Non-emergency patient transport
Clinical practice protocols
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Introduction

The Department of Health has approved these clinical practice protocols for use by non-emergency patient transport (NEPT) providers for the triage and care of patients during patient transfers. In addition, these protocols outline the scope of practice for first aid services at public events by NEPT providers.

These protocols will provide a consistent framework for NEPT provider knowledge, education and training.

The drug reference material in this manual includes indications for use, contraindications, side effects and dose ranges. If required, more comprehensive information about these drugs is available from other sources.

It is intended that this manual will be updated regularly. To provide feedback regarding these protocols, contact the Manager, Private Health Services Regulation, Department of Health, Level 18, 50 Lonsdale Street, Melbourne VIC 3000.

Data and audits to be provided to the Department of Health

Each NEPT provider is expected to have a system of audit in place to identify any variations to routine care. Variations to routine care should be submitted to the department as indicated below.

In addition, patient care records for the following circumstances must be forwarded to the Manager, Private Health Services Regulation, Department of Human Services, for review:

- Death of a patient (immediately)
- Any case where a patient has suffered cardiac arrest during NEPT care whether or not the patient has a ‘not for resuscitation’ or ‘refusal of treatment’ certificate (immediately)
- Any transfer of a patient with mechanical circulatory assist device (monthly)
- Any adverse event (monthly)

Please forward records to:

The Manager  
Private Health Services Regulation  
Department of Health  
Level 18, 50 Lonsdale Street  
Melbourne VIC 3000
Authority-to-practice matrix

It is important to note that NEPT employees are authorised to practice at different levels. In particular, the use of protocols identified in this manual requires specific training, and the protocols are only to be adopted according to the table below. Where a number is indicated please refer to the notes at the end of the matrix for further detail.

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<th>AO</th>
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**Legend**

PTO = Patient transport officer  
ATA = Ambulance transport attendant  
AO = Ambulance officer  
RN1 = Registered nurse (division 1)  
RN1 critical care qualification = Registered nurse (division 1) with a qualification in critical care  
SAED = Semi-automatic external defibrillator  
GTN = Glyceryl trinitrate  
IV = Intravenous  
PICC = Peripherally inserted central catheter

**Notes**

(1) Selective authorisation – pre-existing annual competency.

(2) An intravenous infusion of an analgesic may be maintained during transport provided that:

- the infusion consists of a narcotic, with or without ketamine
- the patient has been stabilised on the infusion for at least one hour prior to transport
- there is a written order (not a photocopy) by a medical practitioner for the infusion, including the amount of drug(s) added to a volume and type of fluid. The infusion dose range must be prescribed and may be adjusted according to patient need. No bolus dose may be given during transport.
(3) A subcutaneous infusion of an analgesic in a chronic pain or palliative care patient may be maintained during transport by all NEPT staff provided that:
- the patient has been stabilised on the infusion for at least one hour prior to transport
- there is no expectation that the NEPT provider will be required to adjust the dose of the drug.

(4) The administration of an antibiotic is only permissible if:
- the transport is prolonged and it is not feasible or medically appropriate to administer the antibiotic prior to or following the transport
- there is a written order (not a photocopy) by a medical practitioner for the dose of the drug, the rate of administration, and the volume and type of diluent (if needed)
- the antibiotic has been administered within the preceding 24 hours without adverse effect.

(5) The administration of vasoactive drugs (dobutamine, adrenaline, noradrenaline, isoprenaline) is only permissible if:
- the patient has been stabilised on the infusion for at least one hour prior to transport
- there is a written order (not a photocopy) by a medical practitioner for the amount of vasoactive drug added to a volume and type of fluid, the range of rate of administration, and the target blood pressure.

(6) The administration of blood products (packed cells, fresh frozen plasma or platelets) is only permissible under the following conditions:
- the indication for packed red cells is chronic anaemia, with no evidence of acute blood loss, or hypotension (<100 mmHg) or tachycardia (>100/min)
- the patient has been stabilised on the infusion for at least 30 minutes prior to transport
- there is a written order (not a photocopy) by a medical practitioner for the blood product, and rate of infusion
- the cross-match form is sighted by the NEPT provider, and the ID number of the blood product is noted on the patient care record
- no new bag of any blood product may be commenced during transport
- at the conclusion of the infusion, the line may be flushed with normal saline (supplied by the sending hospital) at a rate specified by the sending medical practitioner
- infusions of colloid (such as albumin or gelatin) must be replaced with crystalloid (without additives) prior to transport.

(7) A crystalloid infusion containing added potassium chloride requires administration via a pump device (note: Hartmann’s solution contains potassium, but in physiological concentration, and therefore does not need a pump device).

(8) There is a risk of air embolism if disconnection of a CVC occurs, therefore a registered nurse (division 1) must supervise a patient with this catheter. A peripherally inserted central catheter (PICC) or femoral vein catheter line has minimal risk of air embolism and may therefore be regarded as a peripheral venous catheter.

(9) An intra-aortic balloon pump must be supervised by a registered nurse (division 1) critical care nurse who has current (annual) competency in the make and model of the balloon pump being used (see also the detail regarding ‘Patients with mechanical circulatory support’ on page 18).

(10) Total parenteral nutrition is administered either via a central venous catheter or a PICC. In either case, the solution must be administered using a pump device. The rate of infusion must not be changed during transport.
(11) The administration of insulin by infusion is only permissible if:
- the patient has been stabilised on the infusion for at least one hour prior to transport
- there is a written order (not a photocopy) by a medical practitioner for the amount of insulin added to a volume and type of fluid and the rate of administration
- a glucometer (or similar device) is available at all times during the transport to enable measurement of blood sugar.

(12) An infusion of chemotherapy delivered via an ambulatory pump or equivalent, which is low risk of potential complications, may be transported by all staff levels provided there is no expectation of any management of the infusion by NEPT staff. The NEPT vehicle must have a cytotoxic waste spill kit.

(13) A registered nurse (division 1) with current competency in IV cannulation may replace an existing intravenous cannula that has ‘tissued’ during transport, if it is judged that this cannot wait until arrival at the sending hospital. No more than two attempts at IV cannulation are permitted.
Scope of practice

Under the legislation that outlines the scope of practice for NEPT, the staffing of the NEPT vehicle depends on patient illness acuity. Patient acuity is defined in the legislation as low, medium or high.

The regulations and these clinical practice protocols detail the staffing required for each of these patient groups and describe suitable patients for NEPT.

Home-to-hospital and hospital-to-home transfers

These transfers will be of low-acuity patients who have been referred to NEPT by an appropriate health professional as described later in these protocols.

All patients who are transported from home to hospital, from home to a healthcare facility (such as a radiology department or dialysis centre) or from a healthcare facility to home must meet the definition of a ‘low-acuity patient’, with the exception of medium-acuity patients such as home-ventilated patients or ‘hospital in the home’ patients with IV infusions managed by the patient or a visiting nurse.

Despite appropriate triage at the point of call, patient deterioration may have occurred during the time between referral and arrival of NEPT for home-to-hospital transfer, and the patient may have become an ‘emergency patient’. If any clinical criteria are present on arrival that indicate that the patient should be regarded as an ‘emergency patient’, then an immediate referral to ambulance communications must be made for advice (by phoning 000). While awaiting arrival of the emergency ambulance, emergency care (where applicable) is to be commenced and maintained by the NEPT crew.

If emergency criteria develop during transport, NEPT must consult with ambulance communications (by phoning 000). In a rural setting, the NEPT staff may be directed by the emergency ambulance service to rendezvous with an emergency ambulance at a designated point.

Notwithstanding the presence of emergency patient criteria, NEPT staff may transport a patient who has been designated as ‘palliative care’ and ‘not for advanced life support’ because of pre-existing terminal illness.

Inter-hospital transfer (IHT)

These transfers may be of low, medium or high-acuity patients. A situation suitable for NEPT IHT is defined as one in which a medical practitioner has determined that the patient transfer is not urgent and that the patient is expected to be stable for the duration of the transfer.

If emergency criteria develop during inter-hospital transport, NEPT staff must contact the emergency ambulance service (by phoning 000) and may be directed by the emergency ambulance service to either proceed to the nearest appropriate health service, or rendezvous with an emergency ambulance at a designated point.

Notwithstanding the recommendation of a medical practitioner at a hospital, patients in the following situations must be transferred by emergency ambulance (see also ‘Definitions of the adult emergency patient’ on page 8):

- There is a possible requirement for a lights or sirens transport.
- The patient is experiencing chest pain or acute coronary syndrome and is being transferred for urgent coronary angiography or immediate cardiac surgery.
• The patient’s chest pain is due to an acute coronary syndrome where the patient has not been pain-free for two hours.
• There is suspected or diagnosed sub-arachnoid haemorrhage which has not been definitively treated.
• There is suspected or diagnosed acute spinal cord injury.

It is not permissible for NEPT employees to administer any fluids or drugs outside the scope of practice as detailed in this document.

In particular, it is not permissible for registered nurses employed by NEPT providers to carry any drugs, whether supplied by the sending hospital or others, nor to administer any drug or perform any invasive procedure (other than IV cannulation) outside these protocols. If a patient may require administration of a drug during transport outside these protocols (such as atropine, morphine or metoclopramide), then an escort from the sending hospital is required.

A registered nurse or medical practitioner employed by the sending hospital who is escorting the patient may carry and administer any drugs or perform any therapeutic procedures that are within their scope of practice in their sending hospital.

Public event duties

The NEPT provider may provide first aid to any ill or injured person at a public event. In addition, the use of drugs outlined within these clinical practice protocols (such as pain relief) is allowed.

When a patient requires transport, a medical practitioner, who has physically assessed the patient, will determine the most suitable resource for transport. Where a medical practitioner is not in attendance, the NEPT provider will contact the emergency ambulance service (by phoning 000). In the absence of injuries associated with suspected major trauma (see ‘Appendix 2: Adult major trauma criteria’ on page 61), and if deemed appropriate by an ambulance paramedic in the ambulance service communications centre, the NEPT provider may proceed with the transport.

The current definitions of potential major trauma are provided as Appendix 2 for information. Patients who meet the definition of major trauma must be transported by emergency ambulance to the nearest appropriate receiving facility, as per the Victorian State Trauma System.

Major disasters

In cases where the NEPT provider is in attendance at a major disaster, a NEPT provider may facilitate transport of any patients (including ‘emergency patients’) to hospital when authorised by the designated ambulance scene commander. A major disaster is defined as a multi-patient incident for which there may be insufficient emergency ambulance resources immediately available to provide transport to hospital.
Definitions of the adult emergency patient

The NEPT regulations refer to patients who may be ‘time-critical’. For clarity, the ‘time-critical’ patient is referred to as the ‘emergency patient’ in these protocols.

The following symptoms, signs and clinical syndromes define an emergency patient who may not be transported by NEPT.

