**PRIMARY HEALTHCARE LEVEL ESSENTIAL MEDICINES LIST**

**CHAPTER 21: EMERGENCIES AND INJURIES**

**RECOMMENDATIONS FORM THE NEMLC MEETING: 2 NOVEMBER 2017**

**Medicine amendment recommendations, following initial review of the chapter, are listed below.**

**Kindly review the medicine amendments in the context of the complete emergencies and injuries chapter.**

Chapter layout to delineate 3 major sections:

1. Cardiopulmonary resuscitation
2. Medical emergencies
3. Trauma

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| 21.1 Cardiopulmonary arrest– cardiopulmonary resuscitation 21.1.1 Cardiac arrest, adults 21.1.2 Cardiopulmonary arrest, children21.1.3Bradycardia21.1.4Tachydysrhythmias 21.1.5Management of suspected choking/foreign body aspiration in children21.2 Medical emergencies 21.2.1 Paediatric emergencies 21.2.1.1 Rapid triage of the child presenting with acute conditions in clinics and CHCs 21.2.2 Angina pectoris, unstable21.2.3 Myocardial infarction, acute (AMI)21.2.4 Delirium with acute confusion and aggression in adults21.2.5 Hyperglycaemia and ketoacidosis21.2.6 Hypoglycaemia and hypoglycaemic coma21.2.7 Nose bleeds (epistaxis)21.2.8 Pulmonary oedema, acute21.2.9 Shock21.2.10 Anaphylaxis 21.2.11 Status epilepticus21.3 Trauma and injuries 21.3.1 Bites and stings 21.3.1.1 Animal bites 21.3.1.2 Human bites 21.3.1.3 Insect stings and spider bites 21.3.1.4 Snakebites21.3.2 Burns21.3.3 Exposure to poisonous substances21.3.4 Eye injury, chemical burns21.3.5Eye injury, foreign body21.3.6 HIV prophylaxis, post exposure (PEP) 21.3.6.1Post exposure prophylaxis, occupational  21.3.6.2 Post exposure prophylaxis, rape and sexual assault 21.3.6.3 Post exposure prophylaxis, inadvertent (non-occupational)21.3.7 Soft tissue injuries21.3.8 Sprains and strains |

**General:** Resuscitation algorithms were inserted, with permission from the Resuscitation Council of South Africa (RCSA), where applicable.

**A: NEW SECTION(S):**

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| **SECTION** | **CONDITION** | **MEDICINE MANAGEMENT** | **MEDICINE ADDED** |
| 21.1.3 | Bradycardia | Yes | Adrenaline, IV |
| Atropine, IV |
| 21.1.4 | Tachydysrhythmias | No | N/a |

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| **21.1.3 BRADYCARDIA**  |

Separate STG for the management of bradycardiawas developed, as management was removed from updated 2015 Basic Life Support for healthcare workers RCSA algorithm. Guidance was aligned to the Paediatric Hospital Level STGs and EML, 2016, Adult Hospital Level STGs and EML, 2015 and RCSA bradycardia algorithm, 2015.

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| **21.1.3 Bradycardia** R00.1**Refer to Adult Hospital Level and Paediatric Hospital Level STGs and EML for relevant guidance**.**Description**In adults, bradycardia refers to a pulse rate <50 beats/ minute.In children, bradycardia refers to a pulse rate <60 beats/ minute despite effective oxygenation and ventilation.**Emergency treatment**Assess ABC:* Airway: ensure airway is open and patent.
* Breathing: give oxygen to target pulse oximeter saturation of 94-98%.
* Circulation: assess peripheral perfusion, measure pulse and blood pressure.

Attach ECG monitor, pulse oximeter and blood pressure cuff. Establish IV access.Print rhythm strip to confirm bradycardia; if possible, do 12 lead ECG.Assess for signs of instability:

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| --- | --- |
| * Hypotension
 | * Altered mental status
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| * Chest pain
 | * Acute heart failure
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| * Signs of shock: cold clammy peripheries and weak pulses
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AdultIf unstable:* Atropine, IV, 0.5 mg as a bolus.
	+ - Repeat every 3–5 minutes, if no response.
		- Maximum dose: 3 mg.
1. Look for and treat contributory causes for bradycardia (see table below).
2. If no response to atropine, discuss with referral centre or refer to Adult Hospital Level STG and EML for guidance.

