Clinical Practice Guidelines

Air Ambulance Victoria

AmbulanceVictoria

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About

About

Enquiries

Enquiries in relation to these guidelines can be emailed to: ClinicalGuidelines@ambulance.vic.gov.au

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Rapid Sequence Intubation CPG AAV 01

Care Objective

- Ensure safe and effective airway management throughout entire episode of care
- To be read as an adjunct to **CPG A0302 Endotracheal intubation**. This CPG includes two additional pathways available to MICA flight paramedics.

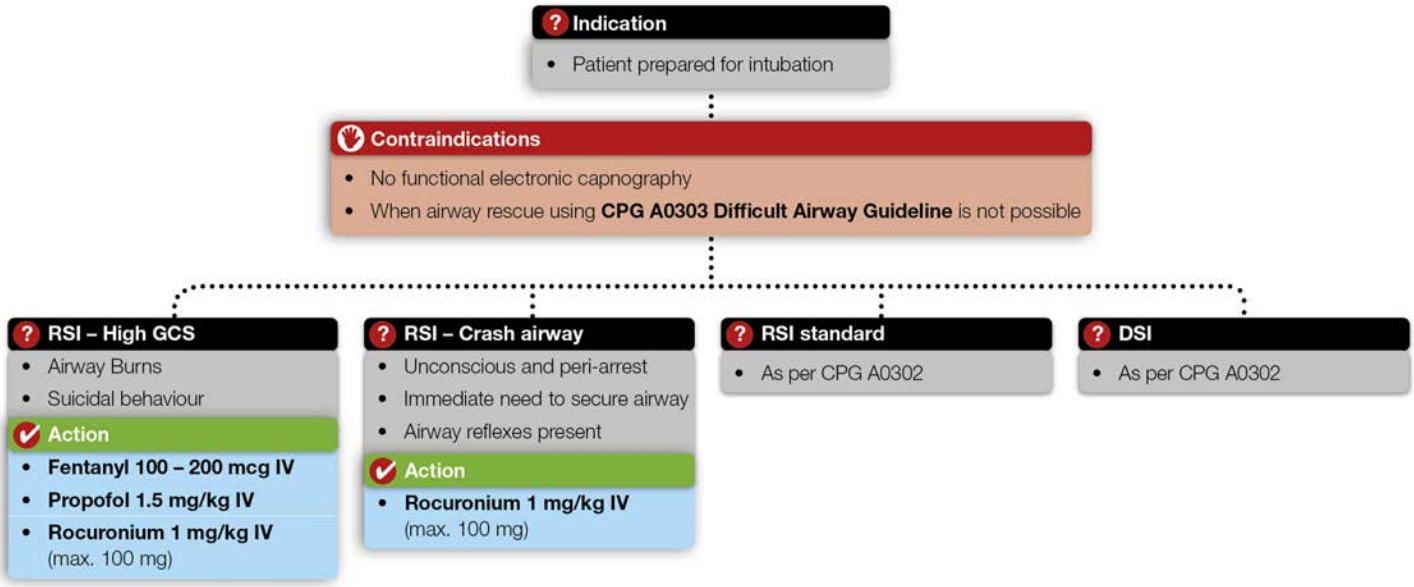
General notes

- While traditionally patients with altered conscious state are intubated for airway protection during aeromedical transport, it is not a mandated clinical requirement. Transport time, ability to divert, reason for transport and clinical fragility must be taken into account even in the setting of aeromedical retrieval.
- The term 'peri-arrest' is reserved for the patient whose vital signs predict a strong likelihood of rapid deterioration into cardiac arrest.
- Due to the rapid metabolism/off-set of propofol in critically unwell patients, an immediate post intubation bolus of propofol and subsequent infusion will be required to maintain anaesthesia / sedation.
- MFPs are authorised to undertake a second RSI in the setting of a failed intubation where it's deemed to be clinically appropriate and safe to do so. A second RSI should be undertaken as per **CPG A0302**/AAV 01.

RSI – Crash airway

- The aim is to secure the airway rapidly while avoiding haemodynamic compromise and extended scene/procedure times in unconscious patients who require immediate airway management to prevent pending cardiac arrest.
- It is expected that concurrent IV access should be attempted if not already obtained.
- RSI with a paralytic only and with expedited preparation is permitted where there is an immediate need to secure the airway and:
  - Administration of sedative / analgesic is likely to cause delay and / or haemodynamic collapse
  - Peri arrest, airway reflexes present

Flowchart



Related Resources

- https://av-digital-cpg.web.app/assets/pdf/MAC/Endotracheal intubation (paeds and AAV) FINAL.pdf

General Notes

Guideline Principles

- This guideline supplements **CPG A0303 Difficult Airway Guideline**, which applies to all MICA Paramedics.
- In addition to the following notes, **Plan C** is the key variation from **CPG A0303**.

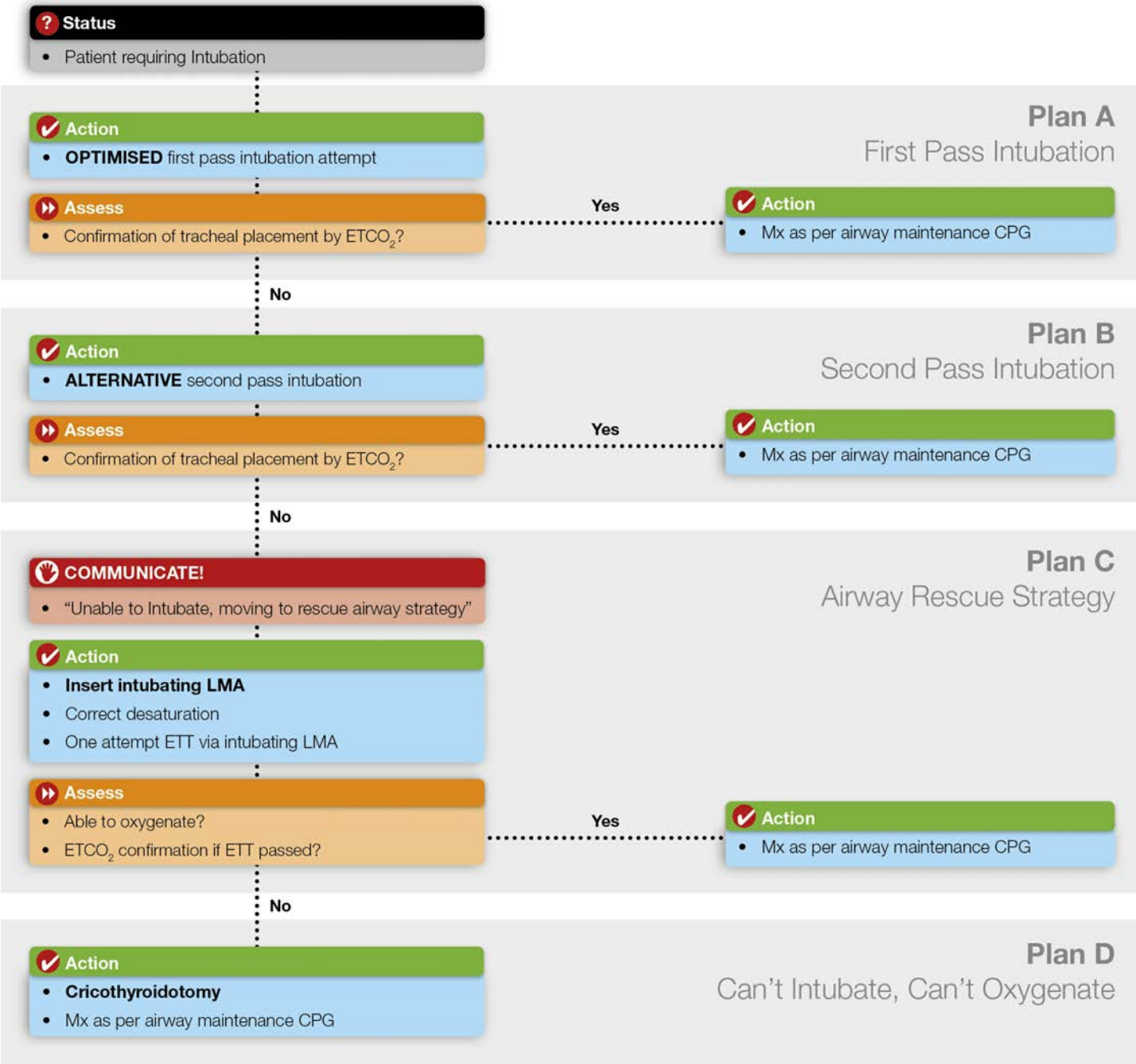
Crew Resource Management

- In complex cases where MFPs are committed to other tasks (such as finger thoracostomy) the most experienced MICA Paramedic should be selected for intubation.