See also ‘Definitions of the paediatric emergency patient’ on page 46.

Moderate to severe respiratory distress

Respiratory rate > 30/min, and at least one of the following:

- Distressed, anxious or exhausted
- Speaks in short phrases or unable to speak
- Use of accessory muscles
- Inspiratory stridor
- Pale or sweaty
- Cyanosed
- Altered conscious state
- Pulse rate < 50 or > 120/min

Note: A patient with mild respiratory distress who is not deteriorating may also be transported by NEPT.

Decreased perfusion

Blood pressure < 100 mmHg systolic. Note: A patient with known chronic (>24 hours) hypotension who has no other signs of poor perfusion may be transported by NEPT. Also, a patient with acute (<24 hours) hypotension, which is usual for the patient (such as immediately after renal dialysis), may also be transported by NEPT.

Pulse < 50 or > 120/min. Note: The patient with known chronic (>24 hours) bradycardia or tachycardia who has stable blood pressure may be transported by NEPT.

A patient with a temporary pacing wire inserted to treat bradycardia is regarded as potentially unstable and therefore an emergency patient.

Decreased conscious state

GCS < 13. Note: A patient with documented chronic (>24 hours) altered conscious state (due to severe dementia, for example) who has no signs of acute deterioration (GCS changed by >2 points) may be transported by NEPT.

Chest pain or acute coronary syndrome

Any patient aged over 20 years with chest pain which could be of cardiac cause is regarded as an emergency, unless the pain has completely resolved with the usual medication of the patient.

For inter-hospital transport of a patient with a suspected acute coronary syndrome, the patient must be free of ischaemic chest pain for two hours prior to transport or is otherwise regarded as an emergency patient.
A patient who has failed to reperfuse with thrombolytic therapy and requires immediate transfer for coronary angiography and possible intervention therapy is an emergency patient.

A patient who has undergone coronary angiography and requires transfer for immediate cardiac surgery (for example, because of coronary artery dissection or other immediate life threat) is an emergency patient.

**Suspected stroke**
Within nine hours of onset is regarded as an emergency patient. Note: If conscious state is stable and a medical practitioner has evaluated the patient, then they may be transported by NEPT.

**Headache**
All headaches must be regarded as possible sub-arachnoid haemorrhage. Therefore, unless sub-arachnoid haemorrhage has been ruled out by appropriate investigations or a medical practitioner has made an alternative diagnosis, there is a potential for sudden neurological deterioration, and the patient is regarded as an emergency patient.

**Abdominal pain**
Acute (<24 hours) and age over 60 years may be a rupture of an aortic aneurysm. Unless this diagnosis has been excluded by a medical practitioner, then the person is regarded as an emergency patient.

**Back pain**
Acute (<24 hours) and age over 60 years may be a rupture of an aortic aneurysm. Unless this diagnosis has been excluded by a medical practitioner, then the person is regarded as an emergency patient.

**Gastro-intestinal bleeding**
Haematemesis or rectal bleeding of acute onset (in the last 24 hours) are regarded as emergency patients except when a health professional has evaluated the patient and confirmed that vital signs are stable.

**Suspected meningococcal septicaemia**
Patients with evidence of septicaemia, with a rash suggestive of this disease, are regarded as emergency patients.

**Trauma patients**
Patients with criteria for major trauma require transport by emergency ambulance to a major trauma service (see ‘Appendix 2: Adult major trauma criteria’ on page 61).

However, patients aged over 55 years with a suspected simple fracture of the neck of femur or pelvis following a fall from a standing position are not regarded as major trauma and may be suitable for NEPT.
Patients with pain

Significant pain other than chest pain or headache does not necessarily make the patient an emergency patient. A patient may be transported by NEPT even if the NEPT pain relief protocol is not applicable because:

- awaiting the arrival of an emergency ambulance may delay definitive pain relief available in an emergency department
- providing appropriate analgesia for a patient may also be outside the scope of an ambulance paramedic (such as non-steroidal analgesia therapy for back or joint pain).

Where a health professional has assessed the patient as low-acuity and requested NEPT to a diagnostic or outpatient service (and indicated that the patient may have pain on movement), an ATA qualified staff member must be part of the crew to be dispatched, to enable administration of pain therapy as needed.

Obstetric patients

Patients with vaginal bleeding in the third trimester and patients in labour are regarded as emergency patients.
Low-acuity patients

A patient is defined as low-acuity if all of the following apply:

1. The patient requires active monitoring
2. The patient has one or more of the following conditions:
   • inability to travel in a normal seated position
   • requirement for oxygen during transport
   • impaired cognitive function
   • inability to travel more than a few steps unaided
3. The patient’s condition is not time-critical or is not likely to become time-critical during transport (See ‘Definitions of the adult emergency patient’ on page 8), and
4. An assessment has been made by an appropriate health professional that the patient can reasonably be expected to be physically and behaviourally stable for the duration of the transport.

An appropriate health professional for the purposes of these clinical practice protocols is one of the following:

• A medical practitioner who has knowledge of the patient and has decided that the patient complaint is not urgent
• A registered nurse (division 1) who has examined the patient
• An ambulance paramedic in the communications department of an ambulance service who has decided that the patient complaint is not urgent based on a discussion with the patient or a health professional who has seen and examined the patient
• An ambulance paramedic or registered nurse working for an ambulance service telephone referral service who has triaged the patient to NEPT transport according to medically approved triage guidelines
• A ‘mental health practitioner’ within the meaning of the Mental Health Act 2014 who has assessed the patient. A mental health practitioner is any of the following who is employed or engaged by a designated mental health service: a registered psychologist, registered nurse, social worker or registered occupational therapist.

It is also acceptable for NEPT to transport a patient who is not acutely ill, but who requires stretcher transport because of a chronic medical condition (such as quadriplegia) and who is unable to access a suitable alternative form of transport. An example of this would be a stretcher patient who wishes to attend a social function.

If air transport is being considered, the guidance on ‘Patients being transported by aircraft’ on page 19 should be followed.

Staffing

The NEPT staffing for low-acuity patients is a minimum of one patient transport officer.

A minimum requirement of two patient transport officers is required in stretcher vehicles when:

• an occupational health and safety assessment has been undertaken (see ‘Appendix 4: Risk assessment for loading a patient into a vehicle – single operator’ on page 65) that indicates that stretcher loading by one PTO would be unsafe (for example, because the stretcher design is not appropriate for loading by one person)
• the patient is unable to walk to the vehicle and lie down on a stretcher unaided.
• there is more than one patient transported in the vehicle.
For transport by air, the minimum NEPT staffing for low-acuity patients is one ambulance transport attendant in addition to the pilot.

Patient care record documentation

The NEPT record must include a brief description of the clinical features that confirm that the patient is low-acuity. Unless otherwise clinically indicated, the measurement and recording of vital signs is not required.

Multiple patient transports

It may be appropriate for NEPT to transport more than one low-acuity patient in a vehicle. However, when one patient is unloaded and transferred into a health facility, consideration needs to be given to the comfort and security of the other patient(s). Patients may only be left unattended in a NEPT vehicle if:

- they are cognitively stable, and agree to be left unattended
- the cabin temperature is comfortable with the vehicle engine not running.

Patients with possible infectious disease (such as influenza, measles, mumps or TB) or colonisation with multi-resistant organisms (such as MRSA or VRE) must not be transported with other patients. Following the transport of such patients, the vehicle must be cleaned in accordance with standard infection control practice.
Medium-acuity patients

A patient is defined as medium-acuity if all of the following apply:

1. The patient requires active monitoring or management. This includes, but is not restricted to, patients who may require:
   (a) cardiac monitoring
   (b) observation and monitoring of an intravenous infusion of a crystalloid fluid, with or without an infusion pump
   (c) observation and monitoring of an intravenous infusion of crystalloid fluid containing glyceryl trinitrate or heparin using (an) infusion pump(s) in cases where the patient has been pain-free for a period of not less than two hours from the time of presentation
   (d) care of an intercostal catheter or central venous catheter
   (e) care in relation to a recent fracture of the spinal column (without spinal cord injury)
   (f) care in relation to being on home ventilation
   (g) behavioural observation or monitoring.

2. The patient has had an assessment by a medical practitioner that they can reasonably be expected to be haemodynamically stable for the duration of the transport

3. An assessment has been made by a registered medical practitioner or ‘mental health practitioner’ that the patient will be behaviourally stable for the duration of the transport. A mental health practitioner is any of the following who is employed or engaged by a designated mental health service: a registered psychologist, registered nurse, social worker or registered occupational therapist)

4. There is no likelihood that the patient will require transport under emergency conditions, and

5. The patient does not meet the criteria of an emergency patient.

If air transport is being considered, the guidance on ‘Patients being transported by aircraft’ on page 19 should be followed.

Staffing

For transport by road, the NEPT staffing for medium-acuity patients is a minimum of at least one patient transport officer and one ambulance transport attendant, ambulance officer or registered nurse (division 1) with appropriate bridging course (see See ‘Table 1: Authority-to-practice matrix’ on page 2 for requirements).

Two medium-acuity patients who meet the criteria of 1(b) or 1(d) above, but only one medium-acuity patient who meets the criteria of 1(a), 1(c), 1(e), 1(f) or 1(g), may be transported in a NEPT road vehicle at any given time.

For transport by air, the minimum NEPT staffing for medium-acuity patients is one ambulance transport attendant.
Documentation

The NEPT record must include a brief description of the clinical features that confirm the patient is appropriate for medium-acuity NEPT transport and the name of the medical practitioner who assessed the patient, as well as the date and time seen.

For patients with a physical health condition or who are under sedation, the measurement and recording of vital signs (BP, pulse, respirations, GCS) prior to transport and on arrival at the receiving facility is required. Vital signs in these instances are also to be taken and recorded at half-hourly intervals (or the same time intervals as measured in the hospital) if the duration of the journey allows.

When transporting a patient who has mental illness and who has not received sedation, behavioural observations only should be recorded half-hourly for the duration of the journey.

Patients on home ventilation

Patients on home ventilation are regarded as medium-acuity patients, provided that the NEPT attendant or a carer is able to perform:

- tracheal suctioning
- connection of the ventilator to the tracheostomy in the event of accidental disconnection (if the patient is unable to do this)
- connection of a bag or valve device (such as Ambu bag) to the tracheostomy for the administration of ventilation in the event that the ventilator fails.
High-acuity patients

A patient is defined as high-acuity if all of the following apply:

1. An assessment has been made by a registered medical practitioner that the patient can reasonably be expected to be haemodynamically stable for the duration of the transport
2. An assessment has been made by a registered medical practitioner or ‘mental health practitioner’ that the patient will be behaviourally stable for the duration of the transport. A mental health practitioner is any of the following who is employed or engaged by a designated mental health service: a registered psychologist, registered nurse, social worker or registered occupational therapist
3. There is no likelihood that the patient will require transport under emergency conditions
4. The patient does not meet the criteria of an emergency patient, and
5. Active monitoring, management and intervention is required, which may include a patient:
   • on mechanical ventilation
   • with an intravenous infusion of a vasoactive drug
   • with a tracheostomy
   • with a central or arterial line
   • with a device which supports the circulation (intra-aortic balloon pump or extra-corporeal membrane oxygenation).

