



Clinical Practice Guidelines

Air Ambulance Victoria



Air AmbulanceVictoria

Version 3.13.1 Exported 02/12/2025



About



This work is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/).

© Ambulance Victoria 2019

These clinical practice guidelines, protocols, work instructions and tools ('the work') have been developed and are owned by Ambulance Victoria, with the exception of content provided by third parties and other excluded material identified below. An online version of the work can be accessed from <https://cpg.ambulance.vic.gov.au>

With the exception of:

- Ambulance Victoria's branding, logos and trademarks;
- other trademarks, logos and coats of arms; and
- content supplied by third parties,
- images supplied by third parties.

The work is available under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. Licensees can copy and distribute the material for non-commercial purposes only. If you remix, transform or build upon the material you may not distribute the modified material.

To view a copy of this licence visit the Creative Commons website using the following link: <https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode>

Use of the work under the above Creative Commons License requires you to attribute the work in any reasonable manner requested by Ambulance Victoria, but not in a way that suggests Ambulance Victoria endorses you or your use of the work. The following is provided to enable you to meet your obligation under the Creative Commons License.

Material used 'as supplied'

Source: '*Clinical Practice Guidelines for Ambulance and MICA Paramedics*', Ambulance Victoria, 2019. Available under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/).

Derivative material for internal use only

Based on '*Clinical Practice Guidelines for Ambulance and MICA Paramedics*', Ambulance Victoria, 2019, as amended by [insert name].

The original resource is available under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/). An online version of the original resourced can be accessed from <https://cpg.ambulance.vic.gov.au>.

Third Party Copyright

In some cases, a third party may hold copyright in material presented in this work. Their permission may be required to use that material.



Enquiries

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

DISCLAIMER

These clinical practice guidelines, protocols, work instructions and tools are expressly intended for use by Ambulance Victoria paramedics and first responders when performing duties and delivering ambulance services for, and on behalf of, Ambulance Victoria.

Other users:

The content of this work is provided for information purposes only and is not intended to serve as health, medical or treatment advice. Ambulance Victoria does not represent or warrant that the content of this work is accurate, reliable, up-to-date, complete or that the information contained in this work is suitable for your needs or for any particular purpose. You are responsible for assessing whether the information is accurate, reliable, up-to-date, authentic, relevant or complete and where appropriate, seek independent professional advice.

To the maximum extent permitted by law, Ambulance Victoria excludes liability (including liability in negligence) for any direct, special, indirect, incidental, consequential, punitive, exemplary or other loss, cost, damage or expense arising out of, or in connection with, use or reliance on this work or any information contained in this work (including without limitation any interference with or damage to a user's computer, device, software or data occurring in connection with this work or its use).

This work provides links to external websites. Ambulance Victoria does not control and accepts no liability for the content of those websites or for any direct, special, indirect, incidental, consequential, punitive, exemplary, or other loss, cost, damage or expense arising from use or reliance on those websites.

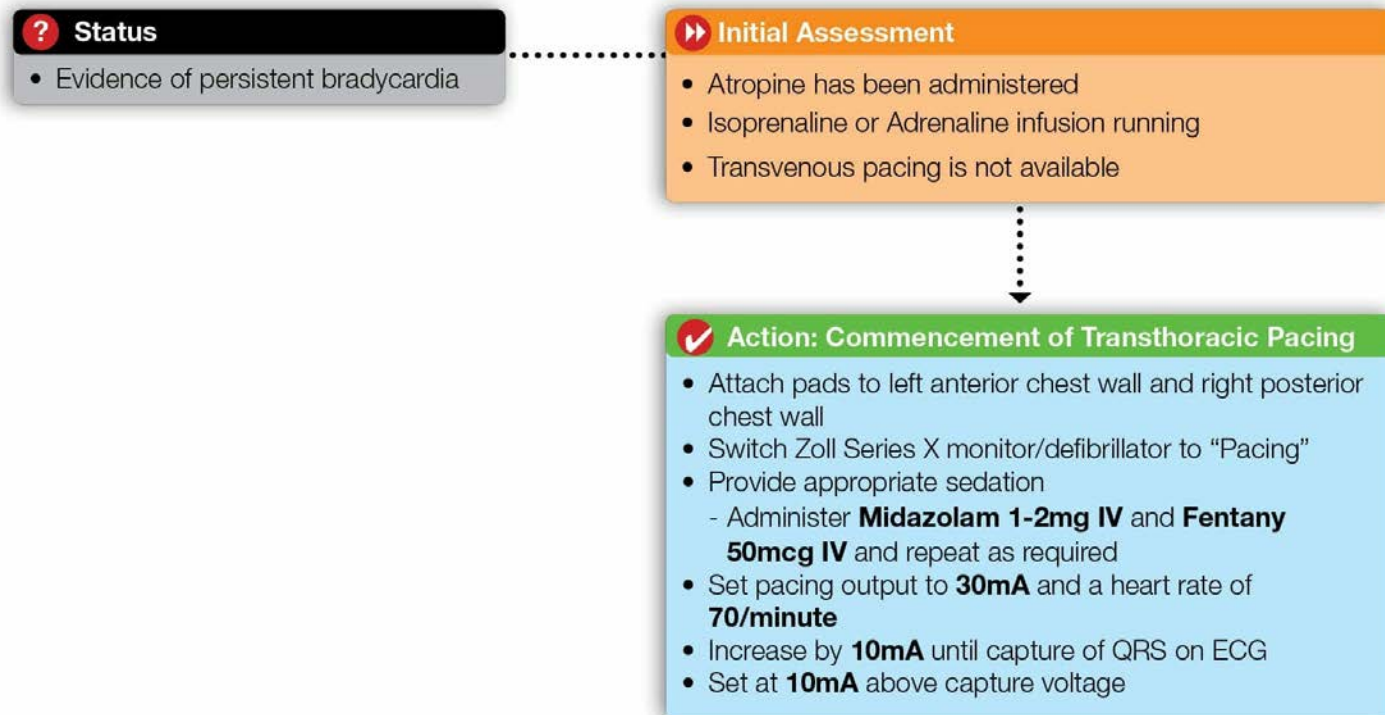
Ambulance Victoria does not endorse any external website and does not warrant that they are accurate, authentic, reliable, up-to-date, relevant or complete. Your use of any external website is governed by the terms of that website. The provision of a link to an external website does not authorise you to reproduce, adapt, modify, communicate or in any way deal with the material on that site.