Plan C

- The intubating LMA replaces the iGel within Plan C.
- In the setting of intubating LMA insertion, correction of desaturation by ventilation should be undertaken prior to ETT insertion through the device.
- With regard to iLMA:
  - LMA success is measured by oxygenation
  - iLMA-ETT success is measured by electronic $ETCO_2$

Flowchart



Related Resources

- https://av-digital-cpg.web.app/assets/pdf/MAC/Surgical airway MAC.pdf

Care Objective

- Optimise sedation +/- paralysis
- Optimise ventilation parameters using lung protective strategies
- Undertake the 'Critical IHT Checklist' to ensure comprehensive patient care post intubation
- To be read as an adjunct to **CPG A0305 Airway Maintenance**

General Notes

Sedation and Paralysis

- If **Propofol** is given to induce unconsciousness then consider post intubation sedation using:
  - **Propofol infusion** at rate **100 mg – 300 mg/hr** (10 – 30 mL/hr). Add **Morphine infusion** for patients intubated with **Propofol** with underlying pain
- If patient has had continuous seizure activity:
  - **Midazolam Infusion @ 0.2 – 0.4 mg/kg/hr IV** as an independent infusion
  - Supplement with **Midazolam 0.05 – 0.1 mg/kg IV bolus** as required (nil maximum)
  - Consider adding **Propofol infusion 50 – 200 mg/hr** in the seizure patient who appears resistant to opioid / midazolam sedation.
  - It is preferable to over-sedate these patients to maintain patient control than administer paralysis and potentially mask seizure activity.
  - Patients intubated for status epilepticus should not receive routine post intubation paralysis. However if sedation using **Midazolam** and **Propofol** is insufficient to safely maintain intubation and ventilation, then **Rocuronium** should be administered
  - Patient receiving high dose sedation may require cardiovascular support

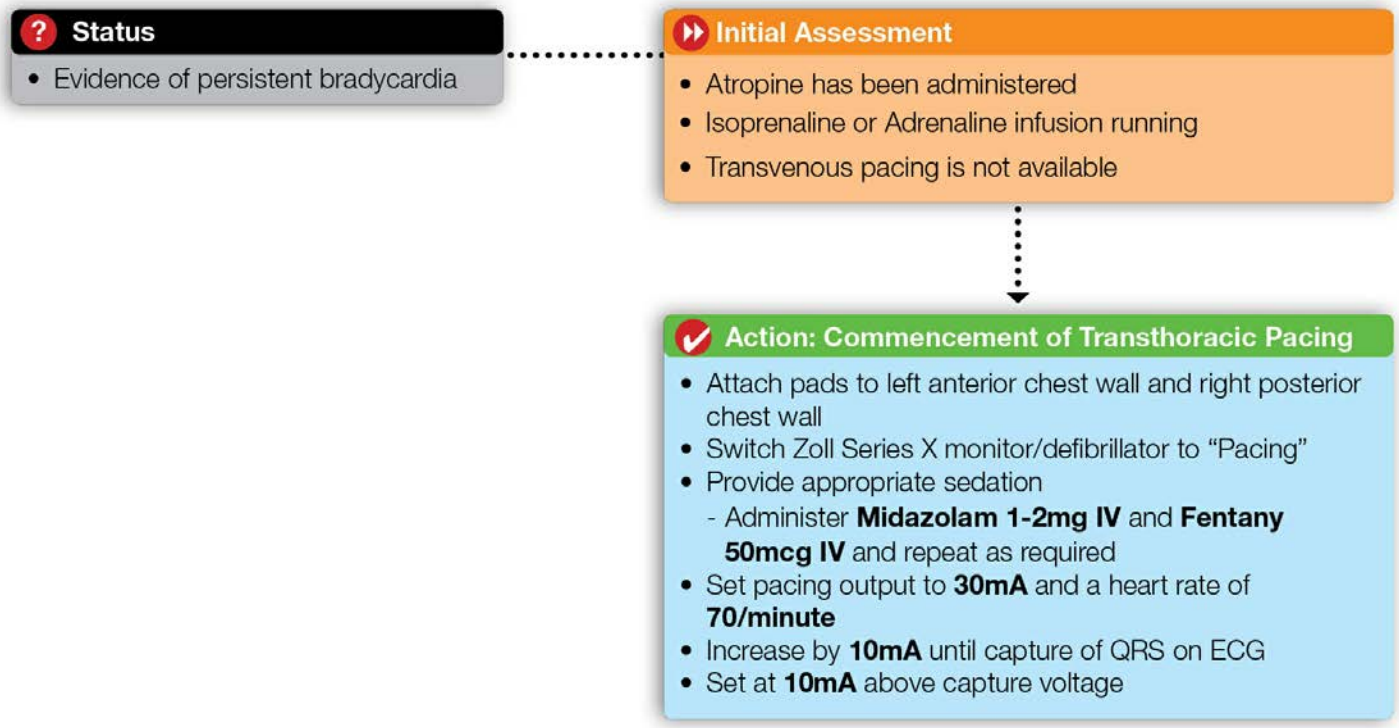
Trauma

- Blood pressure should be managed as per **CPG AAV 08 Inadequate Perfusion** associated with Hypovolaemia

Non-traumatic brain injury

- In suspected NTBI due to suspected intracranial bleeding or sub-arachnoid haemorrhage (pre-RSI GCS < 8), maintain SBP > 120 mmHg and < 140mmHg.
- If hypotension is present in the suspected NTBI (SBP < 120 mmHg):
  - Maintain minimum sedation rates of **Fentanyl 20 mcg/hr** and **Midazolam** at **2 mg/hr IV**
  - Administer **Normal Saline 0.9% 20 mL/kg IV**, titrated to target BP
  - If SBP remains < 120 mmHg despite fluid challenge then consider **Noradrenaline** infusion. Titrate to a SBP 120 mmHg using a dose between **5 – 25 mcg/min IV (5 mL/hr – 25 mL/hr)**
- If hypertension is present (SBP > 140 mmHg) despite **Fentanyl 100 mcg/hr and Midazolam at 10 mg/hr**
  - Administer **Propofol 0.5 mg/kg IV bolus**. Repeat as required
  - Consider **Propofol infusion at 50 mg/hr (5 mL/hr)**. Titrate to effect

Flowchart


Status
• Evidence of persistent bradycardia
Initial Assessment
• Atropine has been administered
• Isoprenaline or Adrenaline infusion running
• Transvenous pacing is not available
Action: Commencement of Transthoracic Pacing
• Attach pads to left anterior chest wall and right posterior chest wall
• Switch Zoll Series X monitor/defibrillator to "Pacing"
• Provide appropriate sedation
- Administer Midazolam 1-2mg IV and Fentany 50mcg IV and repeat as required
• Set pacing output to 30mA and a heart rate of 70/minute
• Increase by 10mA until capture of QRS on ECG
• Set at 10mA above capture voltage

Pacing Wire Care

- In general the OUTPUT setting on the pacemaker should be set at 2 times the THRESHOLD level plus 1mA (i.e. 2 x THRESHOLD(mA) + 1mA)
- Pacing THRESHOLD would usually be determined on consultation with the sending hospital
- In general the SENSITIVITY setting should be set towards the maximum sensitivity (i.e. 0.5mV is the most sensitive)
- If Transthoracic Pacing instituted prior to or during flight consider implications on mission safety and appropriate communication with relevant aircrew/pilot.

Flowchart

Status
- Evidence of persistent bradycardia

Initial Management & Assessment
- Referring hospital handover
- Need for aeromedical transport with temporary transvenous pacing (TVP) wire for symptomatic bradyarrhythmia
- Confirm clinical evidence of appropriate transvenous pacemaker settings and pacemaker pacing or not pacing

Pacemaker not Pacing

Action

IF pacemaker NOT currently pacing (i.e. demand rate < intrinsic rate

- Check that pacer 100% sensing intrinsic cardiac activity

IF pacemaker NOT currently sensing

- Set sensitivity until 100% sensed intrinsic activity noted
- Increase demand rate to > intrinsic rate to check:
  - Pacemaker capture
  - Appropriate output settings
- Confirm evidence of 100% capture on ECG and presence of peripheral pulses
- Return demand rate to appropriate settings
- Do not increase rate above 100 bpm

Pacemaker Pacing

Action

IF pacemaker currently pacing (i.e. demand rate> intrinsic rate)

- Confirm evidence of 100% capture on ECG and presence of peripheral pulses

IF 100% capture not present

- Increase OUTPUT until capture and pulses achieved
- Set OUTPUT to appropriate levels with safety margin

Pacing wire care

Action

- Confirm, secure and note position and insertion length of temporary transvenous pacing wire
- Confirm and secure all connections

Pacemaker Failure to Capture or Pace

Action

- Transvenous Pacing failure to capture and/or pacemaker fail to pace

  AND/OR
- Less than adequate perfusion i.e. clinical evidence of bradycardia
- Check all leads, connections and pacemaker function
- Place patient in left lateral position and/or encourage patient to cough
- Reassess physiological status

IF less than adequate perfusion:

- Increase OUTPUT until capture and return to adequate perfusion

Consider need for institution of Transthoracic pacing (TPP) or pharmacological support

IF Transvenous Pacing ineffective or not possible **AND** less than adequate perfusion

- Manage as per CPG A0402 Bradycardia and/or AAV-03 Transthoracic Pacing

General Notes

- Multimodal pain relief is recognised as the most effective pathway for efficacious analgesia and limits excessive opiate administration. Unless contraindicated Paracetamol IV should be administered to all trauma patients complaining of pain. Parecoxib, in addition, should be strongly considered for patients with moderate to severe pain unless contraindicated.
- Paracetamol and Parecoxib are slow acting, long lasting agents that provide bridging analgesia between the prehospital and Emergency Department settings.
- The use of Ketamine is not specifically contraindicated in the patient requiring winching. However MFPs must be acutely aware that a dissociated patient can be an inherent safety risk during the winching operation. Ideally patients should be allowed time to return to full consciousness prior to extrication and MFPs should include this potential delay in winch operations planning. Alternatively, other analgesic agents such as Methoxyflurane may be considered for procedural pain relief in the winch setting.
- ALS Flight Paramedics **must** consult with either the clinician or a MFP via the FCC prior to exceeding **Morphine 20 mg IV** or **Fentanyl 200 mcg IV**

Infusions

Morphine Infusion

- **Morphine 30 mg** added to make **30 mL** with **Dextrose 5%** or **Normal Saline**.
- **1 mL/hr = 1 mg/hr**