If air transport is being considered, the guidance on ‘Patients being transported by aircraft’ on page 19 should be followed.

Staffing

When transporting by road, NEPT staffing for high-acuity patients is at least one of the following at a minimum:

• At least one ambulance transport attendant or ambulance officer, and one patient transport officer and an appropriately trained medical or nurse escort from the health service from which the patient is being transported
• One patient transport officer and one NEPT registered nurse (division 1) with an ICU/CCU/emergency qualification and recent experience in the critical care setting
• Staff from PIPER/ARV (retrieval services) and one patient transport officer

When transporting by air, the NEPT staffing for high-acuity patients is at least one of the following in addition to the pilot:

• At least one ambulance transport attendant or ambulance officer and an appropriately trained registered medical practitioner escort or nurse escort from the health service from which the patient is being transported
• One NEPT registered nurse (division 1) with an ICU/CCU/emergency qualification and recent experience in the critical care setting
• Staff from PIPER/ARV (retrieval services) and one ambulance transport attendant
Documentation

The NEPT record must include a brief description of the clinical features that confirm the patient is high-acuity and include the name of the escort and the name of the medical practitioner who assessed the patient as well as the date and time that the assessment was made.

The measurement of vital signs must be undertaken by the medical or nurse escort or NEPT registered nurse (division 1) nurse (as above) and recorded on the transfer documentation.

Notes

If a high-acuity patient is referred to NEPT for transport, an appropriately trained registered nurse (division 1) or medical practitioner employed by the NEPT provider, or a medical practitioner or registered nurse (division 1) from the sending facility, is required to escort the patient. If this resource is unavailable, then an emergency ambulance is required to undertake the transport.

Only one high-acuity patient at any given time may be transported in a NEPT road vehicle.

All ARV transfers must be undertaken using the emergency ambulance service, unless the attending retrieval physician specifically approves the use of NEPT.
Mechanically ventilated patients

All mechanically ventilated patients who are being transported by NEPT must be accompanied by a medical practitioner who has the appropriate skills and equipment to undertake this task. The exceptions to this requirement are:

1. a stable ventilated patient transported by Air Ambulance Victoria, who requires transfer from hospital to aircraft or aircraft to hospital, may be escorted in a NEPT vehicle by a MICA flight paramedic working for an emergency ambulance service.

2. a patient on home ventilation (see ‘Medium-acuity patients’ on page 13).

A patient who is breathing spontaneously via a tracheostomy may be transported by a registered nurse (division 1) with a critical care qualification, provided that the tracheostomy was performed more than five days prior to transfer. If the tracheostomy was performed within five days, a medical practitioner who has the appropriate skills and equipment to undertake the task of tracheal tube replacement or intubation must accompany the patient.

Patients who have undergone laryngectomy and permanent tracheostomy are not regarded as high-acuity on the basis of this surgery alone.

All escorts must be appropriately seated and restrained, and all equipment must be securely fastened during transfer.
Patients with mechanical circulatory support

The following requirements apply:

- For patients with an intra-aortic balloon pump, extra-corporeal membrane oxygenation or similar circulatory support device, careful consideration of the potential for patient instability needs to be given by the approving medical practitioner. In particular, there must be awareness of the possible delay in arrival at the receiving hospital due to traffic conditions given the inability of NEPT to upgrade to a Code 1 response.

- The assessment of haemodynamic stability in these patients must take into account the fact that systolic blood pressure is not an accurate guide to stability. Some patients on an intra-aortic balloon pump or other support may be stable with lower blood pressure. The sending medical practitioner must be satisfied that the patient is stable for NEPT.

In any cases of doubt, an emergency ambulance must undertake the transport.

All patients with mechanical circulatory support must have an appropriate medical perfusionist or nurse and medical practitioner escort.

The circulatory assist device must be loaded by the NEPT staff or by means of an appropriate lifting device. The medical and nursing staff at the sending or accepting hospital will be unable to assist with the lifting of heavy equipment into the vehicle.
Patients being transported by aircraft

A patient who meets any of the acuity descriptions may be transported by air.

The effect that altitude, travel in the type of aircraft proposed and the difficulty of stopping en route may have on the patient’s psychological wellbeing and physical health and on the crew, as well as considerations of aircraft safety must be taken into account prior to a patient being assessed as suitable for air transport.

Altitude considerations

Particular caution is required when a patient has a condition that requires the administration of oxygen prior to air travel, including patients with chronic shortness of breath. The effects of altitude and the inability to access additional resources once the journey has commenced require that caution be exercised when assessing the suitable level of escort and equipment.

Patients with cardiac or respiratory conditions must be monitored with pulse oximetry during flight, and supplemental oxygen must be provided to ensure an oxygen saturation of over 92 per cent, except in the following circumstances:

• Ensure oxygen saturation is over 90 per cent for patients with chronic obstructive pulmonary disease.
• Ensure oxygen saturation is over 95 per cent for patients with stable acute coronary syndrome.

In addition, patients with recently applied (<72 hours) plaster casts must be monitored carefully, and the plaster cast split if there is additional discomfort during flight.

Patients with any barotrauma such as pneumothorax, decompression illness, or intracranial air must only be transported by aircraft when it is possible to maintain cabin pressure at sea level.

For transport by road by NEPT from aircraft to hospital or hospital to aircraft, all the criteria for low, medium and high-acuity transport apply.
Patient assessment

Conscious state assessment

Assess conscious state using Glasgow Coma Scale.

Table 2: Glasgow Coma Scale

<table>
<thead>
<tr>
<th></th>
<th>Eye opening</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Spontaneous</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>To voice</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>To pain</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>A: _______</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Verbal response</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.</td>
<td>Orientated</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Confused</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Inappropriate words</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Incomprehensible sounds</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>B: _______</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Motor response</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.</td>
<td>Obey command</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Purposeful movements (pain)</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Withdraw (pain)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Flexion (pain)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Extension (pain)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>C: _______</td>
<td></td>
</tr>
</tbody>
</table>

Total GCS (Maximum score = 15)

\[(A + B + C) = _______\]
Respiratory assessment

Table 3: Respiratory assessment

<table>
<thead>
<tr>
<th>Normal</th>
<th>Severe respiratory distress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>12–16/min Rapid (&gt;30)</td>
</tr>
<tr>
<td>Appearance</td>
<td>Calm, quiet Distressed, exhausted</td>
</tr>
<tr>
<td>Ability to speak</td>
<td>Clear and steady Speaks in short phrases or unable to speak</td>
</tr>
</tbody>
</table>
| Noises          | Usually quiet May be no breath sounds  
Pulmonary oedema: crackles with possibly inspiratory +/- expiratory wheeze  
Upper airway obstruction: Inspiratory stridor |
| Skin colour     | Pink and warm Sweaty and may be cyanosed         |
| Conscious state | Alert Altered or unconscious                      |
| Pulse rate      | 60–100 <50 or >120/min                           |

Notes
Severe respiratory distress is defined as rapid respirations (>30/minute) plus one or more of the above criteria where the onset is within 24 hours. Immediate referral to the emergency ambulance service (by phoning 000) is required and emergency care is to be commenced without delay.

Perfusion assessment
The perfusion assessment is made up of a series of observations that, when considered together, provide an indication of a patient’s perfusion and the function of the cardiovascular system. These observations are:
- blood pressure
- pulse – rate
- skin – colour, temperature and moistness
- conscious state.

Table 4: Perfusion assessment

<table>
<thead>
<tr>
<th>Skin</th>
<th>Pulse</th>
<th>Blood pressure</th>
<th>Conscious state</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate perfusion</td>
<td>Warm, pink and dry 50–120/min</td>
<td>&gt;100 mmHg systolic</td>
<td>Alert and orientated in time and place</td>
</tr>
<tr>
<td>Inadequate perfusion</td>
<td>Cool, pale, clammy &lt;50 or &gt;120/min</td>
<td>&lt;100 mmHg systolic</td>
<td>May be alert, or conscious state may be altered</td>
</tr>
<tr>
<td>No perfusion</td>
<td>Cool, pale, clammy Absence of palpable pulse</td>
<td>Unable to record</td>
<td>Unconscious</td>
</tr>
</tbody>
</table>
Breathing difficulties

Oxygen therapy
Oxygen may be administered:

- to patients with:
  - new onset respiratory distress, where a medical practitioner has prescribed oxygen therapy during transfer (note prescribed rate)
  - new onset severe respiratory distress, where oxygen at 8 L/min by face mask may be administered, while awaiting arrival of emergency ambulance
  - mild–moderate respiratory distress, where oxygen at 8 L/min by face mask may be administered during NEPT transfer
  - chronic breathing difficulties on home oxygen, who may have oxygen continued during transport at the prescribed rate (usually 1–4 L/min by nasal prongs)
  - known chronic obstructive pulmonary disease where a medical practitioner has not yet seen the patient, but who become breathless during loading on to the stretcher, may have oxygen administered by nasal prongs at 2 L/min. If breathlessness does not improve after 10 minutes manage as per ‘Figure 1: Breathing difficulty algorithm’ on the following page
- at maximum flow rate by bag/valve/mask during cardio-pulmonary resuscitation
- for the nebulisation of salbutamol (see below).

Salbutamol
Patients with breathing difficulties and wheeze may benefit from salbutamol therapy. Salbutamol may be administered by an oxygen-driven (8L/min) nebuliser for patients with:

- new onset respiratory distress, where a medical practitioner has prescribed salbutamol therapy
- mild exacerbation of chronic obstructive pulmonary disease or asthma who routinely use salbutamol
- new onset severe respiratory distress and wheeze, while awaiting arrival of an emergency ambulance (see ‘Figure 1: Breathing difficulty algorithm’ on the following page).
Figure 1: Breathing difficulty algorithm

1. Initial management:
   - Assist into an upright position.
   - Commence oxygen therapy as per the protocol on page 42
   - If in severe respiratory distress, activate emergency ambulance response (ring 000)

2. If wheeze is present or patient has history of asthma:
   - Administer salbutamol 10 mg via nebuliser mask with oxygen 8 L/min
   - Continue treatment (5 mg every five minutes) until patient states breathing improved (no longer severe respiratory distress) or handover to paramedic.

