5/6.5.4)</td>
</tr>
<tr>
<td>Indications</td>
<td>Control of post-partum haemorrhage</td>
</tr>
<tr>
<td>Contraindications</td>
<td>Severe kidney, liver or cardiac dysfunction. Sepsis Known severe adverse reaction</td>
</tr>
</tbody>
</table>
| Usual Dosages | **Adult:** 1 mL IM  
**Paediatric:** Not indicated |
| Pharmacology/Action | Causes rhythmic contraction of uterine smooth muscle, thereby constricting uterine blood vessels. |
| Side effects | Nausea & vomiting  
Abdominal pain  
Headache  
Dizziness  
Cardiac arrhythmias |
| Additional information | Ensure that a second foetus is not in the uterus prior to administration |
# APPENDIX 1
## MEDICATION FORMULARY

**CLINICAL LEVEL:** MP

<table>
<thead>
<tr>
<th>Medication</th>
<th>Tenecteplase Powder for injection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Thrombolytic agent</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>A recombinant fibrin-specific plasminogen activator</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>Powder and solvent for solution</td>
</tr>
<tr>
<td></td>
<td>1 vial contains 10,000 units (50 mg) tenecteplase</td>
</tr>
<tr>
<td></td>
<td>1 pre-filled syringe contains 10 mL water for injections</td>
</tr>
<tr>
<td></td>
<td>The reconstituted solution contains 1,000 units (5 mg) tenecteplase per mL</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Intravenous (IV)</td>
</tr>
<tr>
<td></td>
<td>(CPG: 5/6.4.10)</td>
</tr>
<tr>
<td><strong>Indications</strong></td>
<td>Patient conscious, coherent and understands therapy</td>
</tr>
<tr>
<td></td>
<td>Patient consent obtained</td>
</tr>
<tr>
<td></td>
<td>Confirmed STEMI</td>
</tr>
<tr>
<td></td>
<td>Patient not suitable for PPCI from a time or clinical perspective</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Haemorrhagic stroke or stroke of unknown origin at any time</td>
</tr>
<tr>
<td></td>
<td>Ischaemic stroke in previous 6 months</td>
</tr>
<tr>
<td></td>
<td>Central nervous system damage or neoplasms</td>
</tr>
<tr>
<td></td>
<td>Recent major trauma/ surgery/ head injury (within 3 weeks)</td>
</tr>
<tr>
<td></td>
<td>Gastro-intestinal bleeding within the last month</td>
</tr>
<tr>
<td></td>
<td>Active peptic ulcer</td>
</tr>
<tr>
<td></td>
<td>Known bleeding disorder</td>
</tr>
<tr>
<td></td>
<td>Oral anticoagulant therapy</td>
</tr>
<tr>
<td></td>
<td>Aortic dissection</td>
</tr>
<tr>
<td></td>
<td>Transient ischaemic attack in preceding 6 months</td>
</tr>
<tr>
<td></td>
<td>Pregnancy and within one week post-partum</td>
</tr>
<tr>
<td></td>
<td>Non-compressible punctures</td>
</tr>
<tr>
<td></td>
<td>Traumatic resuscitation</td>
</tr>
<tr>
<td></td>
<td>Refractory hypertension (Sys BP &gt; 180 mmHg)</td>
</tr>
<tr>
<td></td>
<td>Advanced liver disease</td>
</tr>
<tr>
<td></td>
<td>Infective endocarditis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Usual Dosages</strong></th>
<th><strong>Kg</strong></th>
<th><strong>Units</strong></th>
<th><strong>mg</strong></th>
<th><strong>mL</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 60</td>
<td>6,000</td>
<td>30</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>≥ 60 &lt; 70</td>
<td>7,000</td>
<td>35</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>≥ 70 &lt; 80</td>
<td>8,000</td>
<td>40</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>≥ 80 &lt; 90</td>
<td>9,000</td>
<td>45</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>≥ 90</td>
<td>10,000</td>
<td>50</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