If this work contains links to your website and you have any objection to such links, please contact Ambulance Victoria at: ClinicalGuidelines@ambulance.vic.gov.au

Developed by Media4Learning: www.media4learning.co.nz



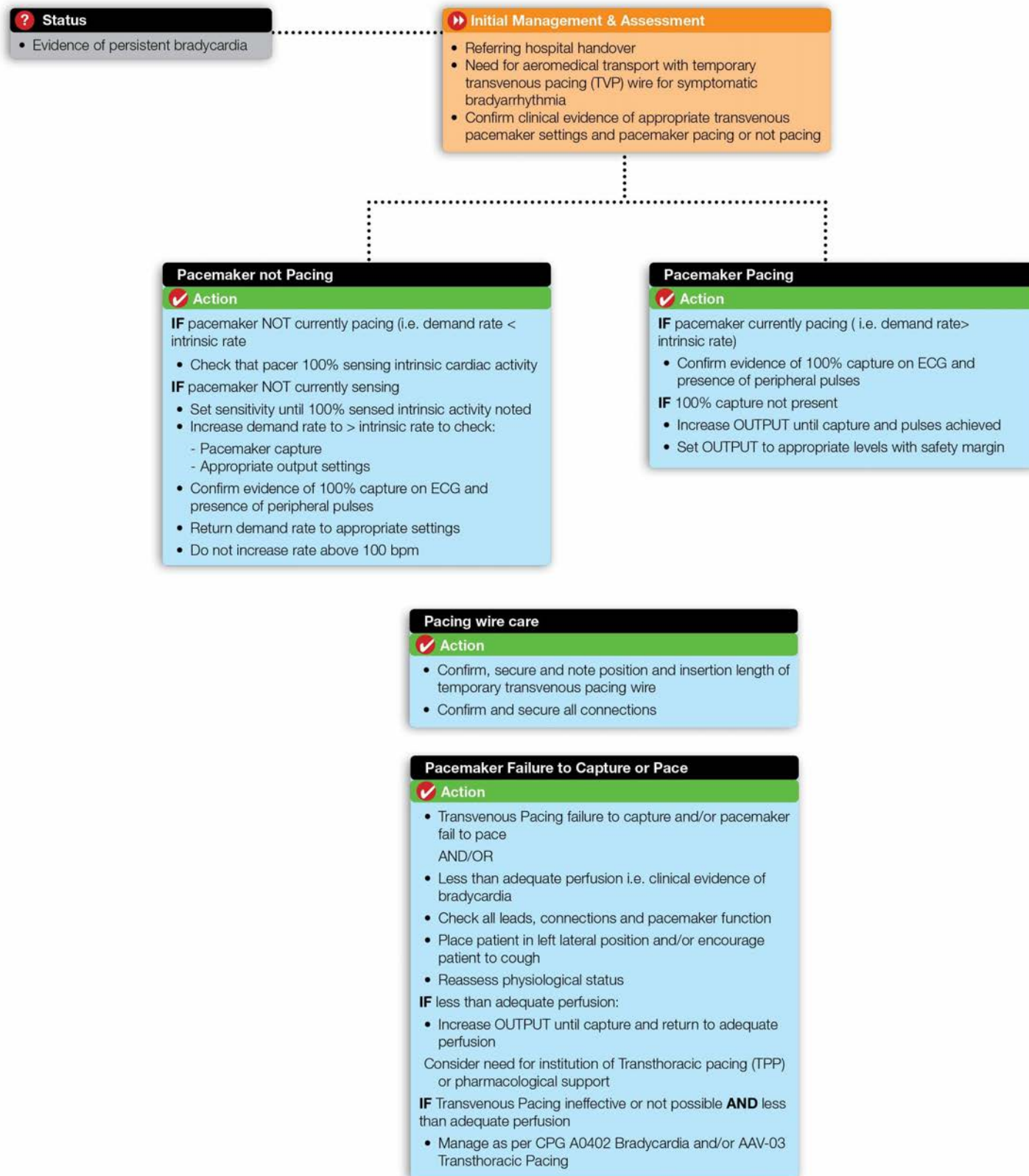
Flowchart



Pacing Wire Care

- In general the OUTPUT setting on the pacemaker should be set at 2 times the THRESHOLD level plus 1mA (i.e. $2 \times \text{THRESHOLD(mA)} + 1\text{mA}$)
- 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



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

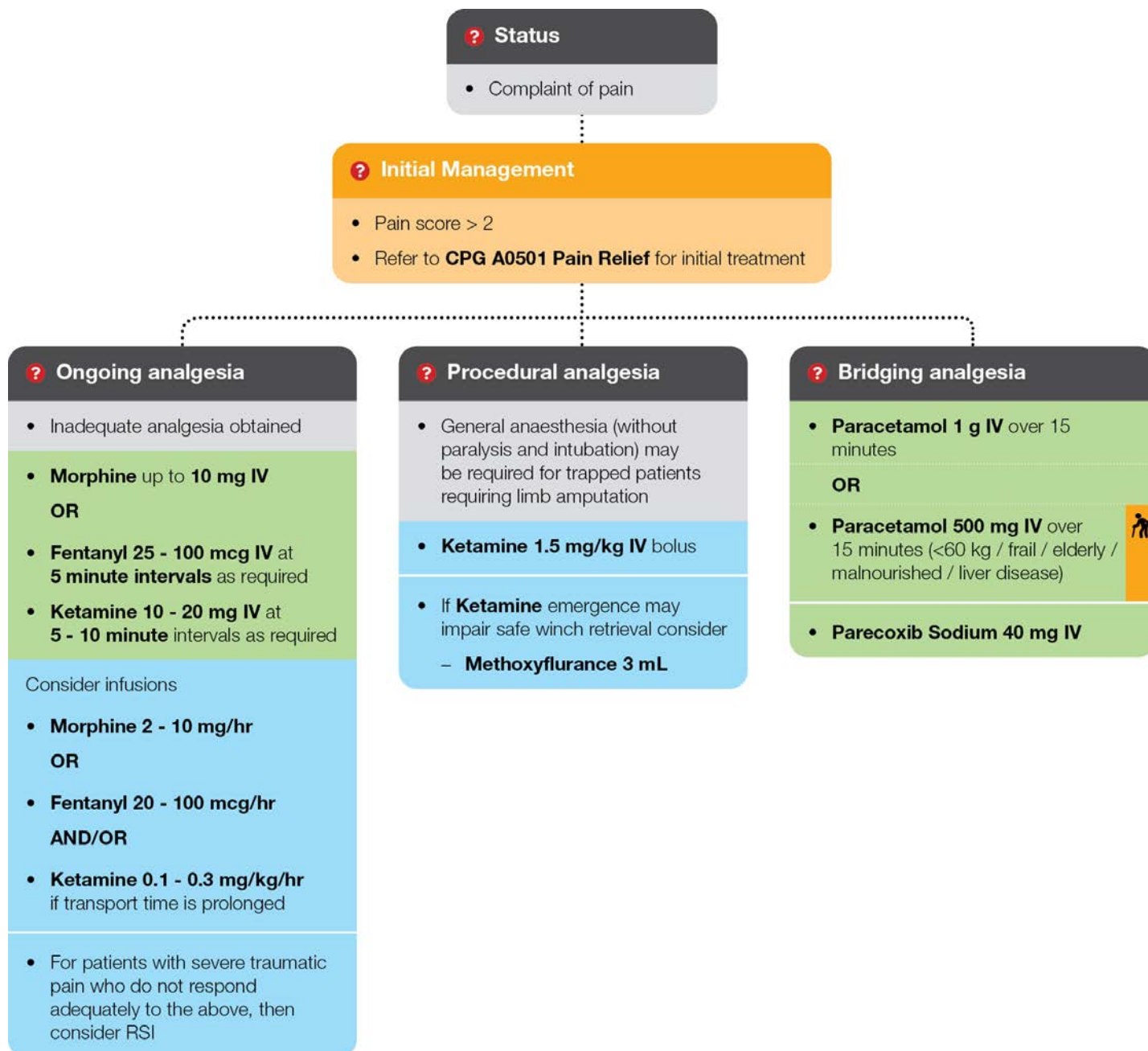
- **Fentanyl 300 mcg** added to make **30 mL** with **Dextrose 5%** or **Normal Saline**
- **1 mL/hr = 10 mcg/hr**