Fentanyl Infusion

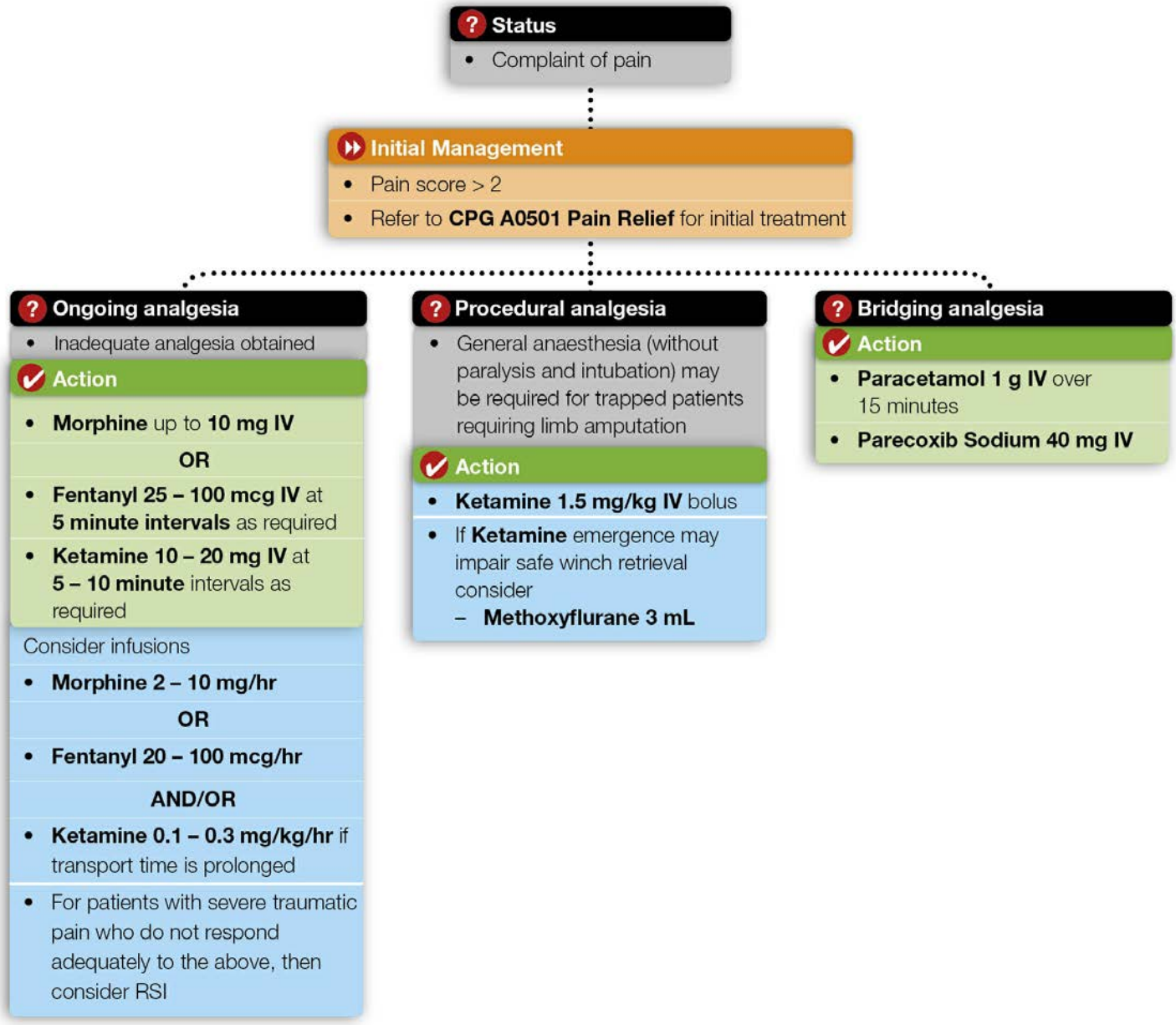
- **Fentanyl 300 mcg** added to make **30 mL** with **Dextrose 5%** or **Normal Saline**
- **1 mL/hr = 10 mcg/hr**

Ketamine Infusion

- **Ketamine 50 mg** added to make **50 mL** with **Dextrose 5%** or **Normal Saline**
- **1 mL/hr = 1 mg/hr**

Ketamine 50 mg may be obtained by adding **50 mg (5 mL)** of the pre-diluted **10 mg/mL Ketamine** solution to **45 mL Dextrose 5%** or **Normal Saline** to make a **1 mg/mL** dilution

Flowchart



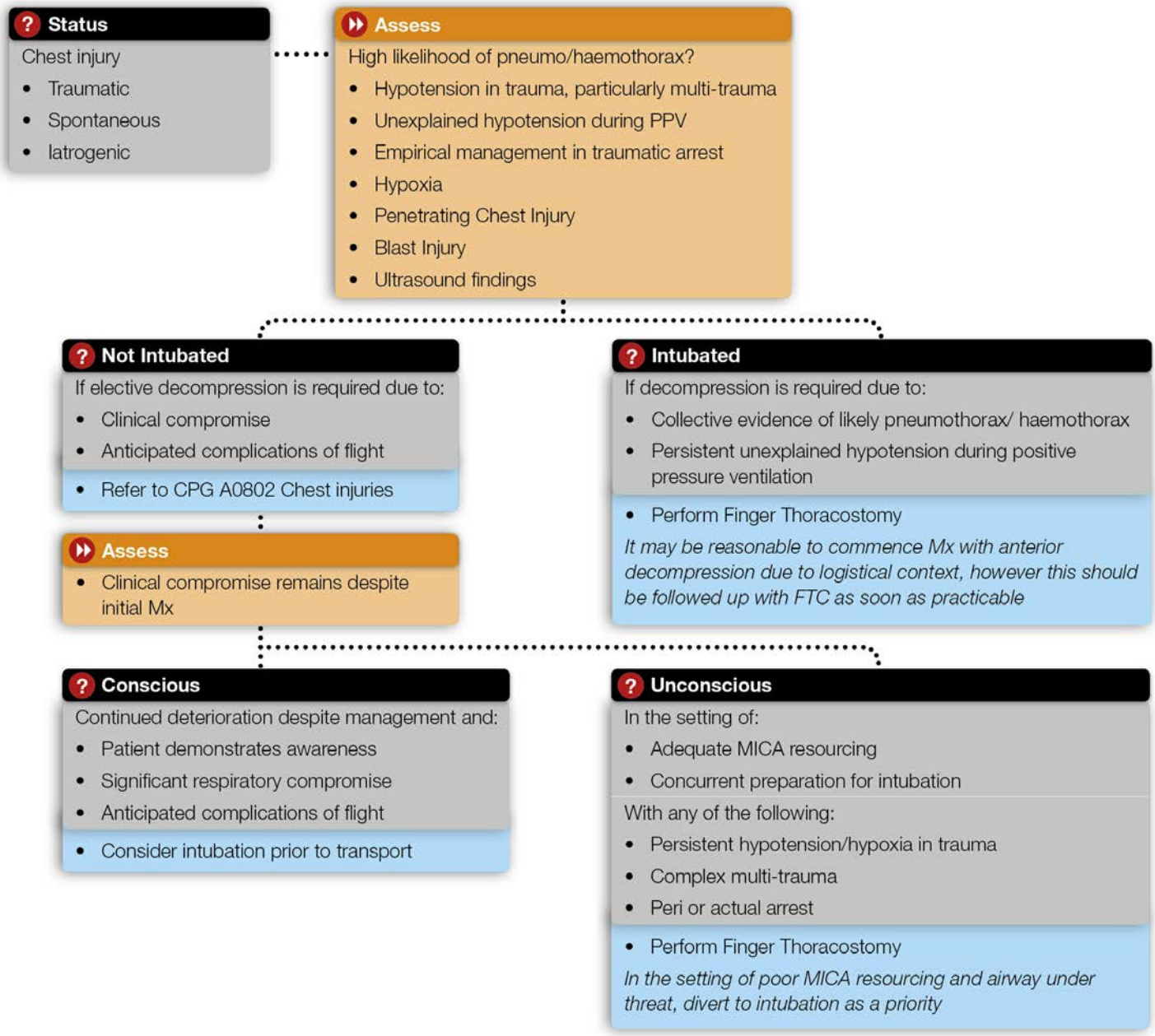
Related Resources

- https://av-digital-cpg.web.app/assets/pdf/MAC/MAC IV Paracetamol review AAV.pdf
- https://av-digital-cpg.web.app/assets/pdf/MAC/Parecoxib update for MAC FINAL (2).pdf

General Care

- Always consider pneumothorax and/or haemothorax in the setting of unexplained hypotension, especially in the setting of traumatic chest injury and positive pressure ventilation
- Early targeted pain relief in the conscious chest injury patient remains an important strategy for maximizing spontaneous minute volume and patient comfort.
- In the setting of major chest trauma in the IHT, consult with ARV.

Flowchart



Related Resources

- https://av-digital-cpg.web.app/assets/pdf/CWI/CWI OPS 170 Pleural Decompression with Finger Thoracostomy.pdf
- https://av-digital-cpg.web.app/assets/pdf/MAC/4.1.4 AAV Chest Injury MAC FINAL (2) .pdf

General Care

- This CPG is to be used in conjunction with and as an adjunct to AV CPG A0201 Cardiac Arrest

Traumatic Cardiac Arrest

- The intent is to prioritise haemorrhage control and managing correctable causes prior to other therapies. Priorities include oxygenation and ventilation; exclusion of tension pneumothorax by insertion of bilateral pleural decompression and administration of Red Cell Concentrate x 4 IV/IO in order of clinical need. This should be followed by routine cardiac arrest management including cardiac rhythm check. Once correctable causes have been addressed, a cardiac rhythm check and other standard cardiac arrest therapies such as compressions and adrenaline should be administered.
- In cases where the Hx, MOI or injuries are inconsistent with traumatic cardiac arrest, or patient is in VF/VT, consider medical cause. If any doubt exists as to the cause of arrest, treat as per Medical Cardiac Arrest.
- Control of major haemorrhage is a priority and can be achieved with tourniquets, haemostatic dressings and/or direct pressure.
- A pelvic splint should be applied after other interventions in undifferentiated blunt trauma. Where pelvic fracture is clearly contributing to cardiac arrest, a pelvic splint may be applied earlier.
- A supraglottic airway is an appropriate option to manage the airway initially and to facilitate continuous compressions. When ETT is attempted, it should not interrupt compressions.
- $ETCO_2$ can be used as a surrogate marker of cardiac output during cardiac arrest. Where capnography is available, measure $ETCO_2$. An $ETCO_2$ reading greater than 10mmHg is desirable.
- Where clear signs of prolonged cardiac arrest are present, or continued resuscitation may be futile, consider **AAV CPG G 01 and/or AV CPG A0203 Withholding or Ceasing Resuscitation**.
- IV access may be difficult in this cohort of patient and consideration should be given to rapidly establishing peripheral access via IO.