3. If condition improves, commence transport to destination and notify emergency communications centre:
   - Notify receiving facility
   - Continually reassess patient during transport and modify treatment as required

3. Commence transport to rendezvous with emergency ambulance as advised by emergency communications centre:
   - Continually reassess patient during transport and modify treatment as required

3. Wait with patient for arrival of an emergency ambulance (unless a higher level of care is present):
   - Continually reassess patient while waiting for ambulance
   - Notify emergency communications centre if patient condition deteriorates (ring 000)

Notes
- If a foreign body in the upper airway is suspected, and the patient is not able to talk, breathe or cough, activate the emergency ambulance response and administer back blows or anterior chest thrusts as required, and administer oxygen.
- If an altered conscious state occurs at any time, immediately commence oxygen at a maximum rate via a bag-valve-mask. Assist ventilation as required and activate an emergency ambulance response.
- If the patient is non-breathing, be aware that over-ventilation of the asthmatic patient may worsen their condition. In the case of severe asthma and respiratory arrest, slow bag-valve-mask ventilation at the following rates may be necessary:
Table 5: Ventilation rates by age

<table>
<thead>
<tr>
<th>Age</th>
<th>Ventilation Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>6–8 per minute</td>
</tr>
<tr>
<td>Large child</td>
<td>8–12 per minute</td>
</tr>
<tr>
<td>Small child</td>
<td>10–15 per minute</td>
</tr>
<tr>
<td>Infant</td>
<td>15–20 per minute</td>
</tr>
</tbody>
</table>

If the patient becomes pulseless at any stage, manage as per the ‘Cardiac arrest protocols’ beginning on page 29.
Chest pain

Sub-lingual GTN
Sub-lingual GTN is authorised for use by NEPT if chest pain occurs:

- during transport of a patient with an acute coronary syndrome despite therapy with heparin or GTN therapy
- during transport of a patient who has known ischaemic heart disease, where the chest pain is not an unusual occurrence for the patient
- in a patient without known ischaemic heart disease, which could be cardiac in origin, while awaiting the arrival of an emergency ambulance.

Methoxyflurane
Methoxyflurane is authorised for treatment of chest pain by NEPT if chest pain occurs:

- during transport of a patient with an acute coronary syndrome despite therapy with heparin or GTN therapy, and blood pressure < 110 mmHg contraindicates the use of sublingual GTN
- during transport of a patient who has known ischaemic heart disease, where the chest pain is not an unusual occurrence for the patient and blood pressure < 110 mmHg contraindicates the use of sublingual GTN
- in a patient who is not known to have ischaemic heart disease, while awaiting the arrival of the emergency ambulance, when sublingual GTN is not authorised or blood pressure < 110 mmHg contraindicates the use of sublingual GTN.
Figure 2: Chest pain algorithm

1. Initial management:
   - Assess if likely to be cardiac pain using DOLOR (Description, Onset, Location, Other symptoms, Relief) and determine pain severity using verbal pain rating scale (0–10)
   - Administer oxygen 8 L/min via face mask

2. If likely to be cardiac pain or discomfort: Contact emergency ambulance service (ring 000)
   - Administer chewable aspirin 300 mg (one tablet) if no allergies and not already taken in last 24 hours

3. If pain score > 2 and previous sublingual GTN administration:
   - Administer sublingual GTN 0.6 mg (one tablet) if BP > 110 mmHg and no contraindications (see drug sheet)
   - Repeat sublingual GTN 0.6 mg (one tablet) every five minutes until pain is reduced to a comfortable or tolerable level or until the onset of side effects
   - Assess vital signs between each administration
   - In the event of a sudden altered conscious state or fall in blood pressure to <100 mmHg following sublingual GTN administration, immediately remove the tablet from the patient’s mouth

3. If pain score > 2 and no previous sublingual GTN administration:
   - Administer sublingual GTN 0.3 mg (half tablet) if BP > 110 mmHg and no contraindications (see drug sheet)
   - Repeat sublingual GTN 0.3 mg (half tablet) every five minutes until pain is reduced to a comfortable or tolerable level or until the onset of side effects (see drug sheet)
   - Assess vital signs between each administration and cease sublingual GTN administration if BP falls below 110 mmHg
   - In the event of an altered conscious state or sudden fall in blood pressure following sublingual GTN administration, immediately lie patient flat and remove the tablet from the patient’s mouth

continues next page
Figure 2: Chest pain algorithm (continued)

4. If pain score > 2 and sublingual GTN contraindicated (BP < 110 mmHg):
   - Administer methoxyflurane 3 ml via Penthrox inhaler with oxygen if no contraindications (see drug sheet)
   - Repeat methoxyflurane 3 ml after 25 minutes if pain score remains > 2

5. Commence transport to destination advised by emergency communications centre:
   - Notify receiving facility
   - Continually reassess patient during transport and modify treatment as required

5. Commence transport to rendezvous with emergency ambulance as advised by emergency communications centre:
   - Continually reassess patient during transport and modify treatment as required

5. Wait with patient for arrival of an emergency ambulance:
   - Continually reassess patient while waiting for ambulance
   - Notify emergency communications centre if patient condition deteriorates

Notes

- During inter-hospital transfer of the patient with an acute coronary syndrome, mild chest pain which occurs despite GTN and heparin infusions may be treated with sublingual GTN and transport continued. An emergency ambulance need only be called if the chest pain does not promptly resolve with the administration of sublingual GTN, or the patient develops instability of vital signs.

- Similarly, chest pain that occurs during transport of a patient who has known ischaemic heart disease, where the chest pain is not an unusual occurrence for the patient, may be treated with sublingual GTN and transport continued. An emergency ambulance need only be called if the chest pain does not promptly resolve with the administration of sublingual GTN, or the patient develops instability of vital signs.
Pain protocol

Methoxyflurane is authorised for use by NEPT if:

- the patient is conscious and able to self-administer the methoxyflurane
- pain is a result of an acute injury and likely to be due to a fracture of ribs, long bone(s), the pelvis or spinal column
- the patient has chest pain and sublingual GTN therapy is contraindicated (such as due to low blood pressure)
- the patient has severe back or joint pain that is likely to be musculoskeletal in nature, where loading to a stretcher is associated with significant pain.

Figure 3: Pain algorithm

1. **Initial management:**
   - Assess pain score (1–10) using verbal pain rating scale

2. **If pain score > 2:**
   - Administer methoxyflurane 3 ml via Penthrox analgiser if no contraindications (see drug sheet). Administer with oxygen if indicated for respiratory distress or chest pain
   - If pain score remains > 2, one further dose of methoxyflurane 3 ml may be administered
   - Record on PCR doses of methoxyflurane given and effect on patient’s pain

3. **Commence transport:**
   - Undertake transport to destination
   - Continually reassess patient during transport and modify treatment as required
   - If pain worsening contact the emergency ambulance service (ring 000) and proceed as directed

Notes

- For patients at public events with traumatic pain, methoxyflurane may be administered while awaiting the arrival of the medical practitioner or emergency ambulance.
- Methoxyflurane must not be administered for any pain outside this protocol, such as headache or abdominal pain.
- The maximum dose of methoxyflurane for any one patient is 6 ml per 24-hour period. Under no circumstances is this to be exceeded.
- Patients with pain may be transported by NEPT provided that they do not otherwise meet the criteria of an emergency patient.
Cardiac arrest protocols

Ventricular fibrillation or pulseless ventricular tachycardia – not witnessed by NEPT

Figure 4: Management of ventricular fibrillation or pulseless ventricular tachycardia – not witnessed by NEPT

1. Initial management:
   - Confirm unconscious and no carotid pulse
   - Activate emergency ambulance response (ring 000)
   - Commence effective CPR (30 compressions to two breaths) (insert oral airway and commence ventilations with oxygen while preparing to defibrillate and during defibrillator charging)
   - Defibrillate single shock – monophasic 360 or biphasic 200 joules (or maximum as per manufacturer)
   - Immediately recommence CPR without carotid pulse or rhythm check
   - Perform CPR for two minutes and then check carotid pulse or rhythm

2. VF or pulseless VT remains:
   - Defibrillate single shock – monophasic 360 or biphasic 200 joules (or maximum as per manufacturer)
   - Immediately recommence CPR without carotid pulse or rhythm check
   - Perform CPR for two minutes and then check carotid pulse or rhythm
   - Repeat above cycle until arrival of emergency ambulance

3. If return of spontaneous circulation (ROSC):
   - Ventilate at a rate of 15 breaths per minute using a tidal volume of approximately 10 ml/kg
Ventricular fibrillation or pulseless ventricular tachycardia
– witnessed by NEPT

Figure 5: Management of ventricular fibrillation or pulseless ventricular tachycardia
– witnessed by NEPT

1. Initial management:
   - Confirm unconscious and no carotid pulse
   - Activate emergency ambulance response (ring 000)
   - Commence effective CPR (30 compressions to two breaths) (insert oral airway and commence ventilations with oxygen while preparing to defibrillate and during defibrillator charging)
   - Defibrillate monophasic $360 \times 3$ or biphasic $200 \times 3$ joules (or maximum as per manufacturer)
   - Perform CPR for two minutes and then check carotid pulse or rhythm

2. VF or pulseless VT remains:
   - Defibrillate single shock – monophasic $360$ or biphasic $200$ joules (or maximum as per manufacturer)
   - Immediately recommence CPR without pulse or rhythm check
   - Perform CPR for two minutes and then check carotid pulse or rhythm
   - Repeat above cycle until arrival of emergency ambulance

3. If return of spontaneous circulation (ROSC):
   - Ventilate at a rate of 15 breaths per minute using a tidal volume of approximately $10 \text{ ml/kg}$
Asystole or pulseless electrical activity (PEA)

Figure 6: Management of asystole or pulseless electrical activity (PEA)

1. **Initial management:**
   - Confirm unconscious and no carotid pulse
   - Activate emergency ambulance response (ring 000)
   - Commence effective CPR (30 compressions to two breaths)
   - Perform CPR for two minutes and then check carotid pulse or rhythm

2. **If asystole or PEA continues:**
   - Continue effective CPR and recheck carotid pulse or rhythm every two minutes
   - Repeat above cycle until arrival of emergency ambulance

3. **If return of spontaneous circulation (ROSC):**
   - Ventilate at a rate of 15 breaths per minute at a tidal volume of approximately 10 ml/kg
Automated external defibrillator (AED)

Figure 7: Automated external defibrillator algorithm

1. Initial management:
   - Confirm no pulse clinically
   - Activate emergency ambulance response
   - Commence effective CPR (30 compressions to two breaths) (insert oral airway and commence ventilations with oxygen while preparing AED)
   - Switch AED on
   - Attach electrodes as indicated on package
   - Follow AED spoken or visual directions (AED will analyse if shock required)
   - If reversion unsuccessful, perform CPR for two minutes

2. Continued resuscitation:
   - Remain in contact with the emergency ambulance communications centre who will advise the NEPT provider to:
     - remain with patient at scene until arrival of an emergency vehicle
     - transport patient to nearest hospital
     - rendezvous with an emergency vehicle
   - If transport is advised it should be undertaken carefully, obeying road rules. Stop the vehicle to re-analyse the rhythm and follow the voice prompts