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



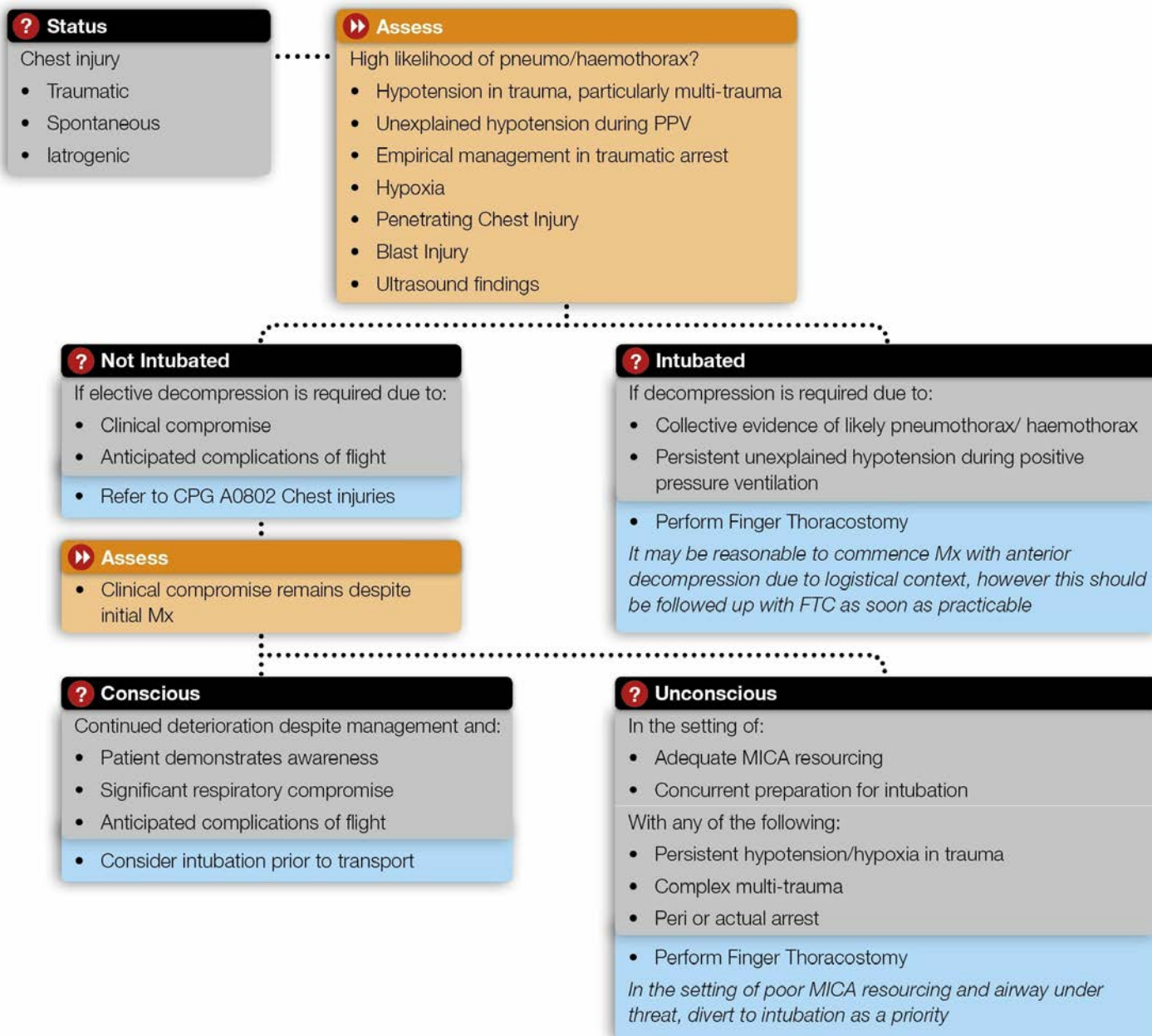
Related Resources

- <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](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