Ratios of compression to ventilation:

No ETT/SGA

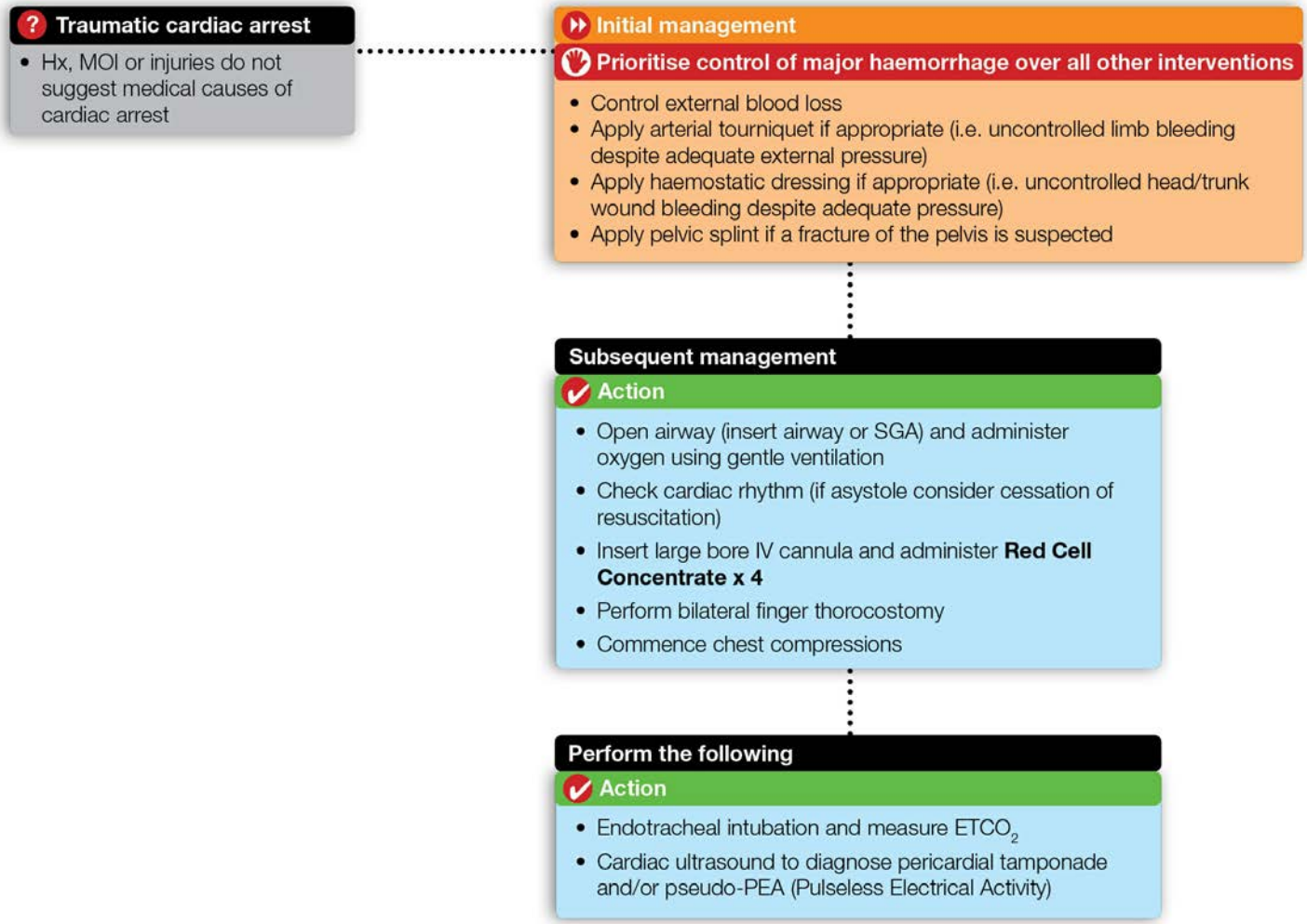
- 30 compressions to 2 ventilations
- Aim for 100 – 120 compressions per minute
- Pause for ventilations

ETT/SGA

- 15 compressions to 1 ventilation
- Aim for 100 – 120 compressions per minute
- 6 - 8 ventilations per minute
- No pause for ventilations
- The required depth of compression is > 5cm and full recoil of the chest should be allowed.

- Evidence suggests compressions rates often differ from recommendations. Consider using metronome if available.
- CPR operators should rotate every 2 minutes to reduce fatigue and maintain performance. A gradual fall in $ETCO_2$ may suggest fatigue during CPR.

Flowchart



General Notes

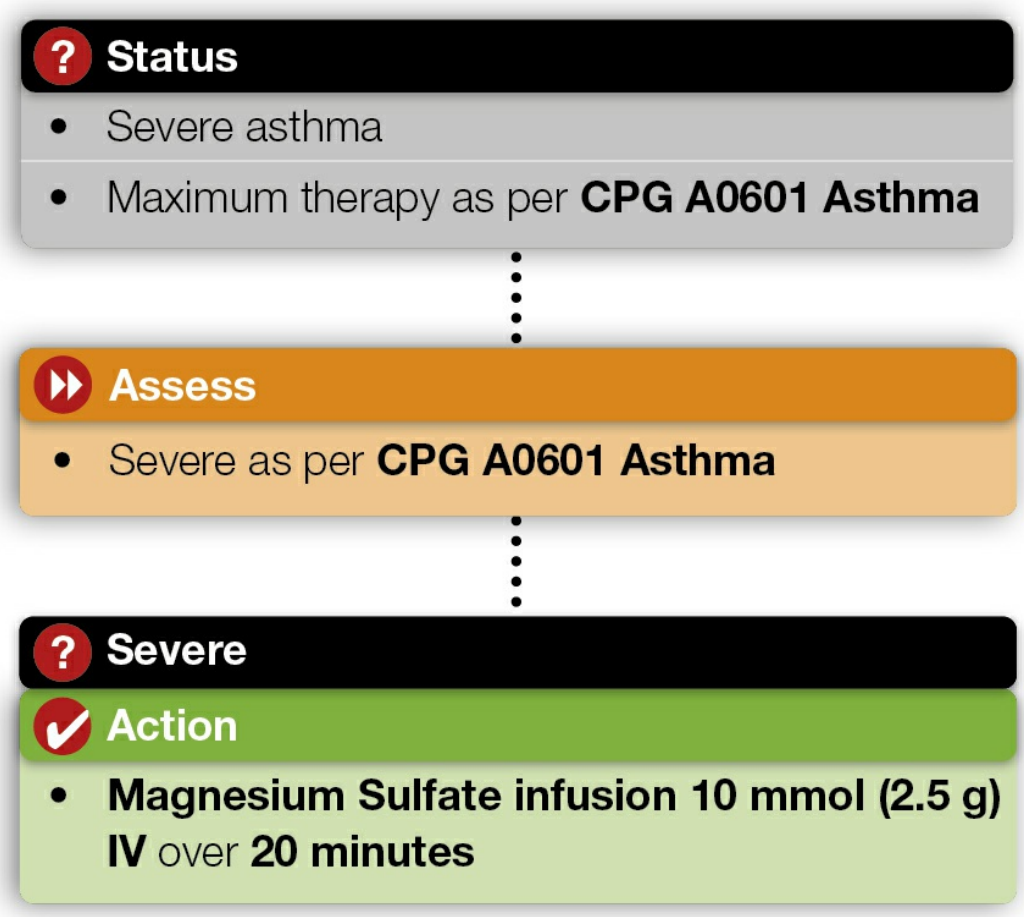
- This CPG applies to critical asthmatic patients who remain acutely unwell despite salbutamol, ipratropium bromide and adrenaline therapy given as per **CPG A0601 Asthma**.
- Consider administration of Magnesium Sulfate as soon as practicable following commencement of adrenaline infusion.

Infusions

ADULT

- Dilute **Magnesium Sulfate 10 mmol (2.5 g)** to 25mL with **Normal Saline** (this equals 100 mg / 1 mL) for IV administration.
- Administer **10 mmol (2.5 g)** via infusion pump over 20 minutes.

Flowchart



Related Resources

- https://av-digital-cpg.web.app/assets/pdf/MAC/Agenda item 4.1.1 Magnesium for Asthma AAV.pdf

Hypokalaemia

CPG AAV 14

Care Objective

- Timely serum potassium measurement
- Safe potassium infusion preparation

Flowchart

Adult patients

Mild to moderate hypokalaemia

- Serum K+ **2.5 - 3.5** mmol/L
- **Potassium 10 mmol IV** via infusion **over 1 hour**

severe hypokalaemia

- Serum K+ **< 2.5** mmol/L
- **Potassium 20 mmol IV** via infusion **over 1 hour**

Potassium safety

ALERT: Intravenous potassium can be fatal if given inappropriately.