Notes
- For the purposes of these protocols, an external automatic defibrillator (AED) is regarded as being the same as a shock advisory defibrillator (SAED).
- Although NEPT vehicles are required to carry a cardiac monitor, and may have a defibrillator that is able to be used in either shock advisory or manual mode, it is highly recommended that this type of defibrillator be used in shock advisory mode wherever possible.
- Perform CPR at a compression/ventilation ratio of 30:2 at a compression rate of 100 per minute with either one or two rescuers.
- CPR must not be interrupted for more than 10 seconds during rhythm or carotid pulse checks. If it is uncertain if a carotid pulse is present, then assume it is not and immediately commence or recommence CPR.
- Rescuers should changeover performance of external cardiac compressions every two minutes (during rhythm checks) to avoid fatigue and subsequent impact on CPR performance. Changeover time should not exceed five seconds.
- If another rhythm develops at any stage during resuscitation then reassess the patient and manage as per relevant protocol.
Withholding resuscitation

Cardiopulmonary resuscitation or defibrillation may only be withheld:

• if there is a ‘refusal of treatment’ certificate that states that cardiopulmonary resuscitation be withheld. This certificate may be sighted, or it may be accepted in good faith by those present at the scene that this document exists

• for inter-hospital transfer, or hospital-to-home transfer, a ‘not for resuscitation’ form must be sighted in the medical record of the transferring hospital. In addition, a copy of the ‘not for resuscitation’ form must be made and included with the patient care record. Special note should be made of any specific limitations of the ‘not for resuscitation’ order; for example, some orders state that a number of defibrillations, but not other advanced life support measures, may be given in the event of a cardiac arrest.
Hypoglycaemia

The treatment of hypoglycaemia is authorised for NEPT employees if:

- it occurs in a known diabetic, and is found on arrival or occurs during transport
- at public events, where a known diabetic presents to the NEPT provider with signs or symptoms.

Figure 8: Hypoglycaemia algorithm

1. **Initial management:**
   - Assess patient for conscious state, respiratory status and perfusion status
   - Be aware that patients with hypoglycaemia may be agitated, uncooperative or aggressive

2. **If patient responds to command**
   - Administer glucose paste 15 g orally

2. **If patient does not respond to command:**
   - Manage as an unconscious patient

3. **Commence transport to destination:**
   - Notify receiving facility of patient status and continue to monitor

3. **Contact emergency ambulance service**

4. **Commence transport to destination advised by emergency communications centre:**
   - Notify receiving facility
   - Continually reassess patient during transport and modify treatment as required

4. **Commence transport to rendezvous with emergency ambulance as advised by emergency communications centre:**
   - Continually reassess patient during transport and modify treatment as required

4. **Wait with patient for arrival of an emergency ambulance:**
   - Continually reassess patient while waiting for ambulance
   - Notify emergency communications centre if patient condition deteriorates

continues next page
5. Extended protocol

NB: This protocol can only be followed if there is the ability to measure the patient’s blood glucose level

- Perform random blood glucose (RBG)
- If RBG < 4 mmol/L and the patient is conscious, administer glucose paste 15 g orally
- If RBG < 4 mmol/L, and the patient has an altered conscious state and is older than eight years of age, administer glucagon 1 mg IMI
- If the patient has an altered conscious state, and is under eight years of age, administer glucagon 0.5 mg IMI
- If RBG > 4 mmol/L, no specific treatment is required and other causes should be considered

Since glucagon may take some time to take effect, and the patient may need subsequent evaluation by a medical practitioner, the patient must be transported by emergency ambulance.
Non-emergency patient transport: clinical practice protocols

Handover or notification

When providing pre-arrival information, or handing over a patient to another healthcare professional, patient information may be provided in a structured way using the IMISTA format.

<table>
<thead>
<tr>
<th>Introductory information, including patient’s name, age and gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main presenting problem</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Injuries or illness</td>
</tr>
<tr>
<td>Signs and symptoms, including vital signs survey</td>
</tr>
<tr>
<td>Treatment provided and response to treatment</td>
</tr>
<tr>
<td>Any other relevant information, such as past history, allergies or medication</td>
</tr>
</tbody>
</table>
NEPT pharmacology

Glyceryl trinitrate (GTN)

Presentation
0.6 mg tablets

Indications for use
Cardiac chest pain

Contraindications
Known hypersensitivity
Blood pressure < 110 mmHg systolic
Sildenafil citrate, vardenafil (or similar) taken in the past 24 hours, or tadalafil, Lavitra or similar in the preceding four days
Heart rate > 150 per minute or ventricular tachycardia

Precautions
No previous administration Elderly patients

Administration
Sublingual

Dose
Extended protocol: 0.3 mg (half tablet) sublingual if no previous administration
0.6 mg (one tablet) sublingual if previous administration

Side effects
Hypotension Tachycardia Headache Bradycardia Skin flushing

Special notes
Sublingual GTN is susceptible to heat and moisture and tablets must be stored tightly sealed in their original container and tablets discarded one month after the container is opened.
Do not administer a patient’s own medication as it may not have been stored in optimal conditions.
Aspirin

Presentation
300 mg chewable tablet

Indications for use
Cardiac chest pain or discomfort

Contraindications
Hypersensitivity to aspirin or salicylates
Actively bleeding peptic ulcers
Bleeding disorders
Suspected aortic aneurysm

Precautions
Nil of significance for the above indication

Dose
300 mg tablet

Side effects
Heartburn, nausea, gastrointestinal bleeding
Increased bleeding time
Hypersensitivity reactions

Special note
Aspirin is not be administered by NEPT for any condition other than acute chest pain of a cardiac nature (such as headache).
Glucagon

Presentation
1 mg in 1 ml Hypokit

Indications for use
Hypoglycaemia with RBG < 4 mmol and altered conscious state

Contraindications
Nil of significance for the above indication

Dose
8 years or greater 1 mg IM
< 8 years of age – 0.5 mg (0.5 ml) IMI

Precautions
Nil of significance for the above indication

Side effects
Nausea and vomiting

Special note
Not all patients will respond to glucagon and it is important to ensure early contact of the emergency communications centre in all cases of hypoglycaemia.
Glucose paste

Presentation
15 g tube

Indications for use
Diabetic hypoglycaemia in the conscious patient

Contraindications
Nil of significance for the above indication

Precautions
Nil of significance for the above indication

Dose
15 g orally

Side effects
Nausea and vomiting

Special note
Not all patients will respond to glucose paste and it is important to ensure early contact with the emergency ambulance communications centre in all cases of hypoglycaemia.
Methoxyflurane

Presentation
3 ml glass bottle with plastic seal

Indications for use
Pre-hospital pain relief

Contraindications
Pre-existing kidney disease
Patients taking tetracycline antibiotics

Precautions
Pregnancy
Penthrox® inhaler must be held by patient so that if unconsciousness occurs it will fall from patient’s face.
Patient must be supervised at all times during methoxyflurane administration.

Dose
3 ml via Penthrox® inhaler. This will provide approximately 25 minutes of pain relief and may be followed by one further dose once the original dose has expired, if required.
The maximum dose is 6 ml in any 24-hour period.

Side effects
Drowsiness
Exceeding maximum total dose of 6 ml in 24-hour period may lead to kidney damage.

Special notes
Analgesia commences after 8–10 breaths and lasts for approximately 3–5 minutes once discontinued.
Concurrent administration of oxygen 3–8 L/min through the inhaler during use is recommended where appropriate.
Must not be administered to a child less than five years of age.
Oxygen

Presentation
High-pressure black cylinder with white shoulder

Indications for use
Treatment of hypoxia
To increase oxygenation in patients with acute injury or illness

Contraindications
Nil of significance for the above indications

Precautions
Beware of fire or explosive hazards.
Patients with chronic obstructive pulmonary disease often require limitation of oxygen therapy.
The amount of oxygen in these patients should be as prescribed by a medical practitioner, or a
maximum of 2 L/min by nasal prongs.

Dose
Limited supplementation (24–28%): 2 L/min by nasal prongs
Moderate concentration (40%) via face mask at 8 L/min
High concentration (60%–95%) via bag/valve/mask device with reservoir bag at 8–15 L/min

Side effects
Drying of the mucous membranes of the upper airway
Salbutamol

Presentation
5 mg or 2.5 mg in nebulisers

Indications for use
Breathing difficulty with wheeze or history of asthma

Contraindications
Nil of significance for the above indication

Precautions
Continue to administer oxygen 8 L/min between doses if required for breathing difficulty (unless known chronic obstructive pulmonary disease).

Dose
10 mg via nebuliser mask with oxygen
Continue treatment with 5 mg every five minutes until patient states breathing is normal or until handover to hospital or paramedic.

Side effects
Tachycardia
Muscle tremor

Special note
Unused nebulisers remaining in the pack at the completion of a case should be discarded. Nebules should be stored in an environment < 30°C.
## Abbreviations and mnemonics

### Table 6: Common abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>bd</td>
<td>Twice daily</td>
</tr>
<tr>
<td>tds</td>
<td>Three times daily</td>
</tr>
<tr>
<td>qid</td>
<td>Four times daily</td>
</tr>
<tr>
<td>prn</td>
<td>Whenever necessary</td>
</tr>
<tr>
<td>stat</td>
<td>Immediate, once only dose</td>
</tr>
<tr>
<td>daily</td>
<td>Once daily</td>
</tr>
<tr>
<td>nocte</td>
<td>Given on settling (at night)</td>
</tr>
<tr>
<td>6/24</td>
<td>Six-hourly</td>
</tr>
<tr>
<td>PEARL</td>
<td>Pupils equal and reacting to light</td>
</tr>
<tr>
<td>Hx</td>
<td>History</td>
</tr>
<tr>
<td>C/O</td>
<td>Complaining of</td>
</tr>
<tr>
<td>Ca</td>
<td>Cancer</td>
</tr>
<tr>
<td>O/A</td>
<td>On arrival</td>
</tr>
<tr>
<td>PHx</td>
<td>Past history</td>
</tr>
<tr>
<td>IM</td>
<td>Intramuscularly</td>
</tr>
<tr>
<td>IV</td>
<td>Intravenously</td>
</tr>
<tr>
<td>SL</td>
<td>Sublingual</td>
</tr>
<tr>
<td>PR</td>
<td>Per rectal</td>
</tr>
<tr>
<td>PV</td>
<td>Per vagina</td>
</tr>
<tr>
<td>'O'</td>
<td>Orally</td>
</tr>
<tr>
<td>Pt</td>
<td>Patient</td>
</tr>
<tr>
<td>O/E</td>
<td>On examination</td>
</tr>
<tr>
<td>Rx</td>
<td>Treatment</td>
</tr>
<tr>
<td>BP</td>
<td>Blood pressure</td>
</tr>
<tr>
<td>BSL</td>
<td>Blood sugar level</td>
</tr>
<tr>
<td>ECG</td>
<td>Electrocardiogram</td>
</tr>
<tr>
<td>TTE</td>
<td>Trans-thoracic echocardiogram</td>
</tr>
<tr>
<td>TOE</td>
<td>Trans-oesophageal echocardiogram</td>
</tr>
<tr>
<td>IVT</td>
<td>Intravenous therapy</td>
</tr>
<tr>
<td>NAD</td>
<td>No abnormalities detected</td>
</tr>
<tr>
<td>IDC</td>
<td>In-dwelling catheter</td>
</tr>
<tr>
<td>PEG</td>
<td>Percutaneous endoscopic gastrostomy</td>
</tr>
<tr>
<td>Medn</td>
<td>Medication</td>
</tr>
</tbody>
</table>
Table 7: Mnemonics