**Paediatric:** Not indicated

**Pharmacology/Action**

Tenecteplase is a recombinant fibrin-specific plasminogen activator that is derived from native t-PA by modifications at three sites of the protein structure. It binds to the fibrin
<table>
<thead>
<tr>
<th>Medication</th>
<th>Tenecteplase Powder for injection (Contd)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>component of the thrombus (blood clot) and selectively converts thrombus-bound plasminogen to plasmin, which degrades the fibrin matrix of the thrombus.</td>
</tr>
</tbody>
</table>
| Side effects | Haemorrhage predominantly superficial at the injection site  
Ecchymoses are observed commonly but usually do not require any specific action  
Stroke (including intracranial bleeding) and other serious bleeding episodes |
| Additional information | Enoxaparin should be used as antithrombotic adjunctive therapy |
### Medication Formulary

<table>
<thead>
<tr>
<th>Medication</th>
<th>Ticagrelor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
<td>Platelet aggregation inhibitor</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>An inhibitor of platelet function</td>
</tr>
<tr>
<td><strong>Presentation</strong></td>
<td>90 mg tablets</td>
</tr>
</tbody>
</table>
| **Administration** | Orally (PO)  
(CPG: 5/6.4.10) |
| **Indications** | Identification of ST Elevation Myocardial Infarction (STEMI) if transporting to PPCI centre |
| **Contraindications** | Hypersensitivity to the active substance (Ticagrelor) or to any of the excipients  
Active pathological bleeding  
History of intracranial haemorrhage  
Moderate to severe hepatic impairment |
| **Usual Dosages** | **Adult:** Loading dose 180 mg PO  
**Paediatric:** Not indicated |
| **Pharmacology/Action** | Ticagrelor is a selective adenosine diphosphate (ADP) receptor antagonist acting on the P2Y12 ADP-receptor that can prevent ADP-mediated platelet activation and aggregation. Ticagrelor is orally active, and reversibly interacts with the platelet P2Y12 ADP-receptor. Ticagrelor does not interact with the ADP binding site itself, but interacts with platelet P2Y12 ADP-receptor to prevent signal transduction. |
| **Side effects** | Common: Dyspnoea, epistaxis, gastrointestinal haemorrhage, subcutaneous or dermal bleeding, bruising and procedural site haemorrhage.  
Other undesirable effects include intracranial bleeding, elevations of serum creatinine and uric acid levels. Consult SmPC for a full list of undesirable effects. |
| **Additional information** | **Special authorisation:**  
Advanced paramedics and paramedics are authorised to administer Ticagrelor 180 mg PO following identification of STEMI and medical practitioner instruction.  
If a patient has been loaded with an anti-platelet medication (other than aspirin), prior to the arrival of the practitioner, the patient should not have Ticagrelor administered. |
# APPENDIX 1

## MEDICATION FORMULARY

**CLINICAL LEVEL:** AP

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<tr>
<th>Medication</th>
<th>Tranexamic Acid</th>
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<tr>
<td>Class</td>
<td>Anti-fibrinolytic</td>
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<tr>
<td>Description</td>
<td>An anti-fibrinolytic which reduces the breakdown of blood clots</td>
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<tr>
<td>Presentation</td>
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<tr>
<td>Administration</td>
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<tr>
<td>Indications</td>
<td>Suspected significant internal or external haemorrhage associated with trauma</td>
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<tr>
<td>Contraindications</td>
<td>Hypersensitivity to the active substance or to any of the excipients, Acute venous or arterial thrombosis, History of convulsions, Severe hepatic impairment</td>
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</table>
| Usual Dosages| **Adult:** 1 g IV/IO (infusion in 100 mL NaCl)  
**Paediatric:** Not indicated |
| Pharmacology/Action| Tranexamic acid exerts an anti-haemorrhagic activity by inhibiting the activation of plasminogen to plasmin, by binding to specific sites of both plasminogen and plasmin, a molecule responsible for the degradation of fibrin, a protein that forms the framework of blood clots. |
| Side effects| Common: Diarrhoea, vomiting, nausea.  
Other undesirable effects include visual disturbance, impaired coloured vision, dizziness and headache. |
| Additional information| Caution with head injury |
### APPENDIX 2
### MEDICATIONS & SKILLS MATRIX

**NEW FOR 2014**

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<tr>
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CARE MANAGEMENT INCLUDING THE ADMINISTRATION OF MEDICATIONS AS PER LEVEL OF TRAINING AND DIVISION ON THE PHECC REGISTER AND RESPONDER LEVELS.

