Although not a fan of ‘cookook medicine’, there is no doubt that checklists can help eliminate simple errors or oversight in even the most experienced doctor - particularly when task-loaded in an emergency. These checklists & aide memoires have been compiled from a variety of sources to be used in theatre or ED both routinely and in an evolving crisis.
## General Principles

- Rapid Sequence Intubation
- Obese / Asthma / DSI
- Difficult Airway Algorithm
- Unexplained Hypoxia
- Elevated or Decreased ETCO2
- Elevated Airway Pressures
- Bradycardia
- Tachycardia
- Cardiac Arrest
- Myocardial Ischaemia
- Severe Hypo- or Hypertension
- Major Haemorrhage
- Anaphylaxis
- Malignant Hyperthermia
- TURP Syndrome
- Obstetric Anaesthesia
- Obstetric Crisis
- Infusion Protocols
- Drug Formulary
PRINCIPLES OF CRISIS MANAGEMENT

**KNOW, MODIFY and OPTIMISE THE ENVIRONMENT**
- establish protocols and procedures
- ensure room set up is conducive to crisis - layout, equipment etc
- how can things be improved (this includes equipment)

**ANTICIPATE and PLAN FOR A CRISIS**
- patient - procedure - equipment - drugs - personnel - retrieval
  - global plans
  - specific plans

**ENSURE LEADERSHIP and ROLE CLARITY**
- assign leader
  - preferably not responsible for tasks ie: has an overview of the situation
  - leader decides, prioritises and assigns tasks to team

**COMMUNICATE EFFECTIVELY**
- leadership and followership aided by clear communication
  - eye contact, use names, clear instructions, ensure understanding and report back
  - close the loop - upstream/downstream communication

**CALL FOR HELP or SECOND OPINION EARLY**
- call for help early - even if not in a crisis
  - second opinion may be reassurance enough or suggest alternatives
  - avoid therapeutic inertia

**ALLOCATE ATTENTION and USE AVAILABLE INFORMATION**
- fixation errors common
  - beware attentional tunnelling / situational overload
  - if you are stressed you are likely to be missing something

**DISTRIBUTE WORKLOAD and USE AVAILABLE RESOURCES**
- maintain situational awareness
  - delegate tasks, use external resources (telemedicine/retrieval)
  - if all else fails, think laterally - improvise/adapt/overcome
## SAFE SURGERY CHECKLIST

### BEFORE INDUCTION

<table>
<thead>
<tr>
<th>Nurse &amp; Anaesthetist</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Has patient confirmed identity, site, surgery and consent?</strong></td>
</tr>
<tr>
<td>Yes □</td>
</tr>
<tr>
<td><strong>Is the surgical site marked?</strong></td>
</tr>
<tr>
<td>Yes □ Not applicable □</td>
</tr>
<tr>
<td><strong>Is the anaesthetic machine &amp; medication check complete?</strong></td>
</tr>
<tr>
<td>Yes □</td>
</tr>
<tr>
<td><strong>Are pulse oximeter, BP &amp; ECG on the patient, functioning &amp; acceptable?</strong></td>
</tr>
<tr>
<td>Yes □ Snapshot taken? □</td>
</tr>
<tr>
<td><strong>Does the patient have a known allergy?</strong></td>
</tr>
<tr>
<td>No □ Yes □</td>
</tr>
<tr>
<td><strong>Difficult airway or aspiration risk?</strong></td>
</tr>
<tr>
<td>No □ Yes &amp; equipment/help available □</td>
</tr>
<tr>
<td><strong>Risk &gt; 500ml blood loss (7ml/kg children)?</strong></td>
</tr>
<tr>
<td>No □ Yes &amp; 2 IVs sited, blood available □</td>
</tr>
</tbody>
</table>

### BEFORE INCISION

<table>
<thead>
<tr>
<th>Nurse, Surgeon &amp; Anaesthetist</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Confirm all team members name &amp; role</strong></td>
</tr>
<tr>
<td>Yes □</td>
</tr>
<tr>
<td><strong>Confirm patient name &amp; nature of surgery</strong></td>
</tr>
<tr>
<td>Yes □ Not applicable □</td>
</tr>
<tr>
<td><strong>Confirm antibiotic prophylaxis given</strong></td>
</tr>
<tr>
<td>Yes □</td>
</tr>
</tbody>
</table>

#### ANTICIPATED CRITICAL EVENTS

**To Surgeon**

- What are critical or non-routine steps? □
- How long will case take? □
- Anticipated blood loss? □

**To Anaesthetist?**

- Any patient-specific concerns? □
- Eyes taped, pressure points protected? □

**To Nursing Team**

- Has sterility been confirmed? □
- Any equipment issues or any concerns? □
- Is appropriate imaging displayed? □

### BEFORE LEAVE OT

<table>
<thead>
<tr>
<th>Nurse, Surgeon &amp; Anaesthetist</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nurse verbally confirms :</strong></td>
</tr>
<tr>
<td>Name of the procedure □</td>
</tr>
<tr>
<td>Equipment, sponge &amp; sharp counts correct □</td>
</tr>
<tr>
<td>Specimens labelled? □</td>
</tr>
<tr>
<td>Any equipment issues arising? □</td>
</tr>
</tbody>
</table>

**To surgeon, anaesthetist & nurse**

- What are the key concerns for this patient in recovery and ongoing management?

**Recovery staff**

- Patient awake & adequate ventilation? □
- Drug chart completed? □
- Antibiotics and analgesia addressed? □
- DVT thromboprophylaxis? □
- Responsible Doctor identified & available? □
Ask ‘who will be team leader’ & then perform a systematic check of each of following:

**Prepare Patient**
- Is position optimal?
  - ear to sternum
  - ramp if obese
  - MILS for trauma
- Is preoxygenation adequate?
  - apnoeic oxygenation ready with nasal specs high flow?
- Can this patient’s condition be optimised any further prior to intubation?
  - O₂, Haemoglobin
  - Cardiac contractility, rate
  - Afterload, Preload
  - PEEP
  - IV access adequate & secure
- How will anaesthesia be maintained post induction?
  - vaporisers full & checked
  - adequate IV medications
  - pump sets available

**Prepare Equipment**
- Is patient monitoring applied, functioning and values acceptable?
  - SpO₂
  - ECG
  - BP
  - ETCO₂
  - BIS required?
- Is equipment checked and immediately available?
  - self-inflating bag
  - appropriate sized Guedel/NPO
  - laryngoscope working & spare
  - ET tube and alternatives
  - Suction
  - Bougie
- Do you have all the necessary drugs, including vasopressors?
  - Amnesic and/or Analgesic
  - Induction agent
  - Neuromuscular blockade

**Prepare Team**
- Delegate and brief team:
  - team leader
  - intubator
  - assistant
  - cricoid pressure / OELM
  - MILS
  - drug administration
  - extra assistance required
- ARTICULATE AIRWAY PLAN
  Request prompts if difficulty
- How do we get further help if required?
  - other theatre staff available?
  - other doctors available?
  - retrieval service notified?
- LEMON Assessment
  Look - beard, no neck, dentition
  Evaluate - thyromental distance
  Mallampati score : I - IV
  Obstruction or Obesity
  Neck Movement - collar/arthritis