<table>
<thead>
<tr>
<th>Signs and symptoms of a fracture</th>
<th>Pain</th>
<th>Irregularity</th>
<th>Loss of movement or power</th>
<th>Swelling</th>
<th>Deformity</th>
<th>Unnatural movement</th>
<th>Crepitus Tenderness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment of fracture</td>
<td>Fix</td>
<td>Reassure</td>
<td>Afford limb support</td>
<td>Cover any wounds</td>
<td>Try for natural position</td>
<td>Use appropriate splint</td>
<td>React to haemorrhage</td>
</tr>
<tr>
<td>Pain assessment</td>
<td>Description</td>
<td>Onset</td>
<td>Location</td>
<td>Other symptoms</td>
<td>Relief</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Situation report</td>
<td>Sex</td>
<td>Age</td>
<td>Description</td>
<td>Injuries</td>
<td>Estimated time of arrival (ETA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History</td>
<td>Allergies</td>
<td>Medications (current)</td>
<td>Past medical history</td>
<td>Last meal</td>
<td>Event that prompted the call for an ambulance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory status assessment</td>
<td>Position</td>
<td>Appearance</td>
<td>Speech</td>
<td>Sounds</td>
<td>Respiratory rate</td>
<td>Respiratory rhythm</td>
<td>Effort (breathing)</td>
</tr>
<tr>
<td>Pre-arrival notification</td>
<td>Introductory information, including patient’s age and gender</td>
<td>Mechanism of injury or main presenting problem</td>
<td>Illness or Injury</td>
<td>Signs and symptoms, including vital signs survey</td>
<td>Treatment provided and response to treatment</td>
<td>Any other relevant information</td>
<td></td>
</tr>
</tbody>
</table>
Paediatric reference material

Definitions of the paediatric emergency patient

The following symptoms, signs, and clinical syndromes define a paediatric emergency patient who must not be transported by NEPT.

Respiratory distress

Signs of respiratory distress in children

- Tachypnoea
- Grunting
- Wheezing
- Chest wall retraction
- Irritability
- Use of accessory muscles
- Pallor
- Abdominal protrusion
- Diminished air entry
- Cyanosis (late sign)

Signs of hypoxia in children

*Infants*

- Lethargy
- Bradycardia
- Hypotension
- Apnoea
- Pallor

*Children*

- Restlessness
- Tachypnoea
- Tachycardia
- Cyanosis
- Bradycardia (late sign)
Decreased perfusion

Table 8: Signs of decreased perfusion in children

<table>
<thead>
<tr>
<th>Age</th>
<th>Pulse</th>
<th>BP mmHg</th>
<th>Skin</th>
<th>Conscious state</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>&lt;100 or &gt;170</td>
<td>N/A</td>
<td>Cool, pale clammy, peripheral cyanosis</td>
<td>Altered conscious state or restless</td>
</tr>
<tr>
<td>Infant</td>
<td>&lt;90 or &gt;170</td>
<td>&lt;60</td>
<td>Cool, pale clammy, peripheral cyanosis</td>
<td>Altered conscious state or restless</td>
</tr>
<tr>
<td>Small child</td>
<td>&lt;75 or &gt;130</td>
<td>&lt;70</td>
<td>Cool, pale clammy, peripheral cyanosis</td>
<td>Altered conscious state or restless</td>
</tr>
<tr>
<td>Large child</td>
<td>&lt;65 or &gt;100</td>
<td>&lt;80</td>
<td>Cool, pale clammy, peripheral cyanosis</td>
<td>Altered conscious state or restless</td>
</tr>
</tbody>
</table>

Decreased conscious state
GCS < 14

Headache
All headaches must be regarded as possible sub-arachnoid haemorrhage. Therefore, unless sub-arachnoid haemorrhage has been ruled out by appropriate investigations or an alternative diagnosis has been made by a medical practitioner, there is a potential for sudden neurological deterioration and the patient is regarded as an emergency patient.

Suspected meningococcal septicaemia
Patients with evidence of septicaemia (with a rash suggestive of this disease) must be treated as an emergency patient.

Trauma patients
Patients with criteria for major trauma require transport by emergency ambulance to a major trauma service (see ‘Appendix 2: Adult major trauma criteria’ on page 61).

Children with pain
Significant pain other than headache does not necessarily make the patient an ‘emergency patient’. A child may be transported by NEPT even if the NEPT pain relief protocol is not applicable because:

- awaiting the arrival of an emergency ambulance may delay definitive pain relief available in an emergency department
- providing appropriate analgesia for a patient may also be outside the scope of an ambulance paramedic.
Definitions of ‘infant’ and ‘child’

Definitions of ‘infant’ and ‘child’ are based on a combination of physiology, age and physical size, which influences the efficacy and practicality of performing resuscitative techniques.

The term ‘newborn’ refers to a child who is just born; ‘infant’ refers to a child of less than one year of age; ‘small child’ refers to a child of pre-school and early primary school age (1–8 years); ‘large child’ refers to a child of middle to late primary school age and to a child of early teen age (9–14 years). Older children may be treated as per adult protocols but it should be noted that they do not have the same susceptibility to ventricular fibrillation.

Paediatric weight calculation

For children, the doses of drugs, DC shock and fluid therapy are based on body weight. Refer to the paediatric graph for calculations of estimated body weight for specific ages. If the body weight is unknown, it can be estimated from the child’s age using the following:

Table 9: Estimated body weight of children by age

<table>
<thead>
<tr>
<th>Age of child</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>3.5 kg</td>
</tr>
<tr>
<td>5 months</td>
<td>7 kg</td>
</tr>
<tr>
<td>1 year</td>
<td>10 kg</td>
</tr>
<tr>
<td>1–9 years</td>
<td>Age x 2 + 8 kg</td>
</tr>
<tr>
<td>10–14 years</td>
<td>Age x 3.3 kg</td>
</tr>
</tbody>
</table>
Respiratory assessment (paediatric)

Table 10: Normal respiratory values in children

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>40–60 breaths/min</td>
</tr>
<tr>
<td>Infant</td>
<td>20–50 breaths/min</td>
</tr>
<tr>
<td>Small child</td>
<td>20–35 breaths/min</td>
</tr>
<tr>
<td>Large child</td>
<td>15–25 breaths/min</td>
</tr>
</tbody>
</table>

Respiratory distress

Signs of respiratory distress in children
- Tachypnoea
- Grunting
- Wheezing
- Chest wall retraction
- Irritability
- Use of accessory muscles
- Pallor
- Abdominal protrusion
- Diminished air entry
- Cyanosis (late sign)

Signs of hypoxia in children

Infants
- Lethargy
- Bradycardia
- Hypotension
- Apnoea
- Pallor

Children
- Restlessness
- Tachypnoea
- Tachycardia
- Cyanosis
- Bradycardia (late sign)
Perfusion assessment (paediatric)

Table 11: Adequate perfusion

<table>
<thead>
<tr>
<th>Age</th>
<th>Pulse</th>
<th>BP mmHg</th>
<th>Skin</th>
<th>Conscious state</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>120–160</td>
<td>N/A</td>
<td>Pink, warm and dry</td>
<td>Conscious, alert, active</td>
</tr>
<tr>
<td>Infant</td>
<td>100–160</td>
<td>&gt;70</td>
<td>Pink warm and dry</td>
<td>Conscious, alert, active</td>
</tr>
<tr>
<td>Small child</td>
<td>80–120</td>
<td>&gt;80</td>
<td>Pink warm and dry</td>
<td>Conscious, alert, active</td>
</tr>
<tr>
<td>Large child</td>
<td>80–100</td>
<td>&gt;90</td>
<td>Pink warm and dry</td>
<td>Conscious, alert, active</td>
</tr>
</tbody>
</table>

Table 12: Inadequate perfusion

<table>
<thead>
<tr>
<th>Age</th>
<th>Pulse</th>
<th>BP mmHg</th>
<th>Skin</th>
<th>Conscious state</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>&lt;100 or &gt;170</td>
<td>N/A</td>
<td>Cool, pale clammy, peripheral cyanosis</td>
<td>Altered conscious state or restless</td>
</tr>
<tr>
<td>Infant</td>
<td>&lt;90 or &gt;170</td>
<td>&lt;60</td>
<td>Cool, pale clammy, peripheral cyanosis</td>
<td>Altered conscious state or restless</td>
</tr>
<tr>
<td>Small child</td>
<td>&lt;75 or &gt;130</td>
<td>&lt;70</td>
<td>Cool, pale clammy, peripheral cyanosis</td>
<td>Altered conscious state or restless</td>
</tr>
<tr>
<td>Large child</td>
<td>&lt;65 or &gt;100</td>
<td>&lt;80</td>
<td>Cool, pale clammy, peripheral cyanosis</td>
<td>Altered conscious state or restless</td>
</tr>
</tbody>
</table>

No perfusion

Absence of palpable pulses

Skin – cool, pale

Unrecordable blood pressure

Unconscious
Conscious state assessment (paediatric)

Assess conscious state using AVPU
- Alert
- Responds to Voice
- Responds to Pain
- Unresponsive

Assess conscious state using the Glasgow Coma Scale extended protocol

Table 13: Glasgow Coma Scale (paediatric)

<table>
<thead>
<tr>
<th></th>
<th>Child four years or less</th>
<th>Child over four years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eye opening</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spontaneously</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Reacts to speech</td>
<td>3</td>
<td>To voice</td>
</tr>
<tr>
<td>Reacts to pain</td>
<td>2</td>
<td>To pain</td>
</tr>
<tr>
<td>No response</td>
<td>1</td>
<td>No response</td>
</tr>
<tr>
<td><strong>Best verbal response</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate words or social smile, fixes, follows</td>
<td>5</td>
<td>Orientated</td>
</tr>
<tr>
<td>Cries but consolable</td>
<td>4</td>
<td>Confused</td>
</tr>
<tr>
<td>Persistently irritable</td>
<td>3</td>
<td>Inappropriate words</td>
</tr>
<tr>
<td>Restless and agitated</td>
<td>2</td>
<td>Incomprehensible sounds</td>
</tr>
<tr>
<td>No response</td>
<td>1</td>
<td>No response</td>
</tr>
<tr>
<td><strong>Best motor response</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spontaneous</td>
<td>6</td>
<td>Obey command</td>
</tr>
<tr>
<td>Localises to pain</td>
<td>5</td>
<td>Localises to pain</td>
</tr>
<tr>
<td>Withdraws from pain</td>
<td>4</td>
<td>Withdraws from pain</td>
</tr>
<tr>
<td>Flexion response</td>
<td>3</td>
<td>Flexion to pain</td>
</tr>
<tr>
<td>Extension response</td>
<td>2</td>
<td>Extension to pain</td>
</tr>
<tr>
<td>No response</td>
<td>1</td>
<td>No response</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>
Assessment of newborn infants (APGAR)

The APGAR score should be conducted one minute after delivery and repeated at five minutes after delivery. A score of:

- 8–10 is considered normal
- 4–7 has moderate depression and may need respiratory support
- 0–3 indicates a newborn requiring resuscitation.