Pre-Hospital responders and practitioners shall only provide care management including medication administration for which they have received specific training. Practitioners must be privileged by a licensed CPG provider to administer specific medications and perform specific clinical interventions.

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### APPENDIX 2

#### MEDICATIONS & SKILLS MATRIX

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### APPENDIX 2

**MEDICATIONS & SKILLS MATRIX**

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## APPENDIX 2
### MEDICATIONS & SKILLS MATRIX

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## APPENDIX 2
### MEDICATIONS & SKILLS MATRIX

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#### TRAUMA

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## APPENDIX 2
### MEDICATIONS & SKILLS MATRIX

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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>
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<tr>
<td>Capillary refill</td>
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<td>✓</td>
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<td>Breathing &amp; pulse rate</td>
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</tbody>
</table>
# APPENDIX 2

## MEDICATIONS & SKILLS MATRIX

### PATIENT ASSESSMENT (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>
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<tbody>
<tr>
<td>Primary survey</td>
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<td></td>
<td></td>
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<td>SAMPLE history</td>
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<td>Secondary survey</td>
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<td>CSM assessment</td>
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<td>Rule of Nines</td>
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<td>Assess pupils</td>
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<td>Paediatric Assessment Triangle</td>
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<td>Pain assessment</td>
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<td>Patient Clinical Status</td>
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<td>Pre-hospital Early Warning Score</td>
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<td>✓</td>
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<td>✓</td>
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<tr>
<td>Pulse check (cardiac arrest)</td>
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<td>✓</td>
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<td>✓</td>
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<td>Triage sieve</td>
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<tr>
<td>Chest auscultation</td>
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<td>✓</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Treat and referral</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Triage sort</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
</tbody>
</table>
APPENDIX 3

CRITICAL INCIDENT STRESS MANAGEMENT

Your Psychological Well-Being

As a Practitioner it is extremely important for your psychological well-being that you do not expect to save every critically ill or injured patient that you treat. For a patient who is not in hospital, whether they survive a cardiac arrest or multiple trauma depends on a number of factors including any other medical condition the patient has. Your aim should be to perform your interventions well and to administer the appropriate medications within your scope of practice. However sometimes you may encounter a situation which is highly stressful for you, giving rise to Critical Incident Stress (CIS). A critical incident is an incident or event which may overwhelm or threaten to overwhelm our normal coping responses. As a result of this we can experience CIS.

SYMPTOMS OF CIS INCLUDE SOME OR ALL OF THE FOLLOWING:

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

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

Post-Traumatic Stress Reactions

Normally the symptoms of Critical Incident Stress subside within a few weeks or less. Sometimes however, they may persist and develop into a post-traumatic stress reaction and you may also experience emotional reactions.

Anger at the injustice and senselessness of it all.

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

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

Fear of ‘breaking down’ or ‘losing control’, not having done all you could have done, being blamed for something or a similar event happening to you or your loved ones.
**APPENDIX 3**

**CRITICAL INCIDENT STRESS MANAGEMENT**

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

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

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

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

**EXPERIENCING SIGNS OF EXCESSIVE STRESS**

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

---

**Where to find help?**

Your own CPG approved organisation 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/ CISM Network published a booklet called 'Critical Incident Stress Management for Emergency Personnel'. It can be purchased by emailing info@cismnetworkireland.ie
- The NAS CISM committee in partnership with PHECC developed an eLearning CISM Stress Awareness Training (SAT) module. It can be accessed by all PHECC registered practitioners using their PHECC eLearning username and password. In due course PHECC will launch a CISM SAT module for non-PHECC registered personnel.
- See a health professional who specialises in traumatic stress.
**APPENDIX 4**

**CPG UPDATES FOR ADVANCED PARAMEDICS**

**CPG updates 2014**

For administrative purposes the numbering system on some CPGs has been changed.

The paediatric age range has been extended to reflect the new national paediatric age (≤ 15 years), as outlined by the National Clinical Programme for Paediatrics and Neonatology.

CPGs that have content changes are outlined below.