**Anticipate Problems**
- If airway is difficult, can we wake this patient?
  Yes ☐  No ☐
- If intubation is difficult, how to maintain oxygenation?
  Plan A - Intubate & Ventilate
  Plan B - lLMA/VL/Fibreoptic
  Plan C - Oxygenation with BMV
  Plan D - CICO, Surgical Airway
- Is the necessary equipment immediately available?
  Yes ☐  No ☐
- Are there any specific problems anticipated?
  - awareness, aspiration
  - profound desaturation
  - hypotension, arrhythmias
  - patient positioning/transfer
  - other?
START HERE

Ask ‘who will be team leader’ & then perform a systematic check of each of following

SET UP

| Monitoring - BP, ECG, SpO2, ETCO2 | Check  □ |
| Nasal Cannulae at 15l/min PLUS Mask O2 | Check  □ |
| Pre-oxygenation for FOUR minutes | Check  □ |
| Suction checked working & available | Check  □ |
| Position optimised - ear-to-sternum | Check  □ |
| Ramping needed? | Check  □ |
| 360 degree access to patient & monitors visible | Check  □ |
| Cricothyroid membrane palpated and marked | Check  □ |

INTUBATION EQUIPMENT

| BVM connected to oxygen | Check  □ |
| PEEP valve for BMV available | Check  □ |
| Oropharyngeal and 2 Nasopharyngeal Airways available | Check  □ |
| Laryngoscope blade selected, light working | Check  □ |
| ET tube size chosen, cuff tested | Check  □ |
| Alternate tube size chosen & cuff tested | Check  □ |
| 20ml Syringe for cuff inflation | Check  □ |
| Stylet straight-to-cuff and/or Bougie with RapiFit connectors | Check  □ |
| Gooseneck, filter, inline ETCO2 (or EasyCap) | Check  □ |
| Tube ties & tape available | Check  □ |
| Ventilator settings determined & set up | Check  □ |

IV & DRUGS

| IV Cannula connected to fluid & running | Check  □ |
| NIBP on contralateral arm and BP seen | Check  □ |
| Spare cannula in situ | Check  □ |
| INDUCTION AGENT drawn up, dose checked | Check  □ |
| SUX or ROC drawn up, dose checked | Check  □ |
| VASOPRESSORS drawn up, labelled | Check  □ |
| POST INTUBATION drugs drawn up & labelled | Check  □ |

TEAM BRIEF

Team roles allocated | Check  □ |
Anticipated difficult airway plan’s A/B/C/D discussed | Check  □ |
Agree prompts if SpO2 < 95% or > 3 intubation attempts | Check  □ |
Difficult airway kit immediately available & checked | Check  □ |

Medications

| Ketamine | 2 mg/kg | Normotensive Dose | 0.5mg/kg | Hypotensive Dose |
| Propofol | 1-3 mg/kg | 0.25mg/kg or ketamine |
| Fentanyl | 3 mcg/kg | consider if high ICP |
| Succinylcholine | 1.5-2 mg/kg | 2 mg/kg |
| Rocuronium | 1.2 mg/kg | 1.6 mg/kg |

Roc 1.2 mg/kg - will give same intubating conditions as sux at 60s but not reversible & causes prolonged paralysis - consider RISK/BENEFIT

ADRENALINE ‘PUSH DOSE’

draw up 9ml N/saline in 10 ml syringe
to this, add 1ml of 1/10,000 (cardiac arrest) adrenaline
shake syringe hard & label as ‘ADRENALINE 10mcg/ml’

ADRENALINE INFUSION

6mg 1/1000 vial in 100ml N/saline at 2-20ml/hr - aim MAP 70
(use 3mg in 50ml syringe if using Niki T34L syringe driver)

RAPID SEQUENCE INTUBATION
# TRAUMA / CRITICALLY ILL PRE-RSI CHECKLIST

*Can do this whilst pre-oxygenating*

## SET UP

- Monitoring - BP, ECG, SpO2, ETCO2  
- Nasal Cannulae at 15l/min PLUS Mask O2  
- Pre-oxygenation for FOUR minutes  
- Suction checked working & available  
- Position optimised  
- Ramping needed?

## IV & DRUGS

- IV Cannula connected to fluid & running  
- NIBP on contralateral arm and BP seen  
- Spare cannula in situ  
- INDUCTION AGENT drawn up, dose checked  
- SUX or ROC drawn up, dose checked  
- VASOPRESSORS drawn up, labelled  
- POST INTUBATION drugs drawn up & labelled

## INTUBATION EQUIPMENT

- BVM connected to oxygen  
- PEEP valve for BMV available  
- Guedel airways & two NPO airways available  
- Laryngoscope blade chosen, light working  
- ET tube size chosen, cuff tested  
- Alternate tube size chosen & cuff tested  
- Syringe for cuff inflation  
- Stylet & Bougie available  
- Gooseneck, filter, inline ETCO2 (or EasyCap)  
- Tube Tie available  
- Ventilator settings determined

## TEAM BRIEF

- In-line immobilisation person briefed  
- Cricoid pressure person briefed  
- Drug giver briefed  
- Anticipated difficult airway plan’s A/B/C/D discussed  
- Post RSI care brief & maintenance of anaesthesia ready  
- Anaesthetic assistant ready

## DIFFICULT AIRWAY KIT AVAILABLE AND PREPARED TO USE IT?
VORTEX AIRWAY CHECKLIST

USE AS COGNITIVE AID IN AIRWAY PLANNING AND CRISIS MANAGEMENT

Start with whichever of the three non-surgical airway supports (mask, LMA, ETT) is appropriate.

No more than THREE attempts at each airway support technique (mask, LMA, ETT)  Check

For each airway support, consider whether changes in the following will help:

- Manipulation (head/neck, larynx, device)  Check
- Adjuncts (oro/nasopharyngeal airways, stylet/bougie, videolaryngoscope etc)  Check
- Size/Type  Check
- Suction  Check
- Pharyngeal muscle tone  Check

The aim is to ensure alveolar oxygenation and allow the team to rapidly manage an airway crisis. Move from each of the three non-surgical options (BMV-LMA-ETT) attempting to remain in green zone and avoid deterioration into surgical airway as a rescue for ‘can’t intubate, can’t oxygenate’
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**PREOPERATIVE EVALUATION - SLEEP APNOEA & OTHER RISKS?**

**STOP-BANG > 5**

<table>
<thead>
<tr>
<th>Question</th>
<th>Check</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snore loudly?</td>
<td>Check</td>
<td>BMI &gt; 35? Check</td>
</tr>
<tr>
<td>Tired during daytime?</td>
<td>Check</td>
<td>Age &gt; 50? Check</td>
</tr>
<tr>
<td>Observed to stop breathing in sleep?</td>
<td>Check</td>
<td>Neck circumference &gt; 40cm? Check</td>
</tr>
<tr>
<td>Pressure high (BP)?</td>
<td>Check</td>
<td>Gender male? Check</td>
</tr>
</tbody>
</table>