If stable: Look for and treat contributory causes for bradycardia (see table below)

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| Table: Contributory causes for bradycardia and treatment |
| Hypoxia | Give supplemental oxygen or ventilate. |
| Hypothermia | Warm the patient. |
| Head injury | Give oxygen, elevate head of bed. |
| Heart block | Look for cause of heart block. |
| Hydrogen ion (acidosis) | Look for cause of acidosis. |
| Hypotension | If no signs of heart failure: Sodium chloride 0.9%, IV, 200 mL. |
| Toxins and therapeutic agents | Treat as for specific overdose |

ChildrenIf unstable:Start CPR: 30 compressions: 2 breaths (1 rescuer) *or* 15 compressions: 2 breaths (2 rescuers)* Adrenaline (epinephrine), IV, 0.1 mL/kg of 1:10 000 solution (Doctor prescribed).
	+ To make an1:10 000 adrenaline (epinephrine) solution, (dilute 1mL ampoule of adrenaline (epinephrine) (1:1000) with 9 mL of sodium chloride 0.9% to give 10mL of 1:10000 solution).
	+ Administer dose every 3–5 minutes, according to table below.

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| **Weight**kg | **Dose**mg | **Volume of diluted solution**(1: 10 000 solution) | **Age**months/years |
| ˃2.5–7 kg | 0.05 mg | 0.5 mL | Birth–6 months |
| ˃7–11 kg | 0.1 mg | 1 mL | ˃6–18 months |
| ˃11–17.5 kg | 0.15 mg | 1.5 mL | ˃18 months–5 years |
| ˃17.5–25 kg | 0.2 mg | 2 mL | ˃5–7 years |
| ˃25–35 kg | 0.3 mg | 3 mL | ˃7–11 years |
| ˃35–55 kg | 0.5 mg | 5 mL | ˃11–15 years |

If heart block or increased vagal tone suspected: * Atropine, IV, 0.02 mg/kg/dose as a single dose (Doctor prescribed).
	+ - Maximum single dose: 0.5 mg.
		- Repeat dose, if no response.

If stable:Look for and treat contributory causes for bradycardia (see table above).Close monitoring required.Ensure adequate oxygenation and ventilation if necessary.**Referral (urgent)**Transfer all patients on supportive treatment and with an accompanying skilled worker until taken over by doctor at receiving institution. |

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| **21.1.4 TACHYDYSRHYTHMIAS** |

Following STG added to chapter for awareness:

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| **21.1.4 Tachydysrhythmias**R00.0**Refer to Adult Hospital Level and Paediatric Hospital Level STGs and EML for relevant guidance**.**Description**In adults, tachydysrhythmias refer to a pulse rate >150 beats/minute.In children, tachycardia refers to a pulse rate of more than normal range for age (see table). **Emergency treatment**Assess ABC:1. Airway: ensure airway is open and patent
2. Breathing: give oxygen to target pulse oximeter saturation of 94-98%
3. Circulation: assess peripheral perfusion, measure pulse and blood pressure.

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| **Table: Child heart rate ranges for age** |
| **Age** | **Heart rate range** |
| Newborn to 3 months | 85-205 |
| 3 months to 2 years | 100-190 |
| 2 years to 10 years | 60-140 |
| >10 years  | 60-100 |

1. Supraventricular tachycardia is suspected in a child when the pulse rate >180 beats/ minute in a child and >220 beats/minute in an infant.

Attach ECG monitor, pulse oximeter and blood pressure cuff.Establish IV access.Print rhythm strip to confirm tachycardia, if possible do 12 lead ECG.Assess for signs of instability:

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| --- | --- |
| * Hypotension
 | * Altered mental status
 |
| * Chest pain
 | * Acute heart failure
 |
| * Signs of shock: cold clammy peripheries and weak pulses
 |

AdultIf unstable:Synchronised cardioversion at 100J.Consider analgesia and sedation if time permits.If stable: Assess QRS length on rhythm strip or 12 lead ECG:1. If QRS<0.12 = Narrow complex tachycardia (supraventricular tachycardia)
* Attempt vagal stimulation: Vasalvamaneavoure.