Table 14: APGAR score

<table>
<thead>
<tr>
<th>0 points</th>
<th>1 point</th>
<th>2 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Blue, pale</td>
<td>Body pink, extremities blue</td>
</tr>
<tr>
<td>Pulse</td>
<td>Absent</td>
<td>&lt;100</td>
</tr>
<tr>
<td>Grimace</td>
<td>None</td>
<td>Grimaces</td>
</tr>
<tr>
<td>Activity</td>
<td>Limp</td>
<td>Flexion of extremities</td>
</tr>
<tr>
<td>Respiratory effort</td>
<td>Absent</td>
<td>Slow and weak</td>
</tr>
</tbody>
</table>
Paediatric pain assessment

Paediatric pain assessment should be appropriate to the developmental level of the child. Pain can be communicated by words, expressions and behaviour such as crying, guarding a body part or grimacing. The QUESTT principles of pain (Baker and Wong, 1987) and the following pain rating scales may be helpful in assessing paediatric pain.

- **Question the child**
- **Use pain rating scales**
- **Evaluate behaviour and physiological changes**
- **Secure parental involvement**
- **Take cause of pain into account**
- **Take action and evaluate results**

Wong–Baker FACES pain rating scale

This scale can be used with young children aged three years and older and may also be useful for adults and those from a non-English speaking background. Point to each face using the words to describe the pain intensity. Ask the child to choose the face that best describes their own pain and record the appropriate number.

![Wong-Baker FACES pain rating scale](image)

Verbal numerical rating scale

This scale asks the patient to rate their pain from ‘no pain’ (0) to ‘worst pain possible’ (10) and is suitable for use in children over six years of age who have an understanding of the concepts of rank and order. Avoid using numbers on this scale to prevent the patient receiving cues. Some patients are unable to use this scale with only verbal instructions but may be able to look at a number scale and point to the number that describes the intensity of their pain.
Paediatric basic life support

Cardio-respiratory arrest in infants and children is most commonly caused by hypoxaemia, hypotension or both and should be suspected when the child or infant loses consciousness, appears pale or cyanosed or is apnoeic or pulseless. Examples of conditions causing cardiac arrest in infants and children are trauma, drowning, septicaemia, sudden infant death syndrome, asthma, upper airway obstruction and congenital abnormalities of the heart and lung.

Infants and children most commonly arrest into severe bradycardia or asystole and this influences the order of resuscitative actions. Ventricular fibrillation may occur, however, with congenital heart conditions or secondary to poisoning to cardioactive drugs and is often encountered during the course of resuscitation. Respiratory arrest may occur alone, but if treated promptly may not progress to cardio-respiratory arrest.

The basic principles of paediatric life support are similar to those of adults.

Airway

To assess an airway in a newborn, infant or child, the positioning and techniques are similar to those for an adult with the exception that care should be taken to avoid over-extension of the neck and head. Noisy breathing, stridor or wheeze, or neck and chest soft tissue retraction on inspiration are signs of significant partial airway obstruction.

Table 15: How to position the head and neck to maintain an open airway

<table>
<thead>
<tr>
<th>Newborn and infants</th>
<th>Head and neck should be placed in the neutral position, avoiding additional neck flexion and head extension.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children</td>
<td>Use neck flexion and head extension with caution in the younger child. If necessary, use chin lift or jaw thrust to clear the airway.</td>
</tr>
</tbody>
</table>

Breathing

If spontaneous ventilation is not present, an appropriately sized oropharyngeal airway should be inserted and assisted ventilation should be commenced immediately using supplemental oxygen. Effective airway control and adequate ventilation with oxygen supplementation is the keystone of paediatric resuscitation.

Circulation

Commence external cardiac compression (ECC) if a pulse (carotid, brachial or femoral) is not palpable, or the pulse is less than 60 beats per minute (infants) or less than 40 beats per minute (children)
External cardiac compression (ECC)

Depth of compression
Approximately one-third the depth of the chest for all age groups. Approximately 50 per cent of a compression cycle should be devoted to compression of the chest and 50 per cent to relaxation.

Method of compression

Newborn and infant
ECC for a newborn or infant can be performed with two fingers or by a two-thumb technique. In this latter technique, the hands encircle the chest and the thumbs compress the sternum. This is a better technique. The two-thumb is the preferred technique for two rescuers but care should be taken to avoid restricting chest expansion during inspiration. The two-finger technique should be used by a single rescuer in order to minimise the transition time between ECC and ventilation.

Young child
Two-handed technique as for adults.

Table 16: Ratios of compressions to ventilations

<table>
<thead>
<tr>
<th></th>
<th>Newborn</th>
<th>Infants and children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single rescuer</td>
<td>Single rescuer</td>
</tr>
<tr>
<td></td>
<td>Three compressions to one ventilation</td>
<td>30 compressions to two ventilations</td>
</tr>
<tr>
<td></td>
<td>Two rescuers</td>
<td>Two rescuers</td>
</tr>
<tr>
<td></td>
<td>Three compressions to one ventilation</td>
<td>15 compressions to two ventilations</td>
</tr>
<tr>
<td>Rate</td>
<td>Approximately 120 compressions per minute</td>
<td>Rate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Approximately 100 compressions per minute</td>
</tr>
</tbody>
</table>
Cardiac arrest (paediatric) – asystole or pulseless electrical activity

**Figure 10: Manual monitor or defibrillation algorithm**

<table>
<thead>
<tr>
<th>1. Initial management:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Confirm unconscious and no pulse clinically</td>
</tr>
<tr>
<td>• Activate emergency ambulance response (ring 000)</td>
</tr>
<tr>
<td>• Immediately commence effective CPR (30 compressions to two breaths) if no signs of circulation or pulse rate &lt; 60 (infants) or &lt; 40 (children)</td>
</tr>
<tr>
<td>• Continue effective CPR and check brachial pulse or rhythm every two minutes</td>
</tr>
<tr>
<td>• If another rhythm develops at any stage during resuscitation, then reassess patient and manage as per relevant protocol</td>
</tr>
<tr>
<td>• Await emergency ambulance arrival</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. If return of spontaneous circulation (ROSC):</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ventilate at an appropriate minute rate for the child’s age at a tidal volume of approximately 10 ml/kg</td>
</tr>
</tbody>
</table>
Cardiac arrest (paediatric) – ventricular fibrillation or ventricular tachycardia

Figure 11: Manual monitor or defibrillation algorithm

1. Initial management:
   - Confirm unconscious and no pulse clinically
   - Activate emergency ambulance response (ring 000)
   - Commence effective CPR (insert oral airway and commence ventilations with oxygen while preparing to defibrillate and during defibrillator charging)
   - Defibrillate single shock – 2 joules/kg (monophasic or biphasic)
   - Immediately recommence CPR without pulse or rhythm check
   - Perform CPR for two minutes and then check pulse or rhythm

2. VF or pulseless VT remains:
   - Defibrillate single shock – 4 joules/kg (monophasic or biphasic)
   - Immediately recommence CPR without pulse or rhythm check
   - Perform CPR for two minutes and then check pulse two rhythm

3. VF or pulseless VT remains:
   - Continue effective CPR and recheck pulse or rhythm every two minutes
   - Continue defibrillation every two minutes using a single shock strategy (4 joules/kg) and immediately recommence CPR without pulse or rhythm check after each shock
   - Await emergency ambulance support

4. If return of spontaneous circulation (ROSC):
   - Ventilate at an appropriate minute rate for the child’s age at a tidal volume of approximately 10 ml/kg

Notes
- CPR must not be interrupted for more than 10 seconds during rhythm or pulse checks. If unsure if pulse present then assume it isn’t and immediately commence or recommence CPR.
- Rescuers should changeover performance of external cardiac compressions every two minutes (during rhythm checks) to avoid fatigue and subsequent impact on CPR performance. Changeover time should not exceed five seconds.
- A standard AED can be used on a child eight years or older (over approximately 25 kg) in cardiac arrest. Some AEDs may also be used for children aged 1–8 years who have no signs of circulation where specifically recommended by the manufacturer. The use of AEDs in children less than one year of age is not recommended. See “Figure 7: Automated external defibrillator algorithm” on page 32 for paediatric AED treatment algorithm.
Appendix 1: Approach to a patient

Figure 12: Approach to a low-acuity patient

1. **Locate and identify patient:**
   - Locate patient to be transported at health service or at residence
   - Introduce yourself to patient
   - Provide patient with organisation contact details
   - If patient not cognitively impaired, confirm patient’s identity and destination with patient
   - If patient cognitively impaired, tell them who you are and where you are taking them
   - Confirm patient’s identity and destination with health service staff caring for patient

2. **Ensure suitability for transport by low-acuity NEPT:**
   - Obtain information relating to reason for transport
   - Ascertain that patient does not require any monitoring or management while being transported
   - Identify if patient requires oxygen for transport and ensure this is available
   - If working with patient as a single-officer crew:
     - ascertain if patient is able to walk onto vehicle and lie down unaided, or
     - assess risk factors involved with assisting patient into vehicle

3. **Load and transport patient:**
   - Load patient into vehicle
   - Undertake transport to destination
Figure 13: Approach to a medium-acuity patient

1. Locate and identify patient:
   - Locate patient to be transported at health service or at residence
   - Introduce yourself to patient, and provide patient with organisation details
   - If patient not cognitively impaired, confirm patient’s identity and destination with patient
   - If patient cognitively impaired, let them know who you are and where you are taking them
   - Confirm patient’s identity and destination with health service staff caring for patient