**OTHER**

- poor functional capacity, abnormal ECG, uncontrolled BP/IHD,
- SpO2<94% air, previous DVT/PE, poorly controlled COPD or asthma
- Diabetes control

**OPERATIVE MANAGEMENT**

**CONSIDER**

- Antacid prophylaxis? Check
- Pre-op analgesia? Check
- DVT prophylaxis? Check
- Careful glucose control? Check

**RAMPING**

- Self-position on table Check
- Ear-to-sternum
- Reduces difficult ETT
- Improves ventilation

**TECHNIQUE**

- Pre-oxygenate RAMPED Check
- Use PEEP valve on BMV Check
- Minimise induction-ventilation time Check
- Avoid spontaneous ventilation Check
- Desflurane if available or Propofol TCI Check
- Short-acting opioids Check
- Multimodal analgesia Check
- PONV prophylaxis Check
- Ensure full reversal of NMB Check
- Extubate & recover head up Check
- Use IBW (except for sux) Check

**EQUIPMENT**

- Bariatric trolley/personnel to lift Check
- Gel padding Check
- Large BP cough Check
- Ramping of patient (pillows) Check
- PEEP for Pre-Ox and BMV Check
- Pressure support ventilation Check

**IDEAL BODY WEIGHT**

- Men Height (cm) - 100
- Women Height (cm) - 105

NB for Propofol Infusion, use Servin’s formula
Add 40% of excess weight to IBW
ie : IBW + 0.4(TBW-IBW)

**ANAESTHESIA for OBESE BMI > 35 kg/m2**
Ask ‘who will be team leader’ & then perform a systematic check of each of following:

<table>
<thead>
<tr>
<th>Letter</th>
<th>Task</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Buy time</td>
<td>Sit up, use non-rebreather, increase FiO2, NIV, PEEP (BMV or vent)</td>
</tr>
<tr>
<td>I</td>
<td>Indication</td>
<td>Do we really need to intubate? Can it wait?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Options: wait for help - videolaryngoscopy - iLMA or Proseal - awake intubation</td>
</tr>
<tr>
<td>G</td>
<td>Get help</td>
<td>Extra hands. Talk to retrieval.</td>
</tr>
<tr>
<td>R</td>
<td>Ramp</td>
<td>Use pillows, ear to sternum, flat on top - RAMP RAMP RAMP!</td>
</tr>
<tr>
<td>A</td>
<td>Apnoeic O2</td>
<td>Oxygenation via nasal specs at 10-15 l/min during RSI</td>
</tr>
<tr>
<td>M</td>
<td>Minimal drugs</td>
<td>Nebulise lignocaine &amp; spray the cords!</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ketamine/Propofol (100mg each in 20ml syringe)</td>
</tr>
<tr>
<td>P</td>
<td>Preoxygenate</td>
<td>With NIV for 3-5 mins max</td>
</tr>
<tr>
<td>P</td>
<td>Paralysis</td>
<td>Only if needed. Sux 1mg/kg or Roc 1.2mg/kg</td>
</tr>
<tr>
<td>P</td>
<td>Plan for failure</td>
<td>Plan B - Plan C - Plan D (CICV)</td>
</tr>
<tr>
<td>P</td>
<td>Post intubation</td>
<td>NGT, IDC, IV lines, central line / arterial line?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sedation/paralysis for transfer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>paperwork for transfer</td>
</tr>
</tbody>
</table>
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**STEP ONE**
Continuous nebulised salbutamol - use O2 not air for nebs
Nebulised ipratropium - 500mcg x3 20 minutely, then hourly
Hydrocortisone 100mg IV (alternative DXM 20mg IV or IM)
MgSO4 2g (50mg/kg max 2g) IV - given over 20 minutes

if no better, proceed to

**STEP TWO**
Adrenaline 0.5 mg IM (0.01mg/kg) = 0.5ml of 1:1000
Fluid bolus 20 ml/kg
CXR, ECG, VBG, Electrolytes, FBC

if no better, proceed to NIPPV

**STEP THREE**
**AGITATED PATIENT**
ketamine 1.5 mg/kg IV over 30 s then 1 mg/kg/hr titrate to effect
if no IV, 5mg/kg IM
IF WORSENING
NIPPV
iPAP PS 8cm H2O
ePAP PEEP 3 cm H2O
continue nebs through NIPPV

**STEP THREE**
**COOPERATIVE PATIENT**
NIPPV
iPAP PS 8cm H2O
ePAP PEEP 3 cm H2O
continues nebs through NIPPV

if no better, proceed to NIPPV

**IF WORSENING**
ketamine 1.5 mg/kg IV over 30 s then 1 mg/kg/hr titrate to effect
if no IV, 5mg/kg IM

**AVOID INTUBATION IF POSSIBLE**

**BUT IF YOU HAVE TO INTUBATE**
Indications - fatigue, resp distress, deterioration, arrest

Maximise preoxygenation
Optimise first pass success
Largest ETT possible
Beware breath stacking

Ketamine 2mg/kg IV
Rocuronium 1.2 mg/kg or Sux 2mg/kg IV

Assist control / Volume control
RR 8 TV 5-7 ml/kg IBW
PEEP 2cm H2O IE 1:5 FiO2 100%
permissive hypercarbia
Ext chest compression
Pplat < 30cm H2O
Aggressive suctioning of ETT, check K NGT

**Consider differential diagnoses**
heart failure, ACS, arrhythmia
pulmonary embolism
PTX, pericardial tamponade,
obstruction, foreign body
anaphylaxis

**LIFE THREATENING ASTHMA**
Ask ‘who will be team leader’ & then perform a systematic check of each of following:

**DIFFICULT AIRWAY PLAN**

**Plan A:** Initial tracheal intubation plan
- Direct laryngoscopy
  - succeed → Tracheal intubation
  - failed intubation →
- failed oxygenation →

**Plan B:** Secondary tracheal intubation plan
- ILMAs™ or LMA™
  - succeed → Confirm - then fiberoptic tracheal intubation through ILMAs™ or LMA™
  - failed intubation →
- failed oxygenation →

**Plan C:** Maintenance of oxygenation, ventilation, postponement of surgery and awakening
- Revert to face mask
  - Oxygenate & ventilate
  - succeed → Postpone surgery
  -失败 →
- failed oxygenation →

**Plan D:** Rescue techniques for "can't intubate, can't ventilate" situation
- LMA™
  - improved oxygenation → Awaken patient
- increasing hypoxaemia →
- Cannula cricothyroidotomy
- Surgical cricothyroidotomy →

**MAXIMUM THREE ATTEMPTS**
- CHANGE POSITION - BLADE - OPERATOR
- USE BOUGIE - CONSIDER STYLET - YL

**SECONDARY INTUBATION PLAN**
- Intubating LMA (iLMA) - FastTrach or AirQ™
- KingVision Videolaryngoscope

**BAG MASK VENTILATION**
- USE TWO HANDS
- CAN YOU WAKE THE PATIENT?

**RESCUE TECHNIQUES**
- Declare a CICO Emergency
- Continue to use LMA to attempt oxygenation
- Identify cricothyroid membrane
- Needle or Scalpel-Bougie-ETT Technique
- Frova (oxygenating bougie) O2 at 2 l/min
**DIFFICULT AIRWAY - KIT CHECKLIST**