- **Do not bolus** potassium chloride under **any** circumstance
- Potassium **must** only be administered by infusion pump
- Do not use chemical symbols on infusion labels e.g. KCl
- A maximum infusion rate of 20 mmol/hr is permitted regardless of measured serum potassium

General Notes

- Hypokalaemia can only be managed based on a very recent pathology measurement.
- Continuous cardiac monitoring required.
- Repeat potassium measurement following the initial hour of treatment. Repeat only if indicated and maximum dose of 20 mmol has not been exceeded.

Care Objective

- Safe transfer of a woman in preterm labour with the baby in-utero to a newborn capable healthcare service

Flowchart

Status

- In uterine contractions present at 20-37 weeks

Assess

- VSS (mother)
- Uterine contractions
- Lower abdominal cramping
- Pelvic Pressure
- Lower back pain
- Spotting or show

N.B. Be alert for sepsis

Consult with PIPER 1300 137 650

Management

General Care

- As per **CPG M0303 Preterm Labour**
- Left lateral position

Nifedipine

- Consult Only – PIPER / receiving hospital
- **Nifedipine 20 mg oral**
  - If contractions persist after 30 minutes, repeat **Nifedipine 20 mg oral**
  - If contractions persist after a further 30 minutes, repeat **Nifedipine 20 mg oral**
  - 60 mg in total in initial care phase

NB. GTN transdermal patch may be given in conjunction with Nifedipine. Seek advice from PIPER.

References

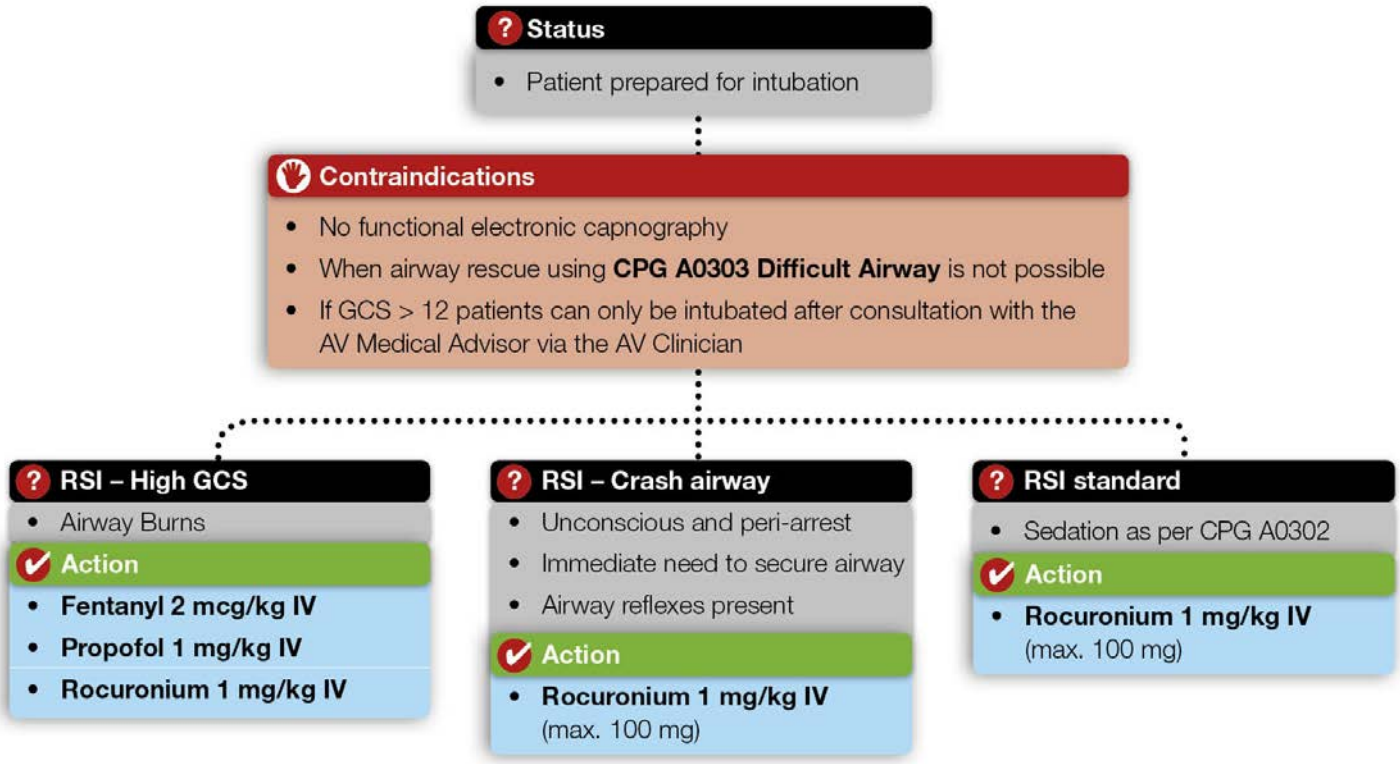
1. https://www.bettersafercare.vic.gov.au/clinical-guidance/maternity/preterm-labour

Rapid Sequence Intubation (Paediatric)

CPG AAV P01

- This guideline is to be read as an adjunct to **CPG AAV A01 Rapid Sequence Intubation** and **CPG P0301 Endotracheal intubation (paediatric)**

Flowchart



- This guideline is to be read as an adjunct to **CPG P0303 Airway Maintenance (paediatric)**

Flowchart

? Sedation

✔ Action

- Mx as per **CPG P0303 Airway Maintenance (paediatric)**
- **Fentanyl / Midazolam infusion 0.2 - 0.4 mL/kg/hr IV**
  OR
- **Morphine / Midazolam infusion 0.2 - 0.4 mL/kg/hr IV**

If Propofol is given for induction consider:

- **Propofol Infusion** at rate **2 mg/kg/hr – 4 mg/kg/hr IV**

? Paralysis

✔ Action

- **Rocuronium 0.6 mg/kg IV** every 15 minutes
- Infusion **Rocuronium 1 mg/kg/hr IV**

General Notes

- Multimodal pain relief is recognised as the most effective pathway for efficacious analgesia and limits excessive opiate administration. Unless contraindicated, Paracetamol IV should be administered to all trauma patients complaining of pain regardless of severity. Parecoxib, in addition, should be strongly considered for patients with moderate to severe pain unless contraindicated.
- Paracetamol and Parecoxib are slow acting, long lasting agents that provide bridging analgesia between the prehospital and emergency department settings.
- Dose errors in IV paracetamol administration for paediatrics is a documented issue. **Do not** administer paracetamol directly from the soft pack to paediatric patients. To avoid the risk of overdose, draw the required dose out of the soft pack and administer from a separate syringe.
- The use of Ketamine is not specifically contraindicated in the patient requiring winching. However MFPs must be acutely aware that that a dissociated patient can be an inherent safety risk during the winching operation. Ideally patients should be allowed time to return to full consciousness prior to extrication and MFPs should include this potential delay in winch operations planning. Alternatively, other analgesic agents such as Methoxyflurane may be considered for procedural pain relief in the winch setting
- ALS Flight Paramedics **are not permitted** to cannulate paediatric patients < 12 years of age for the administration of analgesia. Where the current plan for pain relief is unlikely to be effective, consult with PIPER (if they are the coordinating body) or the MFP on duty, for a management plan prior to transport.

IV Paracetamol dose / volume table

Age (years)	**Weight** (kg)	**Dose** (mg)	**Total volume** (mL)	**Rate** (mL/hr)
3 months	6	90	9	36
6 months	8	120	12	48
1 year	10	150	15	60
2	12	180	18	72
3	14	210	21	84
4	16	240	24	96
5	18	270	27	108
6	20	300	30	120
7	22	330	33	132
8	24	360	36	144
9	26	390	39	156
10	33	495	49.5	198
11	36	540	54	216
12 - 15	40	600	60	240

12 - 15	50	750	75	300
12 - 15	60	900	90	360

Infusions

Morphine Infusion

- **Morphine 30 mg** added to make **30 mL** with **Dextrose 5% or Normal Saline**
- **1 mL/hr = 1 mg/hr**