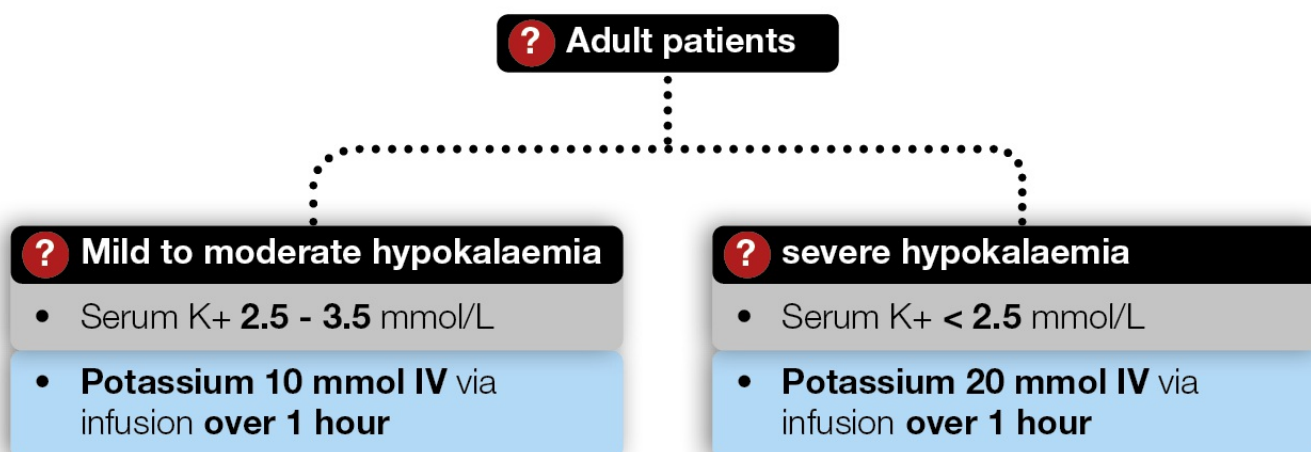
Related Resources

- <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](https://av-digital-cpg.web.app/assets/pdf/MAC/4.1.4 AAV Chest Injury MAC FINAL (2) .pdf)