Ice water applied to face.Cough, breath holding.Carotid sinus massage (not in elderly or cardiac disease). 1. If QRS>0.12 = Wide complex tachycardia (ventricular tachycardia)
* Correct electrolyte disturbances.
* Consider toxins, overdoses.

Child If unstable:Synchronised cardioversion at 0.5-1J/kg initially (max 4J/kg).Consider analgesia and sedation if time permits.If stable: Assess QRS length on rhythm strip or 12 lead ECG:1. If QRS<0.08 = Narrow complex tachycardia (supraventricular tachycardia)
* Attempt vagal stimulation: Ice water applied to face
1. If QRS>0.08 = Wide complex tachycardia (ventricular tachycardia)
* Correct electrolyte disturbances

**Referral (urgent)**Transfer all patients on supportive treatment and with an accompanying skilled worker until taken over by doctor at receiving institution. |

**A: MEDICINE AMENDMENTS:**

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| **SECTION** | **MEDICINE** | **ADDED/DELETED/AMENDED** |
| ***21.1 CARDIOPULMONARY ARREST– CARDIOPULMONARY RESUSCITATION*** |
| **21.1.1 Cardiac arrest, adults** | Adrenaline (epinephrine) | Amended (intraoseus route added) |
| Sodium chloride 0.9%, IV | Deleted |
| Atropine, IV | Deleted |
| ***21.2 MEDICAL EMERGENCIES*** |
| **21.2.6 Hypoglycaemia and hypoglycaemic coma** | Dextrose 50%, IV | Concentration of solution amended from 50% to 10% |
| **21.2.8 Pulmonary oedema, acute** | Isosorbide dinitrate, oral | Directions for use not amended; dosing amended |
| Furosemide, IV | Directions for use not amended |
| Morphine, IV | Directions for use amended |
| **21.2.10 Anaphylaxis** | Oxygen: added |  |
| Salbutamol, nebulisation | Added |
| Ipratropium, nebulisation | Added |
| Sodium chloride 0.9%, IV | Added |
| Hydrocortisone, IM/IV | Doses amended |
| **21.2.11 Status epilepticus** |
| * *Children: Initial benzodiazepine treatment*
 | Midazolam, buccal | Directions for use amended (repeat dose added) |
| Midazolam, IM | Added |
| * *Children: Second line treatment*
 | Phenobarbitone, oral via NGT | Retained |
| Phenobarbitone, IV | Not added |
| * *Adults*
 | Diazepam, IV | Directions for use amended Maximum dose & rate) |
| Midazolam, IM | Directions for use amended (repeat dose added) |
| Midazolam, buccal | Added |
| ***21.3 TRAUMA AND INJURIES*** |
| **21.3.1.2 Human bites** | Hepatitis B immune globulin | Added |
| Hepatitis B vaccine | Added |
| HIV PEP | Added |
| **21.3.1.3 Insect stings and spider bites:****Cytotoxic lesions** | Cross referral to section 5.4.3: Cellulitis. |
| **21.3.1.4 Snakebites** | Sodium chloride, 0.9% irrigation | Added |
| **21.3.2 Burns** | Ringers lactate, IV | Not added |
| Sodium chloride 0.9%, IV | Retained |
| Dextrose 50%, IV | Retained |
| Povidone-iodine, topical | Retained |
| Silver sulfadiazine, topical | Not added |
| **21.3.3 Exposure to poisonous substances** |
| * *Organophosphate and carbamate poisoning: Children*
 | Atropine, IV | Directions for use amended |
| * *Opioid overdose: Adults*
 | Naloxone | Directions for use amended (IM option added) |
| **21.3.6.1 Post exposure prophylaxis, occupational** | Hepatitis B vaccine | Added |
| Hepatitis B immunoglobulin | Added |
| **21.3.6.2 Post exposure prophylaxis, rape and sexual assault** | Hepatitis B vaccine | Dosing interval amended |
| **21.3.7 Soft tissue injuries** |
| * *If sutures needed*
 | Lidocaine with adrenaline 2% injection | Added |
| * *Infected wound management*
 | Cross referral to section 5.4.3: Cellulitis. |

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| **21.1.1 CARDIAC ARREST, ADULTS** |

Adrenaline (epinephrine): *amended (intraoseus route added)*

Sodium chloride 0.9%, IV: *deleted*

Atropine, IV: *deleted*

Aligned with the South African Resuscitation Council algorithm, "Basic life support for healthcare providers".