**PLAN A**
**TRACHEAL INTUBATION PLAN**
- max 3 attempts RSI
- max 4 attempts ELECTIVE

Re-Position - Use a Bougie - Videolaryngoscope

**PLAN B**
**SECONDARY INTUBATION PLAN**
- not in RSI
- maintain oxygenation & ventilation

ETT via iLMA blind or fibreoptic

**PLAN C**
**AWAKEN**
- re-group
- postpone surgery

two handed BMV - Adjuncts - LMA

**PLAN D**
**CICO/CICV**
- needle or surgical airway

**Ramp - Ear to Sternum**
- Stylet ‘straight-to-cuff’ - Frova Oxygenating Bougie
- Change Blade Size
- Consider Miller or McCoy
- KingVision VL

**Use LMA - Classic or Supreme**
- Intubating LMA - FastTrach or Air Q II
- Blind intubate thro’ iLMA or fibreoptic assist if available
- Use Parker tip ETT if available

**Bag Mask Ventilate**
- Oropharyngeal &/or Nasopharyngeal Airway
- LMA (any)
- Suggamadex at 4-8mg/kg if available

**Consider USS to locate & mark cricothyroid membrane**
- 14 G jelco and O2 connection with 3-way tap
- high pressure O2 device
- Size 22 scalpel - Bougie - size 6.0 ETT
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**Oxygen supply**
- Check:
  - Pressure gauges
  - Flow meters
  - FiO2
  - Vaporizer housing

**Anaesthetic machine**
- Check Ventilator:
  - VT
  - Rate
  - Airway Pressures
  - Mode

**Anaesthetic circuit**
- Check Circuit:
  - Connections
  - One-way valves
  - Filter
  - Soda lime

**Patient Airway**
- Check Airway:
  - Exclude obstruction
  - In native airway
  - In filter
  - In airway devices
  - Exclude secretions/plugging - pass suction catheter beyond end of ETT

**Ventilation of patient**
- Ensure adequate ventilation:
  - Exclude bronchial intubation
  - Look/listen for bilateral AE
  - Assess adequacy of MV
  - Exclude bronchospasm
  - Recheck airway pressures
  - Exclude pneumothorax

**Patient Lungs**
- Consider Gas Exchange:
  - Aspiration
  - Pulmonary oedema
  - Consolidation
  - Atelectasis

**Patient Circulation**
- Circulation:
  - Low cardiac output

**Patient Tissues**
- Tissue Uptake of O2
  - Increased metabolism
  - Fever
  - Thyroid crisis
  - Etc

**UNEXPLAINED HYPOXIA** - SpO2 < 90% or decrease > 5% during anaesthesia
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**ELEVATED ETCO2**

**Inhaled / Exogeneous CO2**

Check capnograph for return to baseline?
Laparoscopic CO2 insufflation?
NaHCO3 administration?
Inspired CO2 (soda lime exhausted)?
Incompetent valves or Patient Re-breathing?

**Hypoventilation**

Respiratory depression?
Increased mechanical load on lungs?
(decreased compliance, increased resistance in system)
Inadequate IPPV - check TV/RR/PEEP?
Increased dead space - anatomical/physiological?

**Increased Production of CO2**

Fever?
Parenteral nutrition?
Malignant hyperthermia?

**DECREASED or ABSENT ETCO2**

**Airway**

Exclude inadvertent oesophageal intubation?

**Circuit**

Air entrainment (leak)?
Dilution of gas (sampling problem)?
Sampling line connected to circuit & monitor?

**Ventilator**

Check settings, exclude raised RR?

**Gas Exchange Problem**

Profound Hypotension?
Pulmonary Embolism?
Cardiac Arrest?

**Decreased Production**

Hypothermia
Decreased metabolism

**NB : Apnoea causes rise of PaCo2 8-15mmHg first min, then 3mmHg/min**
Ask ‘who will be team leader’ & then perform a systematic check of each of following:

**Gas supply**
- Check Gas Supply:
  - check O2 bypass
  - ensure O2 flush not jammed
  - eliminate other high pressure source

**Anaesthetic circuit**
- Check Circuit:
  - bag / ventilator switch?
  - obstruction to expiration in circuit/ventilator/scavenger system?
  - PEEP valve & settings?
  - exclude circuit & machine by ventilating with bag

**Patient airway**
- Exclude Obstruction:
  - filter
  - airway
  - ETT
  - secretions / foreign body

**Patient lungs**
- Bilateral chest expansion?
  - Endobronchial intubation, PTX
  - Breath sounds?
  - Bronchospasm, atelectasis, aspiration, pulmonary oedema, endobronchial intubation

**Patient pleural space**
- Consider and exclude:
  - pneumothorax
  - haemothorax
  - 14G needle (2nd ICS MCL)
  - Finger or tube thoracostomy (ant axillary line 5th ICS)

**Patient chest wall**
- Exclude inadequate chest wall relaxation
  - inadequate muscle relaxation
  - opioid-induced rigidity
  - malignant hyperthermia
  - obesity

**Surgical procedure**
- Raised intrathoracic pressure
  - surgical intervention
  - insufflation
  - patient position
  - assistant leaning on chest!

**HIGH AIRWAY PRESSURES**
- Difficulty ventilating patient decreased compliance in bag poor chest expansion reduced tidal volume high airway pressure alarm
  - Hypoxia (due to hypoventilation)
  - Circulatory collapse (high intrathoracic pressure)
  - Tachycardia

**ELEVATED AIRWAY PRESSURE**
Adult bradycardia algorithm

- Assess using the ABCDE approach
- Give oxygen if appropriate and obtain IV access
- Monitor ECG, BP, SpO₂, record 12-lead ECG
- Identify and treat reversible causes (e.g. electrolyte abnormalities)

**Adverse features?**
- Shock
- Syncope
- Myocardial ischaemia
- Heart failure

**Atropine 500 mcg IV**

**Satisfactory response?**

**Interim measures:**
- Atropine 500 mcg IV repeat to maximum of 3 mg
- Isoprenaline 5 mcg min⁻¹ IV
- Adrenaline 2-10 mcg min⁻¹ IV
- Alternative drugs *
- Transcutaneous pacing

**Risk of asystole?**
- Recent asystole
- Mobitz II AV block
- Complete heart block with broad QRS
- Ventricular pause > 3 s

**Seek expert help**
**Arrange transvenous pacing**

* Alternatives include:
- Aminophylline
- Dopamine
- Glucagon (if beta-blocker or calcium channel blocker overdose)
- Glycopyrrolate can be used instead of atropine

**YES**

**NO**
Adult tachycardia (with pulse) algorithm

- Assess using the ABCDE approach
- Give oxygen if appropriate and obtain IV access
- Monitor ECG, BP, SpO2, record 12-lead ECG
- Identify and treat reversible causes (e.g. electrolyte abnormalities)