Fentanyl Infusion

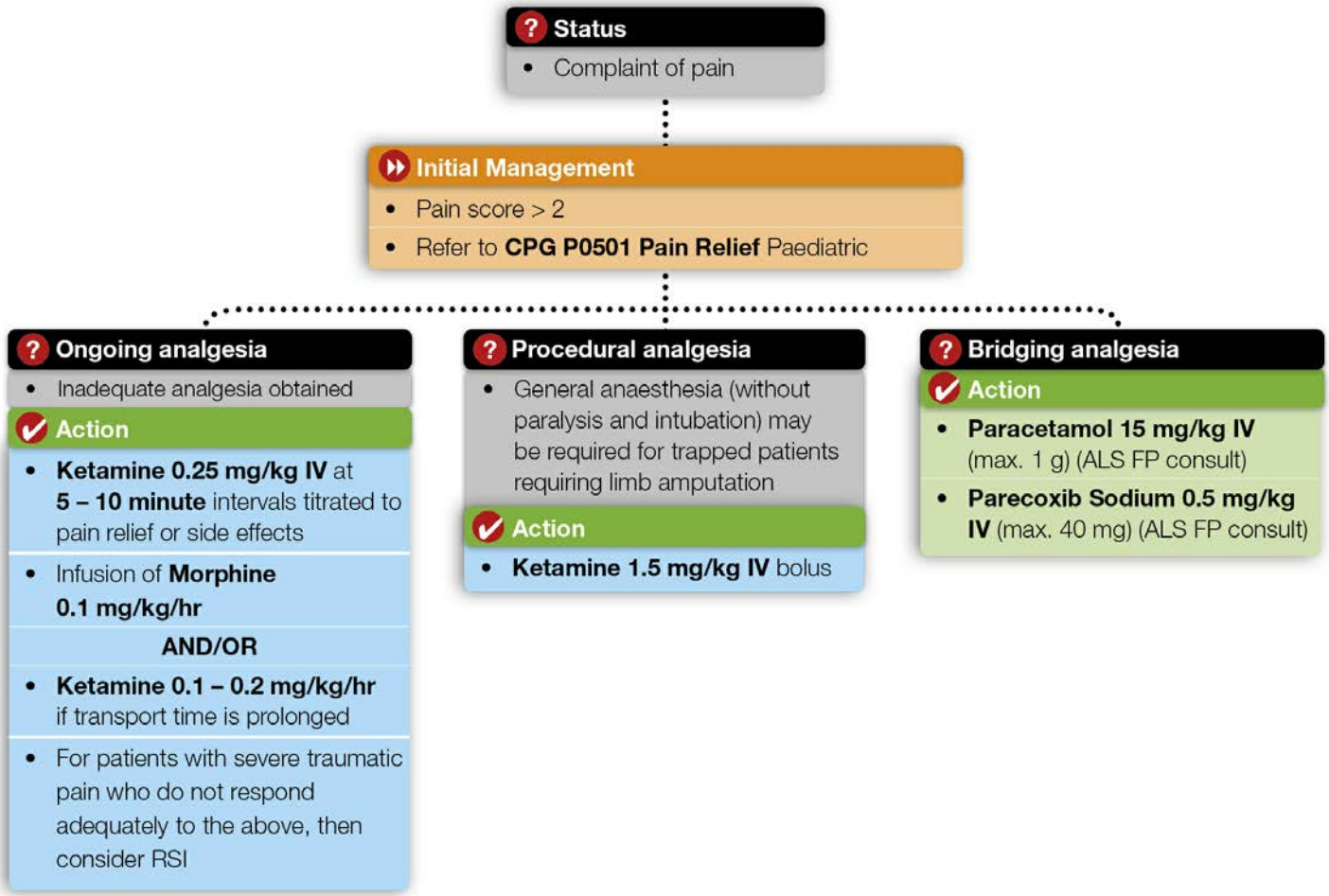
- **Fentanyl 300 mcg** added to make **30 mL** with **Dextrose 5% or Normal Saline**
- **1 mL/hr = 10 mcg/hr**

Ketamine Infusion

- **Ketamine 50 mg** added to make **50 mL** with **Dextrose 5% or Normal Saline**
- **1 mL/hr = 1 mg/hr**

Ketamine 50 mg may be obtained by adding **50 mg (5 mL)** of the pre-diluted **10 mg/mL Ketamine** solution to **45 mL Dextrose 5%** or **Normal Saline** to make a **1 mg/mL** dilution

Flowchart



Related Resources

- https://av-digital-cpg.web.app/assets/pdf/MAC/MAC IV Paracetamol review AAV.pdf

General Care

- This CPG is to be used in conjunction with and as an adjunct to AV CPG P0201 Cardiac Arrest (Paediatric)

Traumatic Cardiac Arrest

- The intent is to prioritise haemorrhage control and managing correctable causes prior to other therapies. Priorities include oxygenation and ventilation; exclusion of tension pneumothorax by insertion of bilateral intercostal catheters; and administration of Red Cell Concentrate 10ml/kg IV/IO in order of clinical need. This should be followed by routine cardiac arrest management including cardiac rhythm check. Once correctable causes have been addressed, a cardiac rhythm check and other standard cardiac arrest therapies such as compressions and adrenaline should be administered.
- In cases where the Hx, MOI or injuries are inconsistent with traumatic cardiac arrest, or patient is in VF/VT, consider medical cause. If any doubt exists as to the cause of arrest, treat as per Medical Cardiac Arrest.
- Control of major haemorrhage is a priority and can be achieved with tourniquets, haemostatic dressings and/or direct pressure.
- A pelvic splint should be applied after other interventions in undifferentiated blunt trauma. Where pelvic fracture is clearly contributing to cardiac arrest, a pelvic splint may be applied earlier.
- A supraglottic airway is an appropriate option to manage the airway initially and to facilitate continuous compressions. When ETT is attempted, it should not interrupt compressions.
- $ETCO_2$ can be used as a surrogate marker of cardiac output during cardiac arrest. Where capnography is available, measure $ETCO_2$. An $ETCO_2$ reading greater than 10mmHg is desirable.
- Where clear signs of prolonged cardiac arrest are present, or continued resuscitation may be futile, consider AAV CPG G01 and/or AV CPG A0203 Withholding or Ceasing Resuscitation.

Administration of Red Cell Concentrate (RCC)

- It is a legal requirement to obtain parental consent prior to administration of Red Cell Concentrate for any patient aged under 18 years (except if married). Therefore RCC must only be administered to a child < 18 years if a parent/legal guardian can be contacted and the parent/legal guardian does not object to the administration of a “blood transfusion”

Ratios of compression to ventilation

No ETT/SGA

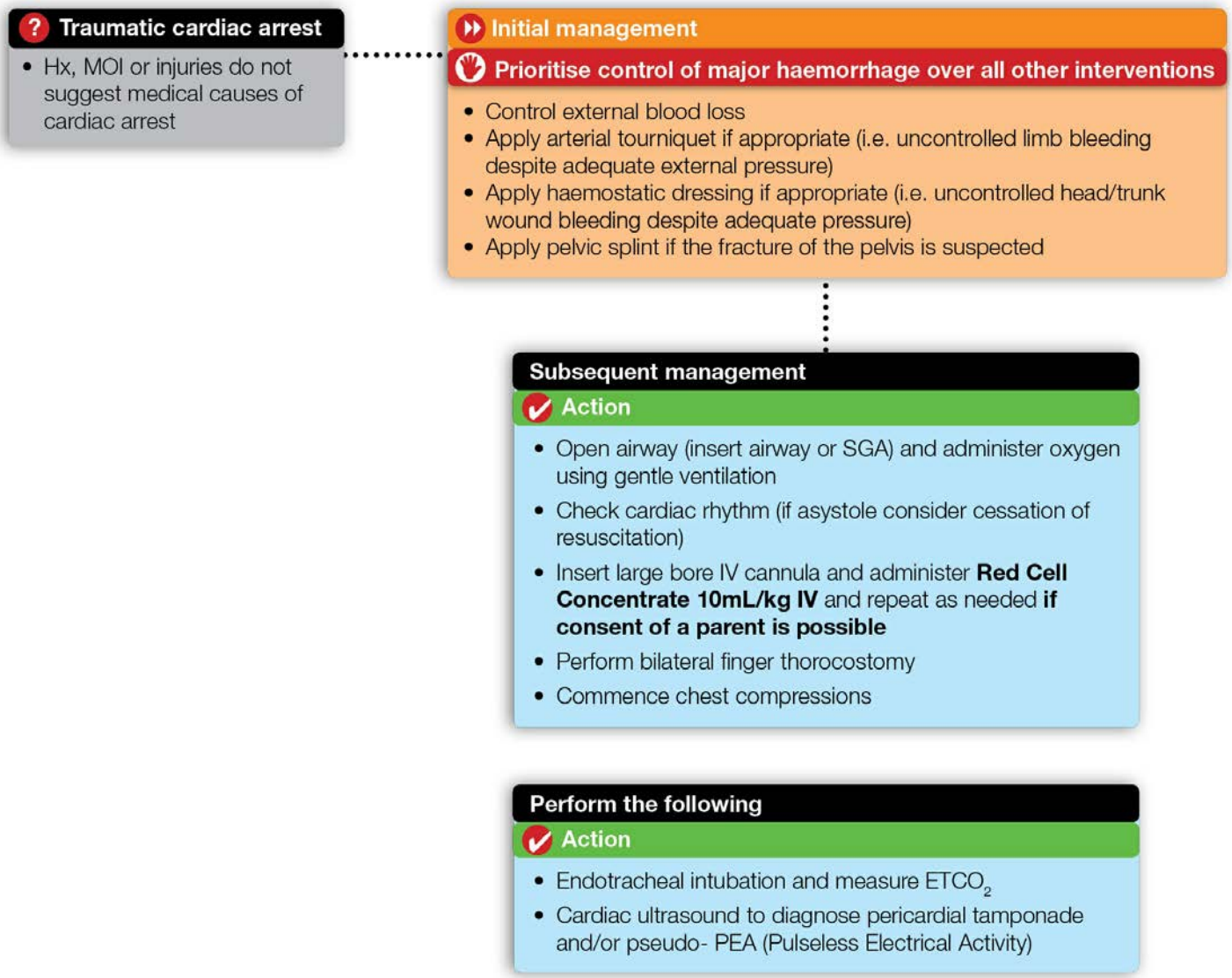
- 15 compressions to 2 ventilations
- Aim for 100 - 120 compressions per minute
- <14 ventilations per minute
- Pause for ventilations

ETT/SGA

- 15 compressions to 2 ventilations

- Aim for 100 - 120 compressions per minute
- <14 ventilations per minute
- No pause for ventilations

Flowchart



General Notes

- This CPG applies to critical asthmatic patients who remain acutely unwell despite salbutamol, ipratropium bromide and adrenaline therapy given as per **CPG P0602 Asthma**.
- Consider administration of Magnesium Sulfate as soon as practicable following commencement of adrenaline infusion.