**Level of Evidence: III Guidelines[[1]](#footnote-2)**

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| **21.2.6 HYPOGLYCAEMIA AND HYPOGLYCAEMIC COMA** |

**Emergency treatment**

**Adult: Unconscious patient**

Dextrose 50%, IV: *concentration of solution amended from 50% to 10%*

A small RCT[[2]](#footnote-3) (n= 51) showed that dextrose 10% delivered in 5 g/50 ml aliquots resulted in better post-treatment blood glucose concentrations than dextrose 50% delivered in 5 g/10 ml aliquots.

 Results:

* + No statistically significant differences in:
		- Median time to recovery (8 minutes)
		- Median post-treatment GCS
		- Number of subjects experiencing a further hypoglycaemic episode within 24 hours (four per group).
	+ The median total dose of dextrose administered was significantly less with the 10% concentration (10% = 10 g, 50% = 25 g, p,0.001)
	+ The median post treatment blood glucose concentrations were significantly lower (10% = 6.2 mmol/l and 50% = 9.4 mmol/l, p = 0.003).
	+ There were no reports of extravasation injuries in either group.

**Recommendation:** Dextrose 50%, IV delivered in smaller aliquots of 5 g/10 ml for treatment of adult hypoglycaemia.

*Rationale:* Small trial showed that dextrose 10%, resulted in better post-treatment blood glucose concentrations than dextrose 50%.

**Level of Evidence: III Disease oriented RCT**

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| **21.2.8 PULMONARY OEDEMA, ACUTE**  |

Isosorbide dinitrate, sublingual: *directions for use not amended, dosing amended*

Furosemide, IV: *directions for use not amended*

Nitrate dosing amended from "4 hourly" to "every 5-10 minutes". The theory behind guideline recommendation of nitrates followed by diuretics is that nitrates reduce preload primarily through dilatory effects on the venous system. Traditionally, diuretics have been considered the mainstay of pharmacologic therapy, but as most acutely ill patients are not volume overloaded, indiscriminate administration of diuretics could be harmful and adequate renal perfusion is required. Generally, diuretics should not be used until optimal preload and afterload reduction has been achieved.

However, international guidelines are based on patients that are not similar to the South African population that generally present with large oedema and immense fluid overload (The cited guidelines by Scott *et al[[3]](#footnote-4)* provide recommendations for patients in Baltimore).

**Recommendation:** NEMLC recommended that furosemide be co-administered with nitrates, but that furosemide to be placed first in the treatment algorithm for pulmonary oedema.

*Rationale:* International guidelines are not generalisable to the South African population, where patients generally present with immense fluid overload.

**Level of Evidence: III Expert opinion**

Morphine, IV:*directions for use amended*

Text updated as follows to align with Adult Hospital level STG, 2015.

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| * ~~Morphine 10 mg diluted with 10 mL of water for injection or sodium chloride~~
	+ ~~0.9%, slow IV (Doctor initiated).~~
	+ ~~Start with 5 mg; thereafter slowly increase by 1 mg/minute up to 10mg.~~
	+ ~~Can be repeated after 4–6 hours if necessary, for pain relief.~~
	+ ~~Beware of hypotension.~~
* Morphine, IV, to a total maximum dose of 10 mg.
	+ Dilute 10 mg up to 10 mL with sodium chloride 0.9%.
	+ Morphine, IV, 3–5 mg as a single dose then further boluses of 1–2 mg/minute and monitor closely.
	+ Total maximum dose: 10 mg.
	+ Repeat after 4 hours if necessary.
	+ Monitor response to pain and effects on respiration and BP.
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**Level of Evidence: III Guidelines**[[4]](#footnote-5)

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| **21.2.10 ANAPHYLAXIS** |

Oxygen:*added*

Salbutamol, nebulisation:*added*

Ipratropium, nebulisation: *added*

Sodium chloride 0.9%, IV: *added*

Medicine treatment was delineated into priority (adrenaline/epinephrine) and second-line priority (for hypotension - sodium chloride 0.9%, IV; for wheeze – oxygen, ipratropium, salbutamol, hydrocortisone IM/IV, promethazine IM/IV) aligned with the South African Resuscitation Council anaphylaxis algorithm (as appropriate for primary level of care).