**Updated CPGs from the 2012 version.**

<table>
<thead>
<tr>
<th>CPGs</th>
<th>The principal differences are</th>
<th>Theory</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPG 4/5/6.2.1 Primary Survey Medical – Adult</td>
<td>EMTs, who have completed the BTEC course, may be privileged by a licensed CPG provider to insert an NPA following appropriate training.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 4/5/6.2.2 Primary Survey Trauma – Adult</td>
<td>EMTs, who have completed the BTEC course, may be privileged by a licensed CPG provider to insert an NPA following appropriate training.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 5/6.2.5 Secondary Survey Trauma – Adult</td>
<td>ECG &amp; SpO₂ monitoring inserted on multi-system trauma arm. Add ‘consider repeat primary survey’.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 4/5/6.2.6 Pain Management – Adult</td>
<td>Delete ‘Minor pain (2 to 3 on pain scale)’ replace with ‘Mild pain (1 to 3 on pain scale)’ Change Moderate pain to ‘4 to 6 on the pain scale’ Change Severe pain to ‘≥ 7 on the pain scale’ Add Fentanyl IN for advanced paramedic practice Add Ibuprofen PO for EMT practice</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CPG 5/6.3.1 Advanced Airway Management – Adult</td>
<td>The age range from 8 years has been replaced by standard adult range. It is now explicit that following two unsuccessful attempts at intubation an AP may attempt insertion of a supraglottic airway.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 4/5/6.3.2 Inadequate Ventilations – Adult</td>
<td>This CPG replaces Inadequate Respirations – Adult (5/6.3.2 and 4.3.2) incorporating all three practitioner levels in one CPG. This CPG outlines generic care for all patients with inadequate ventilation and then offers pathways for specific clinical issues.</td>
<td>✓</td>
<td>x</td>
</tr>
</tbody>
</table>
## APPENDIX 4

### CPG UPDATES FOR ADVANCED PARAMEDICS

<table>
<thead>
<tr>
<th>CPGs</th>
<th>The principal differences are</th>
<th>Theory</th>
<th>Skills</th>
</tr>
</thead>
</table>
| CPG 4/5/6.3.3 Exacerbation of COPD | This CPG incorporates all three practitioner levels in one CPG replacing 4.3.3 at EMT level.  
Peak expiratory flow measurement is now within the scope of practice for paramedics.  
Salbutamol Neb is now within the scope of practice for EMTs.  
Ipratropium Bromide Neb is now within the scope of practice for paramedics. | ✓ | x |
| CPG 6.4.2 Foreign Body Airway Obstruction – Adult | Consider waveform capnography has been added following attempted intubation. | ✓ | ✓ |
| CPG 5/6.4.10 Acute Coronary Syndrome | Thrombolysis has been removed from the scope of practice for advanced paramedics.  
Ticagrelor is now within the scope of practice for paramedics and advanced paramedics.  
The dose for Clopidogrel has been reduced from 600 mg to 300 mg.  
The indication for Clopidogrel has been changed; it is now indicated for patients with confirmed STEMI who are not transported to a PPCI centre. | ✓ | x |
| CPG 4/5/6.4.11 Symptomatic Bradycardia – Adult | The dose of Atropine has been increased from 0.5 mg to 0.6 mg.  
Add ‘NaCl infusion 250 mL (repeat by one)’  
Insert information box; ‘Titrate Atropine to effect (HR > 60)’ | ✓ | x |
| CPG 4/5/6.4.17 Epistaxis | Digital pressure has been increased to 15 minutes.  
The insertion of a proprietary nasal pack is now within the scope of practice for paramedics and advanced paramedics. | ✓ | ✓ |
| CPG 5/6.4.21 Hypothermia | Paramedic has been included in this CPG.  
Warmed O₂ has been removed.  
Mild hypothermia is now defined as 34 – 35.9°C.  
Moderate hypothermia is now defined as 30 – 33.9°C.  
Paediatric dose for NaCl has been reduced from 20 mL/Kg to 10 mL/Kg. | ✓ | x |
## APPENDIX 4
### CPG UPDATES FOR ADVANCED PARAMEDICS