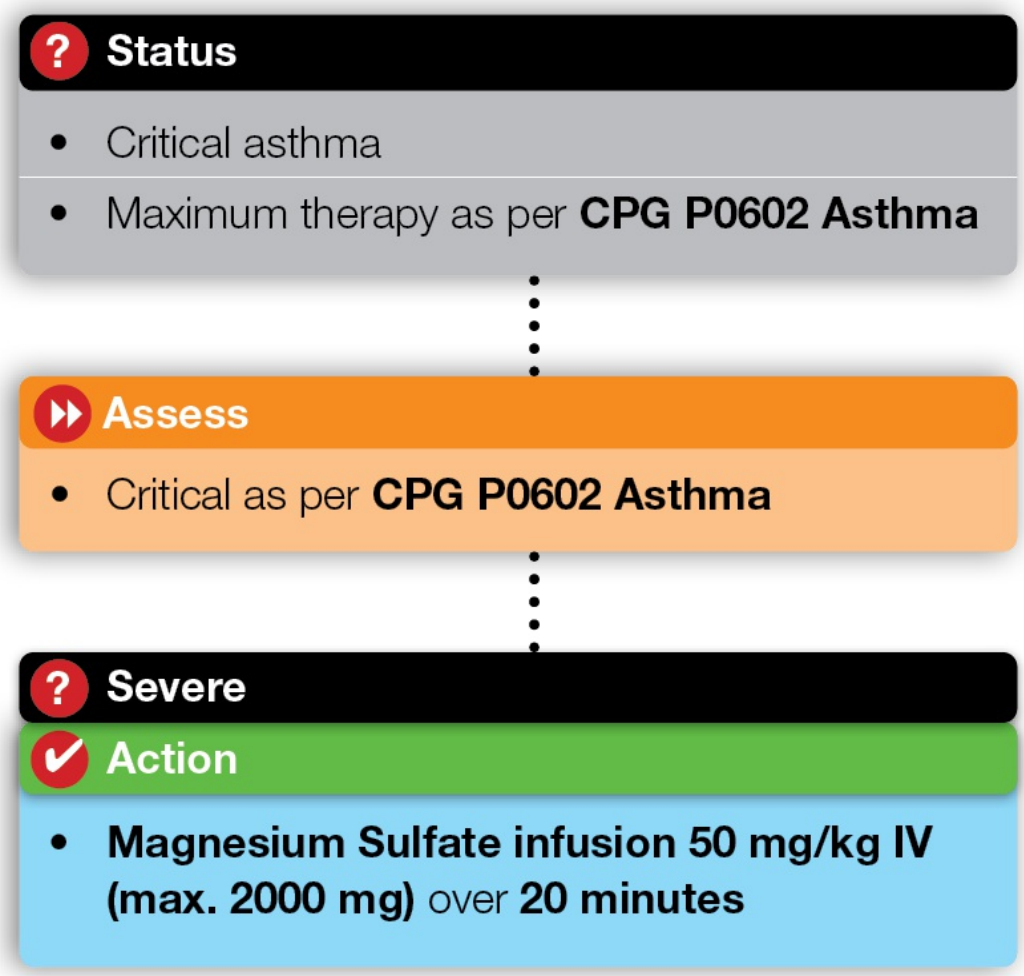
Infusions

PAEDIATRIC

- Dilute **Magnesium Sulfate 10 mmol (2.5 g)** to 25 mL with **Normal Saline** (this equals 100 mg / 1 mL) for IV administration.
- Administer **50 mg / kg (max. 2000 mg)** via infusion pump over **20 minutes**

Age (years)	**Weight** (kg)	**Dose** (mg)	**Dose** (g)	**Total volume** (mL)	**Rate** (mL/hr)
1-3 months	6	300	0.3	3	9
6 months	8	400	0.4	4	12
1 year	10	500	0.5	5	15
2	12	600	0.6	6	18
3	14	700	0.7	7	21
4	16	800	0.8	8	24
5	18	900	0.9	9	27
6	20	1000	1	10	30
7	22	1100	1.1	11	33
8	24	1200	1.2	12	36
9	26	1300	1.3	13	39
10	33	1650	1.65	16.5	49.5
11	36	1800	1.8	18	54
12 - 15	≥ 40	2000	2	20	60

Flowchart



Related Resources

- https://av-digital-cpg.web.app/assets/pdf/MAC/Agenda item 4.1.1 Magnesium for Asthma AAV.pdf

Magnesium Sulfate CPG AAV D15

Presentation	**2.5g (10 mmol magnesium) in 5mL glass ampoule**
Mode of action	Bronchodilation via relaxation of bronchial smooth muscle
Primary emergency indications	Severe acute asthma unresponsive to other treatment
Contraindications	Heart Block (may be exacerbated by magnesium) Renal Failure (increased risk of hypermagnesaemia)
Precautions	Patients with myasthenia gravis – magnesium interferes with neuromuscular transmission, may exacerbate condition
Severe drug interactions (if applicable)	Neuromuscular blockers including rocuronium – effects can be increased and prolonged by magnesium sulfate. Monitor and reduce dose if required
Adverse effects	Adverse effects may indicate hypermagnesaemia, however this is unlikely with a single dose: • Nausea, vomiting, flushing, blurred vision • Hypotension • CNS depression • Muscle weakness and loss of reflexes More severe magnesium toxicity may result in respiratory depression, coma, arrhythmias and cardiac arrest
Administration advice	Route of administration: IV infusion, IO infusion Onset of action: Immediate Time to peak effect: Duration of action: 30 minutes
Pregnancy & breastfeeding category	Safe to Use in both Pregnancy and Breastfeeding.
Special notes	
Infusion information	Dilute Magnesium Sulfate 2.5g to 25 mLs with Normal Saline. Administered via infusion pump over 20 minutes.

Nifedipine CPG AAV D01

Presentation	**10 mg or 20 mg tablet**
Pharmacology	A calcium channel blocker Actions: • Relaxes uterine smooth muscle
Metabolism	Metabolised by the liver
Primary emergency Indications	Premature labour
Contraindications	Hypotension (systolic BP < 100 mmHg)
Precautions	Since Nifedipine causes hypotension, care must be taken to avoid hypovolaemia
Route of administration	Oral
Usual Dose	20 mg tablet
Side effects	• Hypotension • Tachycardia
Special notes	Onset time: 10 minutes Peak: 12 minutes Duration: 240 minutes **Administer only on advice of a physician for premature labour**

Mode of action

- Synthetic sympathomimetic amine.[2]
- α1-adrenergic agonist (+++++)[2*]
  - Peripheral vasoconstriction
  - Increased BP (systolic and diastolic)
- β1-adrenergic agonist (+++)[2*]
  - Positive inotrope / chronotrope

* Receptor activity: + (minimal) to +++++ (maximal).

Indications

- Management of acute hypotension

Contraindications

- Nil

Precautions

- Hypotension due to uncorrected hypovolaemia

Adverse effects[3]

- CV – Reflex bradycardia, arrhythmia
- Local soft tissue necrosis
- Myocardial, mesenteric, renal or peripheral (digital) ischaemia (at extremely high doses)

Significant interactions

- Monoamine oxidase inhibitors (e.g. moclobemide, phenelzine, tranylcypromine) and tricyclic antidepressant (e.g. amitriptyline)[4]

  Potentiate the effects of noradrenaline. Dose noradrenaline conservatively

Pregnancy

- Safe to use.[5]

Breastfeeding

- Safe to use.[5]

Details

- Presentation: 4 mg / 4 mL
- Route: IV
  As infusion via syringe pump only

  If a central venous line is not inserted, noradrenaline should preferably be administered through an 18G cannula or larger in a large proximal vein (e.g. antecubital fossa)
- Onset **of action**: 1 – 2 min[3]
- Duration **of action**: 5 – 10 min[3]

Notes

- Noradrenaline must only be given as a continuous infusion and never as a bolus.
- If running as a co-infusion with adrenaline, the adrenaline must not be bolused from the infusion pump to avoid an inadvertent noradrenaline bolus.
- Monitor the access site every time patient observations are recorded – at least every 15 minutes.[3]
- Continuous cardiac monitoring required due to risk of arrhythmia.

Infusion

- Dilute Noradrenaline 3 mg (3 mL) to 50 mL with Normal Saline or Dextrose 5% = 60 mcg/mL

  1 mL/hr = 1 mcg/min
- Noradrenaline must be administered via a dedicated vasopressor IV infusion line

References

1. Australian Injectable Drugs Handbook, 8th Edition. (Accessed 08/12/2021.)
2. Standardised inotrope and vasopressor guidelines. Safer Care Victoria. ISBN 978-1-76069-729-7.
3. Noradrenaline (Clinical guideline). Safer Care Victoria. https://www.bettersafercare.vic.gov.au/clinical-guidance/critical/noradrenaline-norepinephrine. (Accessed 8/12/2021.)
4. Noradrenaline (Product Information). Therapeutic Goods Administration. Revision: 2/12/2020.
5. Royal Women's Hospital Pregnancy and Breastfeeding Medicines Guide https://thewomenspbmg.org.au.acs.hcn.com.au/medicines/noradrenaline-norepinephrine/

Mode of action

Non-steroidal anti-inflammatory drug (NSAID)

Cyclooxygenase-2 (COX-2) is an enzyme involved in the production of prostaglandins following tissue damage, resulting in an inflammatory response. Parecoxib is a COX-2 specific inhibitor.