**Synchronised DC Shock**
Up to 3 attempts

- Amiodarone 300 mg IV over 10-20 min and repeat shock; followed by:
- Amiodarone 900 mg over 24 h

**Adverse features?**
- Shock
- Syncope
- Myocardial ischaemia
- Heart failure

**Is QRS narrow (< 0.12 s)?**

- **Narrow**
  - Use vagal manoeuvres
  - Adenosine 6 mg rapid IV bolus; if unsuccessful give 12 mg; if unsuccessful give further 12 mg.
  - Monitor ECG continuously
  - **Irregular Narrow Complex Tachycardia**
    - Probable atrial fibrillation
    - Control rate with:
      - β-Blocker or diltiazem
    - Consider digoxin or amiodarone if evidence of heart failure

  - **Sinus rhythm restored?**
    - **Yes**
      - Probable re-entry paroxysmal SVT:
        - Record 12-lead ECG in sinus rhythm
        - If recurs, give adenosine again & consider choice of anti-arrhythmic prophylaxis
      - **Possible atrial flutter**
        - Control rate (e.g. β-Blocker)
    - **No**
      - Seek expert help

- **Broad**
  - **Is QRS narrow (< 0.12 s)?**
    - **No**
      - Narrow QRS
        - **Is rhythm regular?**
          - **Yes**
            - Sinus rhythm restored? (as above)
          - **No**
            - Seek expert help
      - **Irregular**
        - Irregular Narrow Complex Tachycardia (as above)
      - **Regular**
        - Narrow QRS
          - **Is rhythm regular?**
            - **Yes**
              - Sinus rhythm restored? (as above)
            - **No**
              - Seek expert help
      - **Broad**
        - **Is QRS narrow (< 0.12 s)?**
          - **Yes**
            - Seek expert help
          - **No**
            - Broad QRS
              - **Is rhythm regular?**
                - **Yes**
                  - Seek expert help
                - **No**
                  - Regular
                    - Sinus rhythm restored? (as above)
                  - **Irregular**
                    - Irregular Narrow Complex Tachycardia (as above)

- **Irregular**
  - **Is rhythm regular?**
    - **Yes**
      - Seek expert help
    - **No**
      - Seek expert help

**Possibilities include:**
- AF with bundle branch block
- Pre-excited AF
- Consider amiodarone
- Polymorphic VT (e.g. torsade de points - give magnesium 2 g over 10 min)
- Ventricular tachycardia (or uncertain rhythm):
  - Amiodarone 300 mg IV over 20-60 min; then 900 mg over 24 h
  - If previously confirmed VT with bundle branch block:
    - Give adenosine as for regular narrow complex tachycardia
Advanced Life Support for Adults

Start CPR
30 compressions : 2 breaths
Minimise Interruptions

Attach
Defibrillator / Monitor

Assess Rhythm

Shockable

Shock

CPR for 2 minutes

Non Shockable

CPR for 2 minutes

Return of Spontaneous Circulation ?

Post Resuscitation Care

During CPR
Airway adjuncts (LMA / ETT)
Oxygen
Waveform capnography
IV / IO access
Plan actions before interrupting compressions
(e.g. charge manual defibrillator)
Drugs
Shockable
* Adrenaline 1 mg after 2nd shock
  (then every 2nd loop)
* Amiodarone 300 mg after 3rd shock
Non Shockable
* Adrenaline 1 mg immediately
  (then every 2nd loop)

Consider and Correct
Hypoxia
Hypovolaemia
Hypor / hypokalaemia / metabolic disorders
Hypothermia / hyperthermia
Tension pneumothorax
Tamponade
Toxins
Thrombosis (pulmonary / coronary)

Post Resuscitation Care
Re-evaluate ABCDE
12 lead ECG
Treat precipitating causes
Re-evaluate oxygenation and ventilation
Temperature control (cool)

December 2010

CARDIAC ARREST
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**AT RISK**
Ischaemic heart disease  
Hypertension  
Fluid losses  
Diabetes  
Smoker, Lipids, FHx etc.

**OH CRAP !**  
Oxygen, Haemoglobin  
Contractility, Rate, Afterload, Preload

**MITIGATION**
Perioperative Beta-block  
Hb > 10g/dL  
Adequate Oxygenation  
BP in 3 digits,  
HR 2 digits,  
BGL 1 digit  
Regional Anaesthesia?

**SHOULD THIS ANAESTHETIC BE GIVEN HERE?**

**MANAGEMENT**
Are SpO2, BP, HR, Hb, PEEP optimised?  
ECG changes verified with ECG?  
Surgeon aware of problem?  
Defibrillator & Pacing available?  
RATE CONTROL (box) addressed?  
BLOOD PRESSURE (box) addressed?  
CARDIOLOGIST CONSULTED?  
Specific therapy agreed  
ASPIRIN, HEPARIN, NITRATES etc  
Plan for Extubation & Recovery?

**OH CRAP !**

**RATE CONTROL**
INCLUDE hypovolaemia, awareness,  
or raised CO2 as cause of tachycardia  

**NEXT**

**BETA-BLOCKADE** (aim for HR < 60)

Esmolol - 0.25-0.5 mg.kg bolus  
25-300 mg/kg/min infusion

Metoprolol - 1-15 mg titrated over 15 mins

If beta-blockade contra-indicated use verapamil  
2.5 mg - repeat if needed

**FILLING**

Optimise filling, consider need for PEEP  

CAUTION USE OF VASOPRESSORS

For hypertension, consider  
GTN - sublingual (0.3-0.9 mg)  
IVI(0.25 - 4 mg/kg/min - titrate to effect)

Clonidine  
(30 mg every 5 minutes up to 300 mg)

**CARDIOLOGY ADVICE 13STAR**

Lead II is best for detecting arrhythmias.  
CM5 detects 89% of ST-segment ischaemic changes  
(right arm electrode on manubrium, left arm electrode on V5 and indifferent lead on left shoulder).

---

**MYOCARDIAL ISCHAEMIA**
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**HYPERTENSION**

<table>
<thead>
<tr>
<th>Pre-existing hypertension</th>
<th>Hypovolaemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>treated or untreated ?</td>
<td>blood loss ?</td>
</tr>
<tr>
<td>medication taken ?</td>
<td>fluid deficit ?</td>
</tr>
</tbody>
</table>

**Sympathetic reflex response**

<table>
<thead>
<tr>
<th>light anaesthesia? Exclude vaporizer leak, IV disconnect</th>
<th>Contractility, rate, dysthymia ?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypoxia or hypercarbia ? Check SpO2, ETCO2</td>
<td>Anaesthetic agent ?</td>
</tr>
<tr>
<td>cerebral event?</td>
<td>Vasodilators?</td>
</tr>
<tr>
<td>raised ICP ?</td>
<td></td>
</tr>
<tr>
<td>ischaemia ?</td>
<td></td>
</tr>
<tr>
<td>vasospasm ?</td>
<td></td>
</tr>
</tbody>
</table>

**Sympathomimetic effect?**

<table>
<thead>
<tr>
<th>Exogeneous ie : administration of vasopressor</th>
<th>Obstructive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>high intra-thoracic pressures ?</td>
</tr>
</tbody>
</table>