**Level III: Guidelines**

Hydrocortisone IM/slow IV: *doses amended*

Doses aligned with the Adult Hospital Level (2015) and Paediatric Hospital Level (2016) STGs and EML.

*Adults*: dose amended from "100 mg" to "200 mg".

*Children*: dose amended from "4-6 mg/kg" to "5 mg/kg".

**Level of Evidence: III Guidelines**

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| **21.2.11 STATUS EPILEPTICUS** |

**CHILDREN**

**Initial benzodiazepine treatment**

Midazolam, buccal: *directions for use amended (repeat dose added)*

Midazolam, IM: *added*

*Midazolam, buccal:* Please refer to the updated medicine review for detailed information.

* STG recommends second dose of buccal midazolam for children with status epilepticus, if seizure control not achieved with first dose.
* *Rationale:* Persistent status epilepticus reported to cause treatment resistance and neurological harm. No available evidence for second dose buccal midazolam, as in RCTs patients uncontrolled were administered IV benzodiazepines. Not pragmatic for primary level of care, where second line treatment is phenobarbitone tablet administered via nasogastrc tube. Facilities for management of respiratory depression available in the Ideal PHC clinic. Most guidelines recommend a second dose of buccal midazolam.

**Level of Evidence: III Guidelines[[5]](#footnote-6)[[6]](#footnote-7)[[7]](#footnote-8), Expert opinion**

*Midazolam, IM:* Please refer to the medicine review for detailed information.

* Midazolam, IM as a single dose, as a first line alternative to rectal diazepam or buccal midazolam in the treatment of children < 12 years with status epilepticus in a primary health care setting.
* *Rationale:*Limited available RCT evidence suggests that midazolam, IM is as effective as diazepam, IV and lorazepam, IV for the initial management of status epilepticus in children with regards to time to seizure cessation after presentation.

**Level of Evidence: II Systematic reveiw of low to moderate quality RCTs[[8]](#footnote-9)**

*Order of preference of initial benzodiazepine treatment:* Preference for initial treatment for SE in children essentially guided by expertise, preference, pragmatic implications at primary level of care and availability. As evidence for head to head comparisons of different non-intravenous interventions is of ‘low’ to ‘very low’quality, it is not possible to determine if there are clinically important differences between the various forms of non-intravenous antiepileptic medications for control of acute convulsive seizures[[9]](#footnote-10).

The order of preference was recommended as follows in the text of the STG as:

* Midazolam, buccal;
* Midazolam, IM;
* Diazepam, rectal

**Level of Evidence: III Expert opinion**

*Switching between rectal diazepam and buccal midazolam:* The STG does not recommend a switch between rectal diazepam and buccal midazolam when a second benzodiazepine dose is required, as there is no available RCT evidence to support this.

**Level of Evidence: III Expert opinion**

**Second line treatment**

Phenobarbitone, oral administered via NGT:*retained*

Phenobarbitone, IV: *not added*

Accessing phenobarbitone injections through section 21 not considered feasible at primary level of care.

**Level of Evidence: III Expert opinion**

**ADULTS**

Diazepam, IV: *directions for use amended*

The benefit of diazepam IV administered at a rate of 5 mg/minute to stop seizure activity in adults with status epilepticus outweighs the risk of respiratory depression, and maximum dose amended to align with SAMF, 2016 and Guidelines.

**Level of Evidence: III Guidelines[[10]](#footnote-11)[[11]](#footnote-12)**

Midazolam, buccal: *added*

Aligned with Adult Hospital Level STGs and EML, 2015 with recommendation for a second dose as needed for pragmatic purposes.