Care Objective

- Timely serum potassium measurement
- Safe potassium infusion preparation

Flowchart



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

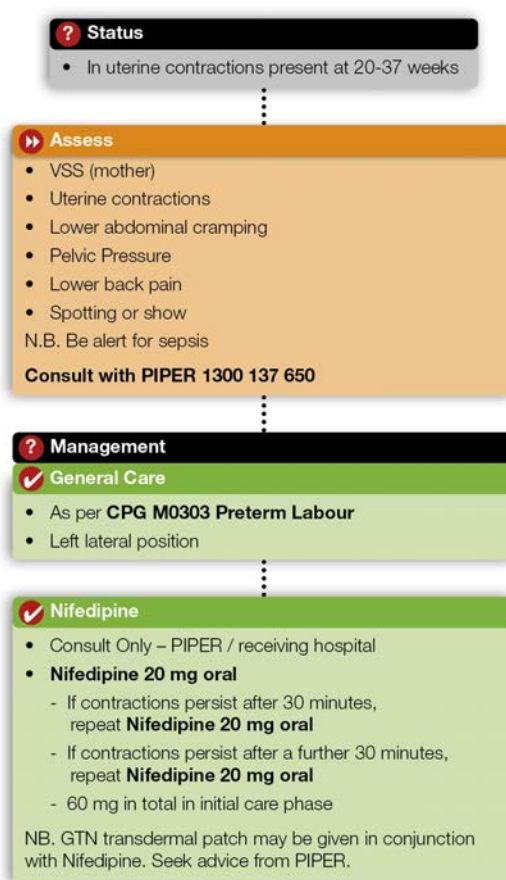
General Notes

- 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

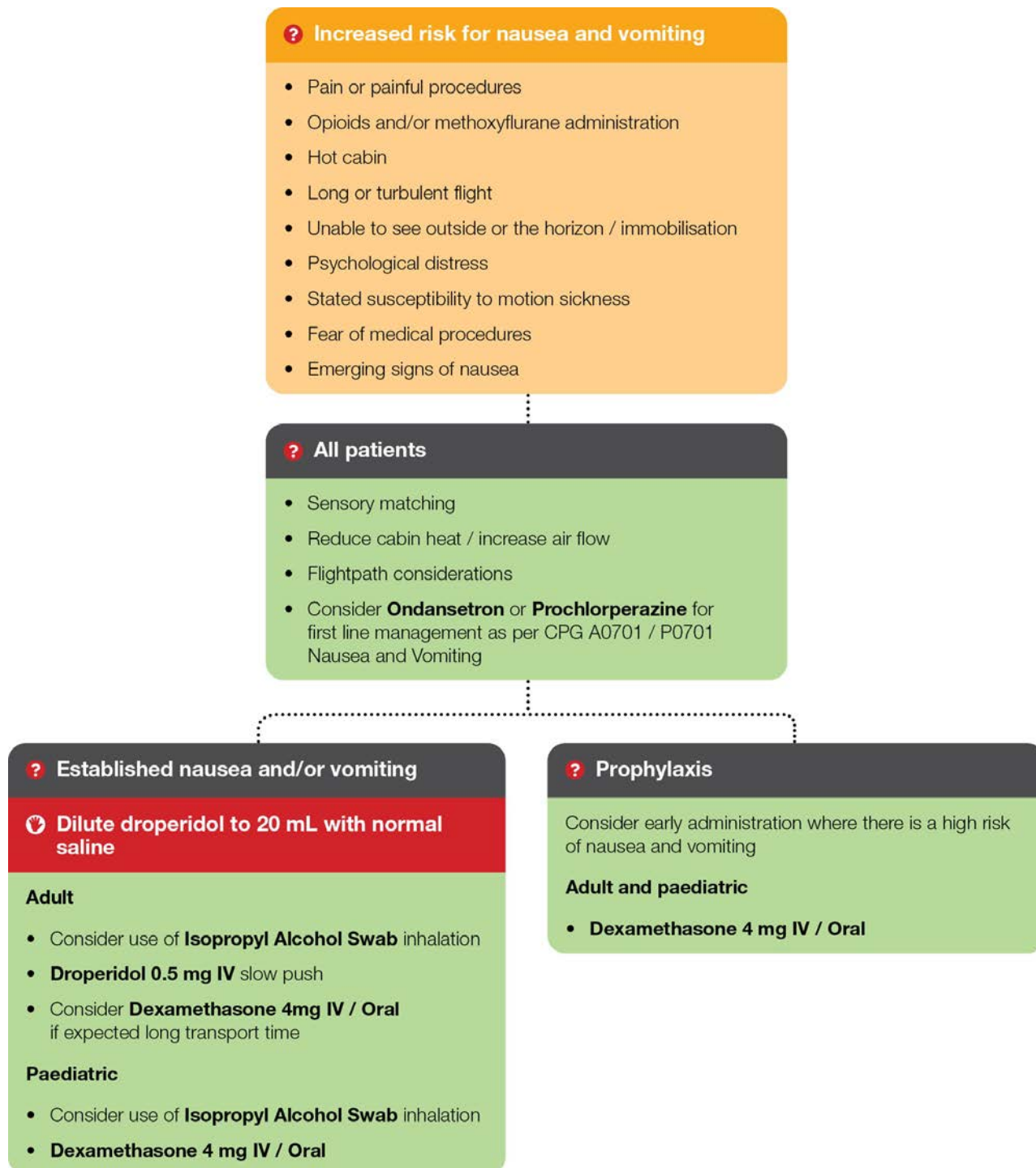
Flowchart



References

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

Flowchart



Care Objectives

- Early identification of patients suffering from nausea and vomiting
- Prophylactic or symptomatic management to prevent complications with care

Intended patient group

- Patients with nausea and/or vomiting that will be exposed to retrieval by flight.

Overview

- Five principle neurotransmitter receptors mediate vomiting: muscarinic, dopamine, histamine, serotonin, and neurokinin receptors
- Where possible identification of the aetiology of nausea and vomiting may assist in identifying the most appropriate pharmacological and non-pharmacological interventions to support patient management, but is not necessary prior to commencing management
- In the aeromedical retrieval environment, it may be impossible to identify the specific cause of nausea and vomiting, given the number of contributing factors.

Assessment

History

- Many factors commonly encountered in the aeromedical environment may contribute to the development of nausea and/or vomiting:
 - Pain or painful procedures
 - Opioids and/or the use of methoxyflurane, particularly in combination or large doses
 - Hot cabin environment, particularly where airflow is difficult to maintain or a sense of claustrophobia is present
 - Long or turbulent flights
 - Inability to see outside cabin or immobilisation
 - Psychological distress, including fear of flying, situational distress etc
 - Stated susceptibility to motion sickness
 - Expressed fear of medical procedures

Emerging signs of nausea

- The following subtle signs and symptoms are indicative of emerging nausea that may lead to vomiting.
 - Restlessness