**Surgical**

<table>
<thead>
<tr>
<th>stimulus</th>
<th>Obstructive</th>
</tr>
</thead>
<tbody>
<tr>
<td>tourniquet</td>
<td>pulmonary embolus ?</td>
</tr>
<tr>
<td>position eg: Trendelenburg</td>
<td>aortocaval compression from 18/40 onwards</td>
</tr>
</tbody>
</table>

Whilst vasopressors elevate BP, treatment should be directed to cause

**BLOOD PRESSURE**
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**ACCESS TO THE CIRCULATION**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two wide bore IVs</td>
<td></td>
</tr>
<tr>
<td>Consider intraosseous with Bone Injection Gun</td>
<td></td>
</tr>
<tr>
<td>Consider venous cutdown</td>
<td></td>
</tr>
<tr>
<td>Consider Rapid Infuser Catheter</td>
<td></td>
</tr>
</tbody>
</table>

**PARAMETERS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permissive hypotension MAP 65-70 mmHg may be acceptable (unless TBI/spinal injury/exsanguination)</td>
<td></td>
</tr>
<tr>
<td>t &gt; 35, pH &gt; 7.2, Lactate &lt; 4, BE &lt; -6</td>
<td></td>
</tr>
<tr>
<td>Ca &gt; 1.1, Plt &gt; 50, INR &lt; 1.5 Fibrinogen &gt; 1</td>
<td></td>
</tr>
</tbody>
</table>

**FIND THE BLEEDING, STOP THE BLEEDING**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimise time to Surgery</td>
<td></td>
</tr>
<tr>
<td>Use tourniquets / direct pressure to control peripheral bleeding</td>
<td></td>
</tr>
<tr>
<td>Tamponade bleeding eg: pelvic binder, direct pressure, sutures</td>
<td></td>
</tr>
<tr>
<td>Tranexamic acid 1g load in first 4 hrs</td>
<td></td>
</tr>
<tr>
<td>If PPH - Uterine massage, oxytocin infusion, ergometrine, misoprostol, TXA</td>
<td></td>
</tr>
<tr>
<td>Transfuse blood at a 1:1 ratio of PRCs : FFP</td>
<td></td>
</tr>
<tr>
<td>Crystalloaid 250 ml bolus titrate to radial pulse</td>
<td></td>
</tr>
<tr>
<td>Send FBE, X-Match, Venous Gas, Calcium, Coags</td>
<td></td>
</tr>
<tr>
<td>Arterial line, consider Calcium (citrate toxicity)</td>
<td></td>
</tr>
</tbody>
</table>

**USEFUL MEDICATIONS**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hartmanns 250ml bolus</td>
<td>Hartmanns 250ml bolus</td>
</tr>
<tr>
<td>Packed calls or Whole Blood</td>
<td>Packed calls or Whole Blood</td>
</tr>
<tr>
<td>Tranexamic acid 1g load in first 4 hrs</td>
<td>Tranexamic acid 1g load in first 4 hrs</td>
</tr>
<tr>
<td>PPH</td>
<td>PPH</td>
</tr>
<tr>
<td>Oxytocin 5 U IV or 10 U IM</td>
<td>Oxytocin 5 U IV or 10 U IM</td>
</tr>
<tr>
<td>Oxytocin Infusion 40 U / ltrl @ 250 ml/hr</td>
<td>Oxytocin Infusion 40 U / ltrl @ 250 ml/hr</td>
</tr>
<tr>
<td>Ergometrine 250 mcg IV or 500 mcg IM</td>
<td>Ergometrine 250 mcg IV or 500 mcg IM</td>
</tr>
<tr>
<td>Misoprostol 200 mcg x 5 PR (1mg)</td>
<td>Misoprostol 200 mcg x 5 PR (1mg)</td>
</tr>
</tbody>
</table>

**WARM FLUIDS / WARM THE ROOM / CATHETERISE THE BLADDER**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm fluids / warm the room / catheterise the bladder</td>
<td></td>
</tr>
</tbody>
</table>
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**EXCLUSIONS**

Anaesthetic circuit obstruction
- filter
- kinked ETT
- cuff herniation
- tube migration

Disconnect circuit and ventilate directly with self-inflating bag

if pressure still high, problem is in airway or ETT

**PRESENTATION**

Wide range of possible presentations
Most common include:

- cardiovascular collapse or hypotension (88%)
- erythema (48%)
- bronchospasm (40%)
- angioedema (24%)
- cutaneous rash (13%)
- urticaria (8%)

**IMMEDIATE MANAGEMENT CHECKLIST**

STOP TRIGGERS
colloids/latex/antibiotic/blood/NMB

MAINTAIN ANAESTHESIA with INHALATIONAL AGENT if possible

Call for HELP, note TIME

Give 100% OXYGEN, give FLUIDS

ADRENALINE 50-100mcg IV (0.5ml-1ml of 1/10,000)
titrate to response or
0.5mg IM (thigh) if no IV access

ANTIHISTAMINE, HYDROCORTISONE 200mg 6/24

SALBUTAMOL 250 mcg IV or 2.5-5mg nebuliser into circuit

**ADRENALINE INFUSION**

1:1000 ADRENALINE
vial (1 mg / ml)

Add 3 mg (3 vials 1:1000) to total 50 mls N Saline (60 mcg/ml)

Run at 2 - 20 ml / hr aim MAP > 70

**ADRENALINE CONCENTRATIONS**

1ml of 1/1000 = 1mg
10ml of 1/10,000 = 1mg

**IV BOLUS DOSE**
50 - 100 mcg

**IM DOSE**
0.5mg IM

**ANAPHYLAXIS**
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**PRESENTATION**
- masseter spasm
- tachypnoea in spontaneous breathing patient
- rise in ETCO2 in ventilated patient
- unexplained tachycardia, progressing to hypoxaemia
- raised temperature
- arrhythmias

**EXCLUSIONS**
- Inadequate anaesthesia / analgesia
- Infection / Sepsis
- Tourniquet Ischaemia
- Anaphylaxis (exclude hypotension)
- Phaeochromocytoma or Thyroid Storm

**RISK FACTORS**
- Family history
- Death under anaesthesia in family
- Volatiles and Suxamethonium

**INVESTIGATIONS**
- ABG, U&Es, CK, FBC, Clotting
- Muscle biopsy

**IMMEDIATE MANAGEMENT**

- **DISCONTINUE VOLATILES**
  - Check
  - and give

- **100% OXYGEN VIA HIGH FLOW**
  - Check

- **CALL FOR HELP - MH BOX**
  - Check

- **ALLOCATE TASK CARDS**
  - Check

- **MAINTAIN ANAESTHESIA with PROPOFOL and OPIOID**
  - Check

- **EXPEDITE SURGERY**
  - Check

- **DANTROLENE 2.5mg/kg IV until hypermetabolism resolved**
  - Check

- **COOLING - AXILLA / GROIN / NECK**
  - Check

- **COLD FLUSH NGT and IDC**
  - Check

**MOBILISE ALL AVAILABLE STAFF**
**NOTIFY medSTAR 13STAR**
**MH EMERGENCY KIT & TASK CARDS**
**PRESENTATION**
Excess absorption of fluid during TURP