*Rationale:* Aligned with Adult Hospital Level STGs and EML, 2015

**Level of Evidence: III Guidelines, Expert opinion**

Midazolam, IM: *directions for use amended*

Repeat dose of midazolam, IM recommended if seizure control not achieved after first dose.

*Rationale:* Aligned with Adult Hospital Level STGs and EML, 2015

**Level of Evidence: III Guidelines**

Caution box was amended, aligned with the Adult Hospital STG, 2015:

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| **CAUTION**Benzodiazepines can cause respiratory depression.Monitor closely for respiratory depression. If this occurs, assist ventilation with bag-valve mask (1 breath every 3-5 seconds) and refer urgently.**Avoid** diazepam IM since absorption is slow and erratic.**Do not** mix diazepam with other medicines in same syringe. |

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| **21.3.1.1 ANIMAL BITES** *and* **21.3.1.2 HUMAN BITES** |

Separate STGs for animal and human bites was developed for clarity purposes as it was reported that nurse prescribers were probably administering Rabies vaccines to human bite victims.

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| **21.3.1.2 HUMAN BITES** |

HIV PEP: *added*

Although the risks for HIV transmission considered to be low, administering HIV PEP deemed appropriate in this setting. Cross referenced to Section 21.3.6.3: Post exposure prophylaxis, inadvertent (non-occupational), if the bite broke the skin.

**Level of Evidence: III Guidelines[[12]](#footnote-13)**

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| **21.3.1.4 SNAKEBITES** |

**Venom in the eyes:**

Sodium chloride, 0.9% irrigation: *added*

**Level of Evidence: III Expert opinion**

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| **21.3.2 BURNS** |

Ringers lactate, IV: *not added*

Sodium chloride 0.9%, IV: *retained*

Dextrose 50%, IV: *retained*

Povidone-iodine, topical: *retained*

Silver sulfadiazine, topical: *not added*

*Maintenance and resuscitation fluids:* The Committee was of the opinion that it necessary to add ringer’s lactate. The Committee members accepted the rationale for the use of sodium chloride 0.9% and dextrose 50%, as previously recommended, based on pragmatic considerations for use at PHC.

The following note was added, emphasising fluid replacement in burns > 10%:

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| **Note:** IV fluid replacement is very important in large burns. However, if unable to obtain IV access, give fluids orally or via NGT and transfer urgently. |

*Protocol:* Management of burns is based on the South African Burn Society burn stabilisation protocol and the PHC Committee was of the opinion that this is adequate and is standard of care at primary care facilities.

*Weight-band table:* The table for replacement fluid for burns is based on the Parklands Formula, and the PHC Committee was of the opinion that it was not pragmatic to add the formula to the STG.

*Infected burns:* As management of burns at primary level of care is restricted to minor burns and patients requiring out-patient care; the PHC Committee was of the opinion that it would be inappropriate to consider dressings used in hospital inpatient care. All serious burns and septic burns are referred to higher levels of care for appropriate treatment.

**Level of Evidence: III Expert opinion**

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| **21.3.3 EXPOSURE TO POISONOUS SUBSTANCES** |

**Organophosphate and carbamate poisoning: Children**

Atropine, IV: *directions for use amended*

Text updated to align with the Paediatric (2016) Hospital STGs and EML, as follows:

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| ~~Children: 0.05 mg/kg/dose. See dosing table, pg 22.2.~~* Atropine, IV, 0.05 mg/kg/dose. See dosing table, pg xxx.
	+ - * Reassess after 3 – 5 minutes and if necessary repeat atropine bolus.
* If no response, give double the dose.
* If some response, give the same or reduced dose.
	+ - * Give a repeat bolus until adequate response achieved, i.e. reduced bronchial secretions, dry mouth, increasing heart rate and dilating pupils (Note: pupil reversal may be delayed).
* Reassess frequently as additional doses may be required.
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**Level of Evidence: III Guidelines**

**Opioid overdose: Adults**

Naloxone: *directions for use amended*

The option for an initial IM dose was added. However, the IV route of administration is preferred.

**Level of Evidence: III Guidelines[[13]](#footnote-14)**

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| **21.3.6.1 POST EXPOSURE PROPHYLAXIS, OCCUPATIONAL** |

Hepatitis B vaccine: *added*

Hepatitis B immunoglobulin: *added*

Aligned with the Adult Hospital Level STGs and EML, 2015.