Indications

- Moderate - severe traumatic or post-operative pain (except post CABG), as an adjunct to opioid analgesia

Contraindications

- Known hypersensitivity to any NSAID, aspirin or sulfonamides
- Post-operative analgesia following coronary artery bypass graft (CABG) or major vascular surgery

Precautions

- Severe renal impairment, or at risk of acute renal failure (e.g. hypovolaemia)

Adverse effects

- Acute renal failure (rare)
- Hypersensitivity reactions (rare)

Significant interactions

- Nil

Pregnancy

- Withhold – limited safety information[1]

Breastfeeding

- Considered safe to use[1]

Administration advice

- **Presentation:** 40 mg powder for injection in glass vial. Reconstitute powder with 2 mL of sodium chloride 0.9%. The reconstituted solution should be clear and colourless. Do not use water for injection
- **Route:** IV
- **Onset of action:** 15 minutes
- **Peak:** 2 hours
- **Duration of action:** 6 – 24 hours

Notes

- Nil

Infusion

- N/A

References

1. The Women's Pregnancy and Breastfeeding Medicines Guide (online). Melbourne: The Royal Women's Hospital. Available from: https://thewomenspbmg.org.au

Mode of action

- Electrolyte – replaces depleted potassium

Indications

- Hypokalaemia

Contraindications

- Nil

Precautions

- Pain or phlebitis may occur with higher concentrations

Adverse effects

- Stop or slow the infusion rate if the patient shows signs or symptoms of hyperkalaemia: nausea, vomiting, abdominal discomfort, hypotension, paraesthesia of the extremities, listlessness, flaccid paralysis, mental confusion, weakness, and heaviness of the legs.[1]
- Potassium toxicity. Monitor for ECG changes including loss of the P-wave, tall peaked T-waves and prolongation of QT intervals.[1]

Significant interactions

- Nil

Pregnancy

- Considered to be safe

Breastfeeding

- Considered to be safe

Details

- **Presentation:** Potassium Chloride 10 mmol in 100 mL bag
- **Route:** IV infusion
- **Onset of action:** N/A
- **Duration of action:** N/A

Notes

- ALERT: Intravenous potassium can be fatal if given inappropriately
- Do not bolus potassium chloride under any circumstance
- Potassium must only be administered by infusion pump
- Do not use chemical symbols on infusion labels e.g. KCl
- A maximum of 20 mmol/hr is mandated regardless of measured serum potassium
- Infuse into a large peripheral vein.
- Monitor injection site carefully and stop administration immediately if extravasation occurs.

Infusion

Administer via IV infusion via infusion pump

Mild to moderate hypokalaemia with Serum K+ 2.5 - 3.5 mmol/L

- Potassium infusion 10 mmol/hr (100 mL/hr)

Severe hypokalaemia with Serum K+ < 2.5 mmol/L

- Potassium infusion 20 mmol/hr (200 mL/hr)

References

1. Australian Injectable Drugs Handbook 2021

Propofol

CPG AAV D09

Presentation	**200mg in 20ml ampoule**
Pharmacology	A sedative/anaesthetic agent
Metabolism	By the liver
Primary emergency Indications	• Induction of anaesthesia with GCS ≥ 13 – Airway burns – Non trauma • Sedation during mechanical ventilation • Intracranial haemorrhage with hypertension
Contraindications	• Allergy to Propofol or component parts (egg, soybean or glycerol) • Sedation or anaesthesia in children < 3 years • Hypotension BP < 100mmHg
Precautions	Since Propofol may cause hypotension, care must be taken to avoid hypovolaemia
Route of administration	Intravenous
Side effects	• Hypotension • Respiratory depression • Bradycardia
Special notes	Since Propofol has no analgesic properties, a Morphine or Fentanyl infusion may be required in addition to Propofol infusion for post operative and trauma patients Intravenous effects (bolus): Onset: 1 minutes Peak: 2 minutes Duration: 5 minutes

Special Notes

- A Refusal of Treatment Certificate may be completed by:
  - A person aged 18 years or older
  - An agent where a person aged 18 years or older has completed an Enduring Power of Attorney (Medical Treatment); or by
  - A guardian appointed by the Civil and Administrative Tribunal (VCAT)
- A Refusal of Treatment Certificate may be sighted by the attending ambulance crew, or they may accept in good faith the advice of those present at the scene. If there is any doubt about the application of a certificate the default position of resuscitation should be adopted
- A Refusal of Treatment Certificate may only be completed in relation to a current condition. When ceasing or withholding resuscitative efforts in these circumstances the attending Ambulance or MICA Paramedic needs to be satisfied that the patient's cardiac arrest is most likely due to this current condition
- Ambulance crews must clearly record full details of the information given to them and the basis for their decision regarding resuscitation on the Patient Care Record (PCR). This is particularly important in circumstances where a copy of the Refusal of Treatment Certificate has not been sighted as it will serve if necessary as evidence of their good faith
- Under the Medical Treatment Act 1988 a person acting under the direction of a registered Medical Practitioner who, in good faith and in reliance on a Refusal of Treatment Certificate, refuses to perform or continue medical treatment is not guilty of professional misconduct or guilty of an offence or liable in any civil proceedings because of the failure to perform or continue that treatment.

Circumstances Where Resuscitation Efforts May Be Withheld

- Likely risk to Paramedic health and safety
- Clear evidence of prolonged cardiac arrest (e.g. rigor mortis, decomposition, post mortem lividity)
- Injuries incompatible with life (e.g. decapitation)
- Inadequate resources to deal with all patients (e.g. multi casualty incidents)
- Death declared by a Medical Officer who is, or has been, at the scene
- An adult (18 years or older), where a Refusal of Treatment Certificate has been completed for a current condition which most likely caused the cardiac arrest
- A child (< 18 years old), where a Court Order is provided to the attending Ambulance crews indicating that Cardiopulmonary Resuscitation (CPR) is not to be commenced
- An adult patient (18 years or older) whose initial cardiac rhythm is asystole (over a minimum 30 second period), provided the time interval between the onset of cardiac arrest i.e. collapse, and arrival of the crew at the patient has exceeded 10 minutes and there are no compelling reasons to continue, such as suspected hypothermia, suspected drug overdose, a child (< 18 years) or family/bystander requests continued efforts

Circumstances Where Resuscitation Efforts May Be Ceased

- An adult patient (18 years or older) who, after 30 minutes of Advanced Life Support resuscitation (including advanced airway management), defibrillation and/or Adrenaline) has no return of spontaneous circulation, is not in VF or VT, has no other signs of life present such as gasps or pupil

reaction and hypothermia or drug overdose are not suspected

- During Air Ambulance transport when cardiac arrest occurs in the setting of severe injury and a quickly reversible cause for the cardiac arrest has been excluded (i.e. pneumothorax, cardiac arrhythmia) and it is not practical to continue chest compressions to hospital

Flowchart

Status

- Patient with potential haemodynamic instability

Assess

- The blood pressure of a patient with potential haemodynamic instability is most reliably monitored during air transport with an electronic transducer connected to an intra-arterial cannula
- Provided there is a palpable radial pulse and time permits, an arterial line maybe inserted by a MICA Flight Paramedic in any of the following conditions
  - Secondary transfer of haemodynamically unstable patients
  - Primary attendance at haemodynamically unstable patients where the transport time is likely protracted or where NIBP is unreliable

Action

- Up to two attempts at insertion are allowed at one radial artery site only
- A 20G or 22G IV cannula or a proprietary kit with guide-wire may be used
- An injection of **1-2mL of Lignocaine 1% S/C** may be required at the cannulation site in an awake patient

Helicopter Safety & Landing Site Requirements

CPG AAV REF04

Operating around helicopters can be dangerous. This card provides important information for the safety of bystanders and emergency services when working in the vicinity of helicopters.

Helicopter Safety Considerations

Emergency Personnel, Vehicles & Bystanders must **remain well clear of the landing area** during landing and take-off. **Protect eyes** with safety goggles or turn head when helicopter is landing and departing.

DO NOT APPROACH THE HELICOPTER unless escorted by a crew member.

If escorted - Only approach or depart the helicopter in the green shaded area indicated.

NEVER WALK BEHIND A HELICOPTER

If on uneven ground, **approach** or **depart** from the **downhill** side.

NEVER from the uphill side or the rear.

Landing Site Requirements – Minimum 40 metres x 40 metres

The **Pilot in Command** of the helicopter has the **final decision** on suitability of the landing site. This also includes the destination hospital.

- Area a minimum of 40 x 40m or about the size of 2 tennis courts.
- Surface should be Free of Obstacles and as Firm and Flat as possible.
- **Landing site to be free of Overhead Wires**
- Approach / Departure paths to be into wind where possible.
- Vehicle Doors & Windows to be closed.
- All loose articles including stretchers to be removed or secured.
- At night, be prepared to turn lights off if requested by crew

Helicopter Winch Safety Considerations

The downwash of a helicopter can be considerable, with potential to cause flying dust, debris or blow equipment away, break tree branches or even bring whole trees down.

The following should be considered when a helicopter winch is likely:

- **Look up**, check for overhanging, broken or dead tree branches and **maintain awareness** of potential for falling debris throughout winch operation.
- **Consider moving** the patient/ persons to be winched away from the hazards where possible.
- **PPE** including Hearing, Eye and Head Protection for all personnel/ patients where available.
- **Secure** all loose items and equipment that may be blown away by downwash.
- Only **essential** personnel should remain in the immediate winch area.
- **Bystanders** should be moved well **clear** of the winch area including the helicopters likely approach and departure paths (into wind wherever possible).
- **Follow** any **directions** provided by the helicopter crew.
- **Maintain awareness** of above considerations until helicopter has **departed** the area.

Anti-Rotation “Tag” line Operation

When a stretcher is to be winched, an Anti-Rotation or ‘Tag’ Line will be attached to one end of the stretcher and held by a nominated Tag Line Operator on the ground. This is to prevent the stretcher from spinning while being winched up to the aircraft.

If you are asked to operate the Tag line:

- **Listen carefully to the briefing** provided to you on its operation, even if you have done it before.
- **PPE** including Hearing, Eye and Head protection along with sturdy gloves **must** be worn.
- **Maintain awareness** of surroundings at all times.
- **NEVER wrap** the Tag Line around your Hands/ Arms/ Body.
- **NEVER attach** the Tag Line to anything.
- When the stretcher reaches the helicopter, the Tag Line will be released by the rescue crewman and will fall to the ground. **Remain clear** of the falling line.
- Return the Tag Line as instructed.

SPECTER Checklist CPG AAV REF03

Before giving the 'Ready' signal, check the following using SPECTER Checks:

- S - Stretcher: Straps, Security
- P - Patient: Protection (eyes, ears), Patient brief
- E - Equipment: ready, checked, secured
- C - Karabiners / connectors: check screwed and squeezed
- T - Tag Line: secured and ready / Operator briefed
- E - Environment: suitable for task, bystanders cleared away
- R - Risk assessment, Radio call

The 406 Stretcher is now ready to be recovered to the aircraft