**EARLY MANIFESTATIONS**

- **CVS**
  - bradycardia, hypertension

- **GI**
  - nausea & vomiting, abdominal distension

- **CNS**
  - anxiety/confusion, headache, dizziness, slow waking GA

**LATE MANIFESTATIONS**

- **CVS**
  - hypotension, angina, cardiac failure

- **RESP**
  - dyspnoea, tachypnoea, cyanosis

- **CNS**
  - twitching, visual changes, seizures, coma

- **GU**
  - renal tubular acidosis, reduced urine output

**EXCLUSIONS**
Congestive cardiac failure
All other causes of confusion

**RISK FACTORS**
- Absorption 1-2 litres fluid per 40 mins operating
- Large prostate
- Prolonged operation > 60 mins
- Hypotonic fluids given IV
- Volume of irrigation > 30 litres
- Inexperienced surgeon
- Height of irrigation > 60cm above patient
- Comorbidities - liver disease, renal stones, UTI

**Immediate Management**
- High index of suspicion
- **ABC** - 100% Oxygen
- Stop irrigation fluid infusion, catheterise
- Check Na and Hb regularly & correct them
- **Frusemide** 40mg IV
Emergency GA LSCS CHECKLIST

CITRATE GIVEN? □
LARGE BORE IV ACCESS AND SECURED? □
FLUIDS PRELOADED? □
TABLE IN LEFT LATERAL TILT? □
PREOXYGENATED 100% O2 > 4 MINUTES? □
ETT - STYLET - BOUGIE - TAPE □
SUCTION - ETCO2 - MONITORING □
FAILED RSI PLAN DISCUSSED? □
RSI □
CRICOID □
PROPOFOL 2mg/kg □
SUXAMETHONIUM 1mg/kg □
ETT PLACEMENT CONFIRMED WITH ETCO2 □
VOLATILE □
ONGOING NEUROMUSCULAR BLOCKADE □
OXYTOCIN available post-delivery □
40 UNITS / 1000ml @ 250ml/hr if needed □
NEONATAL RESUS ANTICIPATED? □

Emergency SPINAL LSCS CHECKLIST

CITRATE GIVEN? □
LARGE BORE IV ACCESS AND SECURED? □
FLUIDS PRELOADED? □
TABLE IN LEFT LATERAL TILT? □
L4-5 INTERSPACE IDENTIFIED? □
PREP - DRAPE - GOWN - GLOVES - MASK - HAT □
ANTISEPTIC REMOVED FROM SPINAL TRAY □
LOCAL ANAESTHETIC 2% XYLOCAINE/ADRENALINE □
2.5ML BUPIVACAINE 0.5% with OPIATE □
FENTANYL 20-25 mcg or MORPHINE 125 mcg □
SKIN INFILTRATION □
INTERSPINOUS LIGAMENT IDENTIFIED □
CLEAR CSF then INJECT & BARBOTAGE □
OXYTOCIN available post-delivery □
40 UNITS / 1000ml @ 250ml/hr if needed □
NEONATAL RESUS ANTICIPATED? □

CAESAREAN SECTION
Ask ‘who will be team leader’ & then perform a systematic check of each of following

### Prepare patient & partner
- IV access 16G, warm IV fluids on pump set
- Sodium citrate drink
- Left lateral tilt to avoid aorto-caval hypotension

Consider need for extra help for neonate
Consider need for extra blood
Position of placenta, Previous LSCS/scarring, Multiparous Gestational DM, Sepsis, Traumatic delivery, Other

Prophylactic antibiotics 30 mins before KTS

### Documentation
- Time called & time arrived
- Consent to anaesthesia
- Time anaesthesia initiated
- GGMG, Prep, Drape, asepsis
- Positioning
- Time of KTS
- Time of delivery
- Time of drugs
- If conversion to GA offered, document risks, time and specify if declined

Any complications?

Post-op DVT prophylaxis and analgesia charted
SC heparin withheld for 24 hrs after spinal
Epidural catheter tip sighted & intact

### NEURAXIAL SECTION
- Spinal 2.5ml 0.5% bupivacaine + 25mcg fentanyl (or 125mcg spinal morphine)
- Top up existing epidural (T10) to T4 for LSCS supplemental nitrous if needed 50:50 N20/O2

### GA SECTION
- Preoxygenate - 100% oxygen
- Anticipate difficult airway and rapid desaturation
- Cricoid pressure
- RSI : Propofol - Suxamethonium - ET Tube
- Once sux wears off use nondepolarising NMB

Give antibiotics unless contraindication
- Oxytocin 3-5 U IV once baby out (check not twins!)
- Oxytocin infusion - 40U/1000ml @ 250ml/hr

### NEONATAL RESUS
- HR 60-100 assisted ventilation
- HR < 60 start CPR 3:1
- Adrenaline 10mcg/kg IV (use the 1V, not 2A)

### PPH
- Consider Tone - Trauma - Tissues - Thrombin
- Oxytocin for all - 5 U IV once uterus empty
- Oxytocin infusion 40U @ 10U/hr
- Check placenta
- Fundal rub to uterus
- Ergometrine 250mcg IV or 500mcg IM
- Misoprostol 1000mcg PR
- Tranexamic acid 1g load
- Check Chem 8, INR

### CONSIDER SURGICAL OPTIONS?
- Pre-Eclampsia
- 4g MgSO4 over 15 mins, then 1g/hr IVI
- Labetalol 50mg IV
- +/- Hydralazine 5mg IV

---

**LSCS CHECK LIST**
# EMERGENCY SPINAL LSCS CHECKLIST

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotics &amp; Citrate Given?</td>
<td>❑</td>
</tr>
<tr>
<td>IV Access, Secured &amp; Fluids Preloaded?</td>
<td>❑</td>
</tr>
<tr>
<td>Consider Ephedrine or Phenylephrine</td>
<td>❑</td>
</tr>
<tr>
<td>Table Position, may need L lateral to open interspace</td>
<td>❑</td>
</tr>
<tr>
<td>L4-5 Interspace Identified?</td>
<td>❑</td>
</tr>
<tr>
<td>Prep - Drape - Gown - Gloves - Mask - Hat</td>
<td>❑</td>
</tr>
<tr>
<td>Antiseptic Removed from Spinal Tray</td>
<td>❑</td>
</tr>
<tr>
<td>Local Anaesthetic 2% Xylocaine/Adrenaline</td>
<td>❑</td>
</tr>
<tr>
<td>Interspinous Ligament Identified</td>
<td>❑</td>
</tr>
<tr>
<td>Clear CSF, Swift Injection with Barbotage</td>
<td>❑</td>
</tr>
<tr>
<td>2.5ml Bupivacaine 0.5% with Fentanyl 20-25mcg (or spinal morphine 125mcg)</td>
<td>❑</td>
</tr>
<tr>
<td>Test Adequacy of Block: LT &gt; Cold</td>
<td>❑</td>
</tr>
<tr>
<td>Oxytocin 3-5 U post-delivery (+/-40U/L @ 250ml/hr)</td>
<td>❑</td>
</tr>
<tr>
<td>Post-Op Multimodal Analgesia</td>
<td>❑</td>
</tr>
<tr>
<td>Clexane 40mg sc OD &gt; 4 hrs post spinal or catheter out</td>
<td>❑</td>
</tr>
</tbody>
</table>