<table>
<thead>
<tr>
<th>CPGs</th>
<th>The principal differences are</th>
<th>Theory</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPG 6.4.22 Poisons – Adult</td>
<td>The methods of introduction of a poison have been removed.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>The poison types have been updated to incorporate toxidromes.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Midazolam has been removed for psychostimulant poisoning, APs are advised to consider medical oversight.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>For tricyclic poisons a Max of 50 mL of Sodium Bicarbonate 0.8% has been set.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Cooling the patient, if hyperthermic, has been added.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Naloxone has been added to this CPG for opiate induced poison.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Naloxone IN is now within the scope of practice for advanced paramedics.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Reference to the National Poison Information Centre has been removed.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>The absolute contraindication for O₂ has been removed following paraquat poisoning.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 5/6.4.23 Seizure/Convulsion – Adult</td>
<td>Magnesium sulphate may be considered by advanced paramedics to manage a pre-eclampsia patient who is seizing.</td>
<td>✓</td>
<td>x</td>
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<tr>
<td>CPG 4/5/6.4.24 Sepsis – Adult</td>
<td>This CPG replaces Septic Shock – Adult.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>It authorises the administration of Paracetamol for pyrexic patients.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>It authorises the administration, by advanced paramedics, of Benzylpenicillin for severe sepsis.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Advanced paramedics may consider additional aliquots of NaCl to maintain systolic BP &gt; 100 mmHg.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 4/5/6.6.1 Burns – Adult</td>
<td>Add ‘Caution with hypothermia’</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 4/5/6.6.3 External Haemorrhage – Adult</td>
<td>This CPG has been updated to reflect the importance of managing catastrophic haemorrhage immediately.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Dressings impregnated with haemostatic agents are now within the scope of practice for EMTs, paramedics and advanced paramedics.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>EMTs, who have completed the BTEC course, may be privileged by a licensed CPG provider to apply a tourniquet.</td>
<td>✓</td>
<td>x</td>
</tr>
</tbody>
</table>
## CPG UPDATES FOR ADVANCED PARAMEDICS

<table>
<thead>
<tr>
<th>CPGs</th>
<th>The principal differences are</th>
<th>Theory</th>
<th>Skills</th>
</tr>
</thead>
</table>
| **CPG 5/6.6.5 Head Injury – Adult**       |  - LoC history has been replaced with 'consider spinal injury'  
  - Collar and long board have been replaced with 'see Spinal injury CPG' to avoid repetition.  
  - A ‘GCS of < 12’ has been replaced with a ‘GCS of ≤ 12’  
  - An emphasis has been placed on minimising Intra Cranial Pressure; using pain management, control of nausea & vomiting, 10° upward head tilt and ensuring that the collar is not too tight.  
  - 'Maintain SBP > 120 mmHg' has been replaced with 'avoid hypotension'  
  - 'Transport to most appropriate ED according to local protocol' has been deleted                                                                                                     | ✓      | x      |
| **CPG 4/5/6.6.7 Limb Injury – Adult**     |  - Fractured neck of femur has been included.  
  - With a fractured neck of femur, if the transport time to ED is > 20 minutes, ALS should be requested.  
  - With a fractured neck of femur advanced paramedics should consider NaCl infusion.                                                                                                                                             | ✓      | x      |
| **CPG 5/6.6.8 Shock from Blood Loss (trauma) – Adult** |  - This CPG has been renamed from 'Shock from Blood Loss – Adult'.  
  - Add; with polytrauma consider application of a pelvic splint.  
  - Change 'Trauma' to 'Suspected significant internal/ external haemorrhage'  
  - Tranexamic acid is now within the scope of practice for advanced paramedics.                                                                                                                                                               | ✓      | x      |
| **CPG 4/5/6.6.10 Submersion Incident**    |  - Salbutamol is now within the scope of practice for EMTs.                                                                                                                                                                                                                                         | ✓      | x      |
| **CPG 4/5/6.7.4 Secondary Survey – Paediatric** |  - The estimated weight formula has been updated;  
  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                                                                                                                                                                                               | ✓      | x      |
## APPENDIX 4