**Level of Evidence: III Guidelines**

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| **21.3.6.2 POST EXPOSURE PROPHYLAXIS, RAPE AND SEXUAL ASSAULT** |

**Hepatitis B prevention**

Hepatitis B vaccine: *dosing interval amended*

Aligned with dosing interval for occupational post exposure prophylaxis for pragmatic purposes:

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| * ~~Hepatitis B, 3 adult doses of 1 mL~~
* ~~first dose administered immediately;~~
* ~~second dose 1 month after the first dose;~~
* ~~third dose 6 months after the first dose.~~
* Hepatitis B vaccine, IM, 3 doses at monthly intervals.
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**Level of Evidence: III Expert opinion**

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| **21.3.7 SOFT TISSUE INJURIES** |

**Children: If sutures needed:**

Lidocaine 2% injection:*added*

Aligned with the Paediatric Hospital Level STG, 2016.

**Level of Evidence: III Guidelines**

1. South African Resuscitation Guidelines, Basic life support for healthcare provider, 2015. www.resuscitationcouncil.co.za [↑](#footnote-ref-2)
2. Moore C, Woollard M. Dextrose 10% or 50% in the treatment of hypoglycaemia out of hospital? A randomised controlled trial. Emerg Med J. 2005 Jul;22(7):512-5. [↑](#footnote-ref-3)
3. Scott MC, Winters ME. Congestive Heart Failure. Emergency Medicine Clinics of North America. 2015;33(3):553-62. <https://www.ncbi.nlm.nih.gov/pubmed/26226866> [↑](#footnote-ref-4)
4. Adult Hospital Level STGs and EML, 2015. [↑](#footnote-ref-5)
5. World Health Organisation. mhGAP Intervention Guide Mental Health Gap Action Programme for mental, neurological and substance use disorders in non-specialized health settings, version 2.0 Geneva: World Health Organization; 2016. <http://www.who.int/mental_health/mhgap/mhGAP_intervention_guide_02/en/> [↑](#footnote-ref-6)
6. National Institute for Health and Care Excellence. Epilepsies: diagnosis and management Clinical guideline [CG137], 2012. <https://www.nice.org.uk/guidance/cg137> [↑](#footnote-ref-7)
7. Smith R, Brown J. Midazolam for status epilepticus. AustPrescr. 2017 Feb;40(1):23-25. <https://www.ncbi.nlm.nih.gov/pubmed/28246432> [↑](#footnote-ref-8)
8. Jain P, Sharma S, Dua T, Barbui C, Das RR, Aneja S. Efficacy and safety of anti-epileptic drugs in patients with active convulsive seizures when no IV access is available: Systematic review and meta-analysis. Epilepsy research. 2016;122:47-55. [↑](#footnote-ref-9)
9. [↑](#footnote-ref-10)
10. Brophy GM, Bell R, Claassen J, Alldredge B, Bleck TP, Glauser T, Laroche SM, Riviello JJ Jr, Shutter L, Sperling MR, Treiman DM, Vespa PM; Neurocritical Care Society Status Epilepticus Guideline Writing Committee. Guidelines for the evaluation and management of status epilepticus. Neurocrit Care. 2012 Aug;17(1):3-23. <https://www.ncbi.nlm.nih.gov/pubmed/22528274> [↑](#footnote-ref-11)
11. Brophy GM, Bell R, Claassen J, Alldredge B, BleckTP, Glauser T, Laroche SM, RivielloJJ Jr, Shutter L, Sperling MR, Treiman DM, Vespa PM; Neurocritical Care Society Status Epilepticus Guideline Writing Committee. Guidelines for the evaluation and management of status epilepticus. Neurocrit Care. 2012 Aug;17(1):3-23. [↑](#footnote-ref-12)
12. Havens PL. Postexposure prophylaxis in children and adolescents for nonoccupational exposure to human immunodeficiency virus. Pediatrics. 2003;111(6 Pt 1):1475-89. [↑](#footnote-ref-13)
13. SAMF, 2016 [↑](#footnote-ref-14)