 - Headache
 - Burping / flatulence

- 'Prickly heat' sensation and clamminess
- Slowing heart rate
- Deep sighs
- Yawning

Management

All patients

- Manage as per **CPG A0701 – Nausea and Vomiting** or **CPG P0701 – Nausea and Vomiting**
- Sensory matching aims to connect the sensory cues between the vestibular, visual and proprioceptive signals to reduce nausea. Procedures which may help to achieve this include:
 - Allowing visualization of the horizon
 - Placing the head against the back of the stretcher
 - Reducing exposure to strobing lights
 - Distraction from the flight, such as conversation
- Where safe and appropriate for the patient's condition, an alternative flight path may be negotiated with the pilot to avoid anticipated turbulence.

Established nausea and/or vomiting

- Consider the use of Isopropyl Alcohol Swab inhalation while initiating management, or in conjunction with management.
Procedure

- Hold or instruct the patient to hold an alcohol swab approximately 2 cm under their nose
- Instruct the patient to take deep breaths through their nose
- The patient can decide how frequently they choose to inhale the swab depending on level of nausea and efficacy of treatment
- Anti emetic effects are usually seen within several minutes
- Provide a new alcohol swab every 15 minutes as required to manage nausea

- If nausea and/or vomiting is persistent, consider the following management in addition to ondansetron or prochlorperazine:

Adult patients

- **Droperidol 0.5 mg IV slow push**
 - Administration of **Droperidol** for nausea and vomiting requires atypical dilution.
 - Dilute **10 mg Droperidol** into 20 mL of **Sodium Chloride 0.9%** to give concentration of 0.5 mg / mL.
 - **Ondansetron, Prochlorperazine and Droperidol** may all potentially cause QT prolongation. Ensure the ECG is monitored, particularly for co-administration of

medications or where other risk factors for QT prolongation are present (e.g. patient history, electrolyte imbalance).