### CPG UPDATES FOR ADVANCED PARAMEDICS

<table>
<thead>
<tr>
<th>CPGs</th>
<th>The principal differences are</th>
<th>Theory</th>
<th>Skills</th>
</tr>
</thead>
</table>
| CPG 4/5/6.7.5 Pain Management – Paediatric | Pain assessment recommendations;  
< 5 years use FLACC scale  
5 – 7 years use Wong Baker scale  
≥ 8 years use analogue pain scale  
Delete ‘Minor pain (2 to 3 on pain scale)’ replace with ‘Mild pain (1 to 3 on pain scale)’  
Change Moderate pain to ‘4 to 6 on the pain scale’  
Change Severe pain to ‘≥ 7 on the pain scale’  
Fentanyl IN is now within the scope of practice for advanced paramedics.  
Ibuprofen PO is now within the scope of practice for EMTs. | ✓      | ✓      |
| CPG 6.7.10 Advanced Airway Management – Paediatric | The minimum age for paediatric advanced airway is ≥ 2 years old.  
The advanced paramedic may select either an ETT or supraglottic airway to manage the airway.  
Unsynchronised chest compression should be performed when an advanced airway is secured.  
Ventilate at a rate of 12 to 20 per minute, depending on the age.  
Consider waveform capography has been added. | ✓      | ✓      |
| CPG 4/5/6.7.11 Inadequate Ventilations – Paediatric | This CPG replaces Inadequate Respirations – Paediatric (5/6.7.5 and 4.7.5) incorporating all three practitioner levels in one CPG.  
This CPG outlines generic care for all patients with inadequate ventilation and then offers pathways for specific clinical issues.  
Naloxone IN is now within the scope of practice for EMTs, paramedics and advanced paramedics. | ✓      | ✓      |
| CPG 6.7.21 Foreign Body Airway Obstruction – Paediatric | ‘Consider waveform capnography’ has been added following attempted intubation. | ✓      | ✓      |
| CPG 4/5/6.7.24 Symptomatic Bradycardia – Paediatric | ‘The routine ventilations’ has been changed to ‘ventilations if hypoxic’.  
Unresponsive has been added as a criteria for CPR  
Consider advanced airway management if prolonged CPR has been removed. | ✓      | ✓      |
<table>
<thead>
<tr>
<th>CPGs</th>
<th>The principal differences are</th>
<th>Theory</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPG 5/6.7.32 Glycaemic Emergency – Paediatric</td>
<td>The dose of NaCl has been reduced from 20 mL/Kg to 10 mL/Kg.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 5/6.7.33 Seizure/ Convulsion – Paediatric</td>
<td>The dose of Midazolam buccal has been changed from weight based to age based.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 4/5/6.7.50 External Haemorrhage – Paediatric</td>
<td>This CPG has been updated to reflect the importance of managing catastrophic haemorrhage immediately.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Dressings impregnated with haemostatic agents are now within the scope of practice for EMTs, paramedics and advanced paramedics.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EMTs, who have completed the BTEC course, may be privileged by a licensed CPG provider to apply a tourniquet.</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>CPG 4/5/6.7.53 Burns – Paediatric</td>
<td>Add ‘Caution with hypothermia’</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>4/5/6.8.1 Major Emergency – First Practitioners on site</td>
<td>Add ‘ambulance loading point’</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Add ‘On site co-ordination centre’</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>4/5/6.8.2 Major Emergency – Operational Control</td>
<td>Add information box ‘Controller of Operations may be other than ambulance or fire officers, depending on nature of emergency’</td>
<td>✓</td>
<td>x</td>
</tr>
</tbody>
</table>
### New CPGs