2. Ensure suitability for transport by medium-acuity NEPT:
   - Obtain information relating to reason for transport
   - Obtain relevant medical history from staff caring for patient and relevant documentation to be provided to destination facility
   - Identify patient monitoring and management needs for time during transport
   - Establish baseline vital signs and record on the PCR
   - Establish that vital signs are within normal limits and patient has been assessed by a medical practitioner as stable for transport
   - If IV infusion running ensure all details of infusion(s) are obtained and recorded on documentation
   - Ensure all criteria for transporting a medium-acuity patient are met
   - Obtain name of authorising transport medical officer

3. If patient suitable for medium-acuity NEPT:
   - Load patient onto vehicle
   - Undertake transport to destination
   - Monitor patient’s condition en route
   - Provide handover and any documentation to the receiving health professional

3. If patient not suitable for medium-acuity NEPT:
   - Inform sending facility patient requires an alternative level of care
   - Contact communications centre and await further instructions
   - Do not transport patient
1. Locate and identify patient:
   - Locate patient to be transported at health service
   - Introduce yourself to patient and escort and provide patient with organisation details
   - If patient not cognitively impaired, confirm patient’s identity and destination with patient
   - If patient cognitively impaired, let them know who you are and where you are taking them
   - Confirm patient’s identity and destination with health service staff

2. Ensure suitability for transport by high-acuity NEPT:
   - Confirm that patient has been assessed by sending physician that transport using lights and sirens will not be required
   - Obtain relevant medical history from staff caring for patient and relevant documentation to be provided to destination facility
   - Identify patient monitoring and management during transport and instruction(s) regarding any required interventions
   - Obtain additional equipment or drugs that are required for transport from sending facility if needed
   - Establish that vital signs are within acceptable limits
   - If IV infusion running ensure all details of infusion(s) are obtained and recorded on documentation
   - Ensure safe restraint of the escort and any equipment

3. If patient suitable for high-acuity NEPT:
   - Load patient onto vehicle
   - Ensure escort is seated and restrained
   - Ensure all equipment is restrained
   - Undertake transport to destination

3. If patient not suitable for high-acuity NEPT:
   - Inform sending facility an emergency ambulance will be required for transport
   - Contact your communications centre and await further instructions
   - Do not transport patient
Appendix 2: Adult major trauma criteria

Figure 15: Adult major trauma criteria

<table>
<thead>
<tr>
<th>Vital signs (major trauma if any of the following present):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory rate &lt;8/min or &gt;30/min</td>
</tr>
<tr>
<td>Hypotension &lt;100 mmHg systolic</td>
</tr>
<tr>
<td>Pulse &lt;50/min or &gt;120/min</td>
</tr>
<tr>
<td>Conscious state GCS &lt; 13</td>
</tr>
<tr>
<td>Oxygen saturation &lt;90% on air</td>
</tr>
</tbody>
</table>

or

<table>
<thead>
<tr>
<th>Injuries (major trauma if any one of the following present):</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Penetrating injuries to head, neck, chest, abdomen, pelvis, axilla or groin</td>
</tr>
<tr>
<td>• Blunt injuries:</td>
</tr>
<tr>
<td>– Significant injuries to a single region (head, neck, chest, abdomen, pelvis, axilla or groin)</td>
</tr>
<tr>
<td>– Any injuries to two or more of head, neck, chest, abdomen, axilla or groin</td>
</tr>
<tr>
<td>• Specific injuries:</td>
</tr>
<tr>
<td>– Limb amputations or limb-threatening injury</td>
</tr>
<tr>
<td>– Suspected spinal cord injury</td>
</tr>
<tr>
<td>– Burns &gt; 20 per cent of body surface area or airway</td>
</tr>
<tr>
<td>– Serious crush injury</td>
</tr>
<tr>
<td>– Major compound fracture or open dislocation</td>
</tr>
<tr>
<td>– Fracture of two or more of femur, tibia or humerus</td>
</tr>
<tr>
<td>– Fracture of pelvis</td>
</tr>
</tbody>
</table>

or

<table>
<thead>
<tr>
<th>Mechanism of injury:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ejection from vehicle</td>
</tr>
<tr>
<td>• Motor/cyclist impact &gt; 30 km/hr</td>
</tr>
<tr>
<td>• Fall from height &gt; 3 metres</td>
</tr>
<tr>
<td>• Struck on head by falling object &gt; 3 metres</td>
</tr>
<tr>
<td>• Explosion</td>
</tr>
<tr>
<td>• MCA &gt; 60 km/hr</td>
</tr>
<tr>
<td>• Vehicle rollover</td>
</tr>
<tr>
<td>• Fatality in same vehicle</td>
</tr>
<tr>
<td>• Pedestrian</td>
</tr>
<tr>
<td>• Prolonged extrication &gt; 30 minutes</td>
</tr>
</tbody>
</table>
## Paediatric major trauma criteria

**Figure 16: Paediatric major trauma criteria**

**Vital signs (major trauma if any of the following present):**

<table>
<thead>
<tr>
<th></th>
<th>Newborn &lt;2 weeks</th>
<th>Infant &lt;1 year</th>
<th>Child 1–8 years</th>
<th>Large child 9–14 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory rate/min</td>
<td>&lt;40 or &gt;60</td>
<td>&lt;20 or &gt;50</td>
<td>&lt;20 or &gt;35</td>
<td>&lt;15 or &gt;25</td>
</tr>
<tr>
<td>Hypotension mmHg</td>
<td>N/A</td>
<td>&lt;80</td>
<td>&lt;70</td>
<td>&lt;80</td>
</tr>
<tr>
<td>Pulse/min</td>
<td>&lt;100 or &gt;170</td>
<td>&lt;90 or &gt;170</td>
<td>&lt;75 or &gt;130</td>
<td>&lt;65 or &gt;100</td>
</tr>
<tr>
<td>Conscious state</td>
<td>GCS &lt; 15</td>
<td>GCS &lt; 15</td>
<td>GCS &lt; 15</td>
<td>GCS &lt; 15</td>
</tr>
<tr>
<td>Oxygen saturation</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>&lt;90% on air</td>
</tr>
<tr>
<td>Skin</td>
<td>Cold/pale/clammy (all ages)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Injuries (major trauma if any one of the following present):**

- Penetrating injuries to head, neck, chest, abdomen, pelvis, axilla or groin
- Blunt injuries
  - Significant injuries to a single region (head, neck, chest, abdomen, pelvis, axilla or groin)
  - Any injuries to two or more of head, neck, chest, abdomen, axilla or groin
- Specific injuries:
  - Limb amputations or limb-threatening injury
  - Suspected spinal cord injury
  - Burns > 20 per cent of body surface area or airway
  - Serious crush injury
  - Major compound fracture or open dislocation
  - Fracture of two or more of femur, tibia or humerus
  - Fracture of pelvis

**Mechanism of injury:**

- Ejection from vehicle
- Motor/cyclist impact > 30 km/hr
- Fall from height > 3 metres
- Struck on head by falling object > 3 metres
- Explosion
- MCA > 60 km/hr
- Vehicle rollover
- Fatality in same vehicle
- Pedestrian
- Prolonged extrication > 30 minutes
Appendix 3: Non-emergency patient transport of people with mental illness

Key message

The provisions in the NEPT Regulations 2005 and Clinical Practice Protocols relating to the transport of persons with mental illness have changed.

The objective of the Mental Health Act 2014 (the Act) to ensure that assessment and treatment of persons with mental illness are provided in the least restrictive way possible affects transport decisions.

Transport for persons with a mental illness should be arranged in the most timely and least restrictive way possible. This includes travelling in a private vehicle or mental health agency car rather than a stretcher vehicle if appropriate, and travelling in a NEPT vehicle rather than an emergency ambulance if appropriate.

The changes to the NEPT Regulations and Clinical Practice Protocols reflect this ‘least restrictive’ principle. They have been amended so that persons receiving services for mental illness, who are assessed as stable and suitable for transport according to the general criteria in the NEPT Regulations, may be transported by NEPT services regardless of:

1. the departure and arrival points of the transport
2. the level of acuity; persons with mental illness may now be transported by low acuity NEPT services if appropriate
3. whether restraint and significant sedation, or repeat doses of sedation, may be required.

As NEPT providers cannot use restraint or sedation, this would only be permitted where the requirements of the Act are met, for example if the person is accompanied by an authorised person under the Act who takes responsibility for the use of restraint, or by someone authorised to administer sedation
4. whether they are compulsory (formerly called involuntary) patients.

Authorised persons

NEPT staff are not ‘authorised persons’ under the Act. However, it is useful for NEPT providers to have a general understanding of who authorised persons are and what they can do.

Authorised persons include paramedics working for Ambulance Victoria, police officers and registered medical practitioners employed or engaged by a designated mental health service or a mental health practitioner.

Authorised persons have powers under the Act to:

- use bodily restraint to enable a person to be safely taken to or from a designated mental health service or any other place. Bodily restraint may only be used if all reasonable and less restrictive options have been tried or considered and have been found to be unsuitable and the restraint is necessary to prevent serious and imminent harm to the person or to another person. The use of restraint must be documented by the person who used the restraint in accordance with their organisation’s records management practices
- search a person who is subject to transport under the Act if they suspect that the person is carrying something that could help the person to escape or that presents a danger to health and safety
- seize and detain items that could be used to help the person escape, or is a danger to health and safety.
Sedation for safe transport

Under the Act, a registered medical practitioner can administer sedation to enable a person to be safely taken to or from a designated mental health service or any other place if all reasonable and less restrictive options have been tried or considered and found to be unsuitable and if the sedation is necessary to prevent serious and imminent harm to the person or to another person. The practitioner may direct a registered nurse or ambulance paramedic to administer the sedation.

The use of sedation must be documented by both the person prescribing and the person administering the sedation in accordance with their organisation’s records management practices. NEPT drugs and poisons certificates do not allow any NEPT staff, including registered nurses, to hold drugs for sedation.

Mental health practitioner

A mental health practitioner is any of the following employed or engaged by a designated mental health service:

- registered psychologist
- registered nurse
- social worker
- registered occupational therapist.

Further information on the changes to NEPT to reflect the Act is available at: www.health.vic.gov.au/ambulance/nept.htm
Appendix 4: Risk assessment for loading a patient into a vehicle – single operator

Prior to loading a patient into a vehicle utilising a single officer, perform the following risk assessment.

**Figure 17: Risk assessment for loading a patient into a vehicle – single operator**

1. **Consider:**
   - Posture
   - Movements
   - Forces to be exerted
   - Any other environmental conditions that may present a risk of musculoskeletal disorder to the employee

2. **At risk of musculoskeletal disorder:**
   - Do not undertake loading of patient
   - Seek assistance from sending and receiving facilities to ensure risk of musculoskeletal injury is removed
   - If assistance available load and transport patient

2. **Not at risk of musculoskeletal disorder:**
   - Load and transport patient