- If extended prehospital times are expected (> 1 hour), the addition of **Dexamethasone IV** may be considered.

Paediatric patients

- **Dexamethasone 4 mg IV**
- Aim for a reduction of symptoms rather than elimination.
- ALS Flight Paramedics are not permitted to cannulate paediatric patients < 12 years of age for the administration of dexamethasone. It may be administered IV in patients < 12 years where an IV is already established.

Prophylaxis

- The need for prophylactic management should be indicated by actively appraising the listed risks for nausea and vomiting.
- For patients aged ≥ 21 years, consider **Prochlorperazine 12.5 mg IM** as per **CPG A0701 – Nausea and Vomiting**.

Dexamethasone

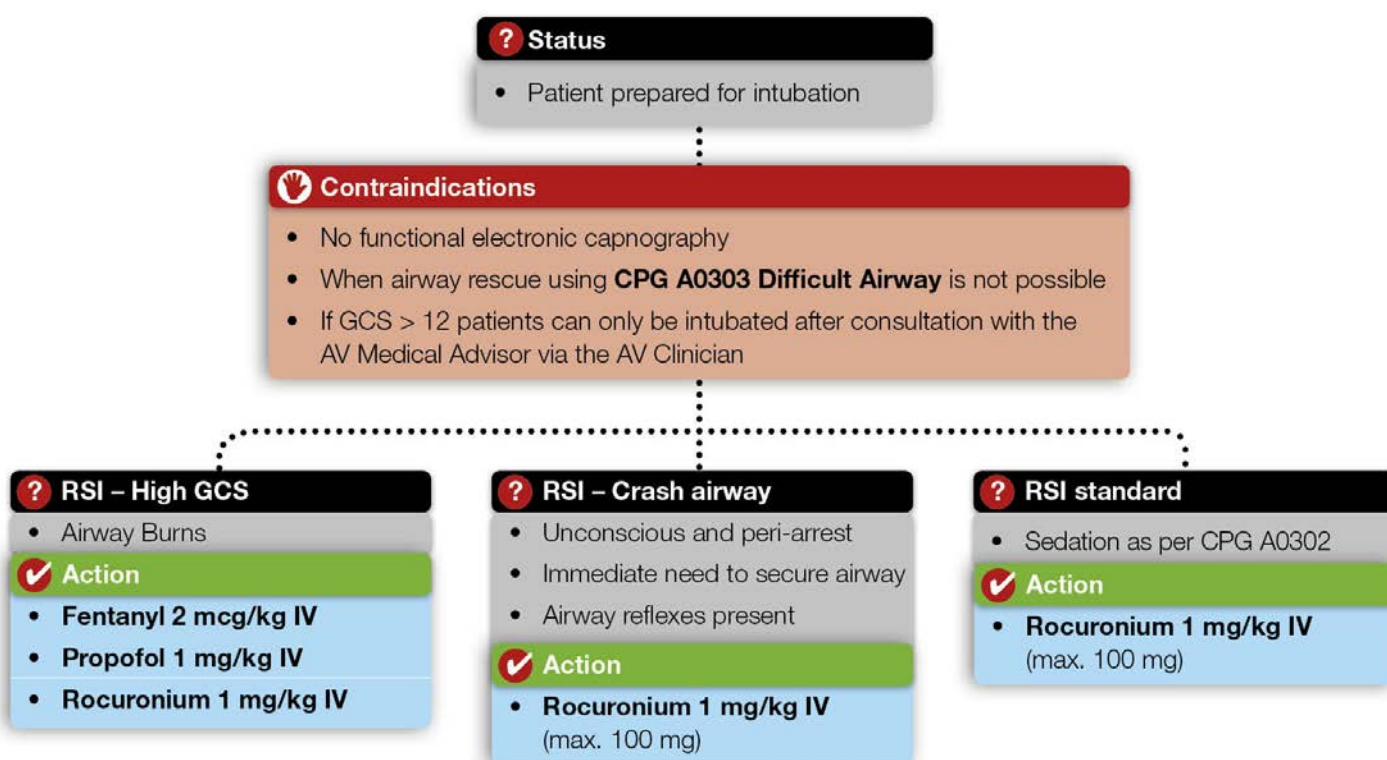
- Earlier administration is associated with improved effectiveness.
- May be given in addition to prochlorperazine
- Consider for:
 - Paediatric patients
 - Patients where prochlorperazine should be avoided (e.g. due to sedative effects)
 - High likelihood of in-transit nausea and vomiting

Related Resources

- [https://av-digital-cpg.web.app/assets/pdf/MAC/MAC_paper - AAV Nausea and vomiting.pdf](https://av-digital-cpg.web.app/assets/pdf/MAC/MAC_paper_-_AAV_Nausea_and_vomiting.pdf)

This CPG has been replaced by the updated **CPG P0301 Endotracheal Intubation** as of November 2025. These CPGs will remain here for reference if required during the transition period for approx. 3 months and will then be deleted.