<table>
<thead>
<tr>
<th>New CPGs</th>
<th>The new skills and medications incorporated in the CPG are:</th>
<th>Theory</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPG 4/5/6.3.4 Asthma – Adult</td>
<td>This CPG outlines the care for a patient with an acute asthma episode.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 5/6.3.5 Acute Pulmonary Oedema</td>
<td>This CPG outlines the care for a patient with an acute pulmonary oedema episode.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CPG 5/6.4.12 Tachycardia – Adult</td>
<td>This CPG outlines the care for a patient with a tachycardia episode.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CPG 5/6.4.13 Adrenal Insufficiency – Adult</td>
<td>This CPG outlines the care for a patient with an adrenal crisis.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 5/6.4.25 Shock from Blood Loss (non-trauma) – Adult</td>
<td>This CPG outlines the care for a patient with non traumatic blood loss.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 4/5/6.4.27 Sickle Cell Crisis – Adult</td>
<td>This CPG outlines the care for a patient with a sickle cell crisis.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 4/5/6.6.4 Harness Induced Suspension Trauma</td>
<td>This CPG outlines, in particular, the correct posture for patients following harness induced suspension trauma.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 4/5/6.6.6 Heat-Related Emergency – Adult</td>
<td>This CPG outlines the care for a patient with a heat-related emergency.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 4/5/6.7.12 Asthma – Paediatric</td>
<td>This CPG outlines the care for a paediatric patient with an acute asthma episode.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 5/6.7.30 Adrenal Insufficiency – Paediatric</td>
<td>This CPG outlines the care for a paediatric patient with an adrenal crisis.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 4/5/6.7.35 Pyrexia – Paediatric</td>
<td>This CPG outlines the care for a paediatric patient with a pyrexia episode.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 4/5/6.7.36 Sickle Cell Crisis – Paediatric</td>
<td>This CPG outlines the care for a paediatric patient with a sickle cell crisis.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 5/6.9.1 Clinical Care Pathway Decision – Treat &amp; Referral</td>
<td>This CPG outlines the inclusion process to select patients for a clinical care pathway other than ED care.</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CPG 5/6.9.2 Hypoglycaemia – Treat &amp; Referral</td>
<td>This CPG outlines the exclusion process to select patients following a hypoglycaemic event for a clinical care pathway other than ED care.</td>
<td>✓</td>
<td>x</td>
</tr>
</tbody>
</table>
## New CPGs

<table>
<thead>
<tr>
<th>New CPGs</th>
<th>The new skills and medications incorporated in the CPG are:</th>
<th>Theory</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPG 5/6.9.3 Isolated Seizure – Treat &amp; Referral</td>
<td>This CPG outlines the exclusion process to select patients following an isolated seizure for a clinical care pathway other than ED care.</td>
<td>✓</td>
<td>✗</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 2010 identified that without ongoing CPR, survival with good neurological function from SCA is highly unlikely. Defibrillators in AED mode can take up to 30 seconds between analysing and charging during which time no CPR is typically being performed. The position below is outlined to ensure maximum resuscitation efficiency and safety.

**Position**

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

2. **Hands off time (time when chest compressions are stopped)**
   2.1 Minimise hands off time, absolute maximum 10 seconds.
   2.2 Rhythm and/or pulse checks in manual mode should take no more than 5 to 10 seconds and CPR should be recommenced immediately.
   2.3 When defibrillators are charging CPR should be ongoing and only stopped for the time it takes to press the defibrillation button and recommenced immediately without reference to rhythm or pulse checks.
   2.4 It is necessary to stop CPR to enable some AEDs to analyse the rhythm. Unfortunately this time frame is not standard with all AEDs. As soon as the analysing phase is completed and the charging phase has begun CPR should be recommenced.
3 Energy
3.1 Biphasic defibrillation is the method of choice.
3.2 Biphasic truncated exponential (BTE) waveform energy commencing at 150 to 200 joules shall be used.
3.3 If unsuccessful the energy on second and subsequent shocks shall be as per manufacturer of defibrillator instructions.
3.4 Monophasic defibrillators currently in use, although not as effective as biphasic defibrillators, may continue to be used until they reach the end of their lifespan.

4 Safety
4.1 For the short number of seconds while a patient is being defibrillated no person should be in contact with the patient.
4.2 The person pressing the defibrillation button is responsible for defibrillation safety.
4.3 Defibrillation pads should be used as opposed to defibrillation paddles for pre-hospital defibrillation.

5 Defibrillation pad placement
5.1 The right defibrillation pad should be placed mid clavicular directly under the right clavicle.
5.2 The left defibrillation pad should be placed mid-axillary with the top border directly under the left nipple.
5.3 If a pacemaker or Implantable Cardioverter Defibrillator (ICD) is fitted, defibrillator pads should be placed at least 8 cm away from these devices. This may result in anterior and posterior pad placement which is acceptable.

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

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

8 Cardioversion
8.1 Advanced paramedics are authorised to use synchronised cardioversion for unresponsive patients with a tachycardia greater than 150.