Flowchart



This CPG has been replaced by the updated **CPG P0301 Endotracheal Intubation** as of November 2025. These CPGs will remain here for reference if required during the transition period for approx. 3 months and will then be deleted.

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 a patient < 12 years of age already has an IV in situ, ALS flight paramedics can administer IV pain relief as required. 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

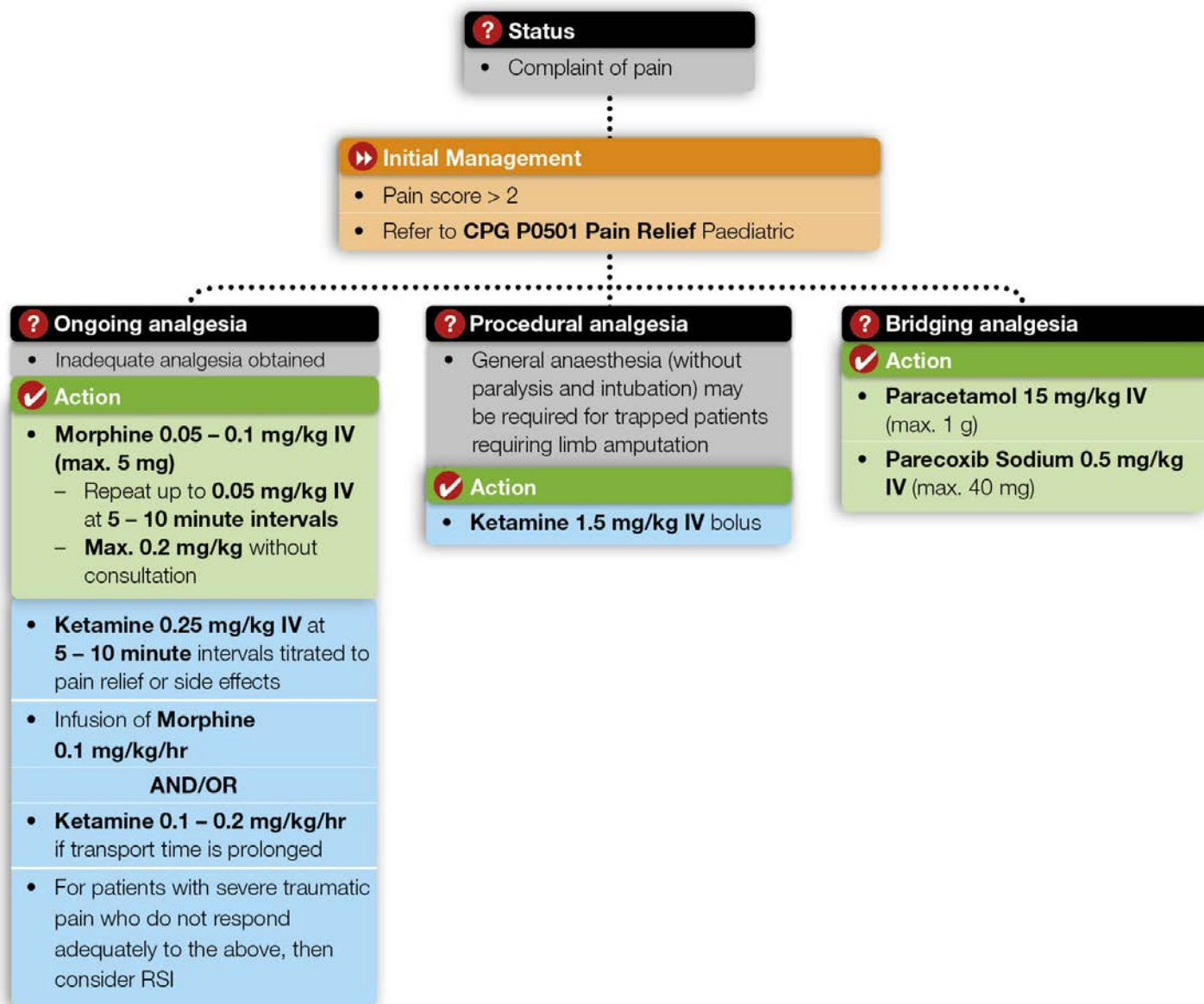
- **Fentanyl 300 mcg** added to make **30 mL** with **Dextrose 5% or Normal Saline**
- **1 mL/hr = 10 mcg/hr**

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>

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.



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