# EPIDURAL CHECKLIST

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV Access, Secured &amp; Fluids Preloaded?</td>
<td>❑</td>
</tr>
<tr>
<td>Valid Indication, Recent VE &amp; Consent?</td>
<td>❑</td>
</tr>
<tr>
<td>Appropriate Position?</td>
<td>❑</td>
</tr>
<tr>
<td>L4-5 Interspace Identified?</td>
<td>❑</td>
</tr>
<tr>
<td>Prep - Drape - Gown - Gloves (8) - Mask - Hat</td>
<td>❑</td>
</tr>
<tr>
<td>Antiseptic Removed from Epidural Tray</td>
<td>❑</td>
</tr>
<tr>
<td>Saline Available if Lorts Approach</td>
<td>❑</td>
</tr>
<tr>
<td>Epidural Catheter Primed with LA</td>
<td>❑</td>
</tr>
<tr>
<td>Skin LA 2% Xylocaine with 1/200,000 Adrenaline</td>
<td>❑</td>
</tr>
<tr>
<td>Interspinous Ligament Identified</td>
<td>❑</td>
</tr>
<tr>
<td>SLOW ADVANCE WITH TUOHY NEEDLE</td>
<td>❑</td>
</tr>
<tr>
<td>8cm, 16G/18G slow advance to LORTS(A) in epidural space</td>
<td>❑</td>
</tr>
<tr>
<td>Note Catheter Depth advance Catheter +5cm</td>
<td>❑</td>
</tr>
<tr>
<td>Secure, Test Dose 3ml LA 2% Xylo 1/200,000 Adr</td>
<td>❑</td>
</tr>
<tr>
<td>Bupivacaine 0.125%/100mcg fentanyl (20ml premix)</td>
<td>❑</td>
</tr>
<tr>
<td>TEST ADEQUACY OF BLOCK : LT &gt; COLD, IDC</td>
<td>❑</td>
</tr>
<tr>
<td>Top Up for LSCS - 2% xylo with 1/200,000 10-20ml</td>
<td>❑</td>
</tr>
</tbody>
</table>
Ask ‘who will be team leader’ & then perform a systematic check of each of following

CONSIDER POTENTIAL CAUSES & SUGGEST TO MIDWIFE & OBSTETRICIAN

<table>
<thead>
<tr>
<th>Cause</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormalities of uterine contraction</td>
<td>TONE</td>
</tr>
<tr>
<td>Retained products of conception or invasive placenta</td>
<td>TISSUE</td>
</tr>
<tr>
<td>Genital tract trauma</td>
<td>TRAUMA</td>
</tr>
<tr>
<td>Abnormalities of coagulation</td>
<td>THROMBIN</td>
</tr>
</tbody>
</table>

70%  
10%  
10%  
1%

Resuscitate A - B - C  
Oxygen 15 l/min NRBM and IV Access 16G x 2  
5 minutey Obs HR/BP/RR/SpO2

Mobilise OBS Dr - ANAES Dr - MW - RN - EN - Consider need for THEATRE TEAM, BLOOD, WARMED FLUIDS, INFUSION PUMPS x 2

INITIAL MEASURES

Basic resus as above, also ensure:

- Fundal pressure / rub up contraction
- Check uterus not inverted
- Check placenta is intact
- Lay flat, reverse Trendelenburg
- Set up EnFlow fluid warmer
- Infuse Hartmann’s
- Consider need for BLOOD

BLEEDING despite CONTRACTED UTERUS?

Look for other causes:

- Move to theatre
- Ensure adequate anaesthesia
- Lithotomy position, IDC
- Adequate light, equipment
- Inspect looking for genital tract trauma
- Exclude uterine rupture
- Suture & repair as necessary
- Consider need for BLOOD

STILL BLEEDING?

Consider operation & Retrieval

- Bimanual compression
- Expert advice 13STAR
- RSI GA
- Anticipate difficult airway - get DAE kit
- Pass a NGT
- Intramyometrial prostaglandin-F2a
- 5mg dilute up to 10ml
- 6ml in fundus

POST PARTUM HAEMORRHAGE
Newborn Life Support

Term gestation? Breathing or crying? Good tone?
- Yes: Prevent heat loss, Ensure open airway, Stimulate; Stay with mother.
- No:
  - HR below 100? Gasping or apnoea?
    - Yes: Positive pressure ventilation, SpO₂ monitoring.
    - No:
      - Yes: HR below 100?
        - Yes: Ensure open airway, Reduce leaks, Consider increasing pressure & oxygen.
        - No: HR below 60?
          - Yes: Add chest compressions, 3 compressions to each breath, 100% oxygen, Consider intubation or LMA.
          - No:
            - Yes: Venous access, adrenaline, Consider volume expansion.
    - No: Laboured breathing or persistent cyanosis?
      - Yes: Ensure open airway, SpO₂ monitoring, Consider CPAP.
      - No: Post-resuscitation care.

Targeted pre-ductal SpO₂ after birth:
- 1 min: 60-70%
- 2 min: 65-85%
- 3 min: 70-90%
- 4 min: 75-90%
- 5 min: 80-90%
- 10 min: 85-90%

Adrenaline IV 10-30 mcg/kg (0.1-0.3 mL/kg of 1:10,000 solution)
Ask ‘who will be team leader’ & then perform a systematic check of each of following

**ADRENALINE**

*Preparation* 1:10,000  
= 100 mcg/ml

*IV Dose*  
10 - 30 mcg/kg  
= 0.1 - 0.3 ml/kg

*Via ETT*  
50 - 100 mcg/kg  
= 0.5 - 1.0 ml/kg

**FLUIDS**

*Saline or blood*, depending on circumstances

10 - 20 ml/kg via IV or Umbilical Vein Catheter

**INTRAOSSEOUS**  
(quicker than UVC)

**SYRINGE & 3-WAY**  
(to administer fluid bolus / drugs)

**Umbilical Vein Catheter**  
(2 arteries, 1 vein!)

**NEONATAL RESUS - DRUGS**
**ADENOSINE**
- First dose 0.05mg/kg
- Second dose 0.10mg/kg
- Then 0.20mg/kg
- **GIVE VIA FAST FLUSH**

**ADRENALINE**
- **IM:**
  - < 6 yr 150mcg (0.15ml)
  - 6-12 yr 300mcg (0.3ml)
  - > 12 yr 500mcg (0.5ml)
- **IV:** CAUTION WITH DOSE
  - 0.01 mg/kg (10mcg/kg)
  - 1/10,000 - 0.1 ml/kg IV

**CODEINE**
- 1mg/kg

**DEFIBRILLATION**
- 2-4 J/kg – Biphasic

**DEXTROSE**
- 0.5 gm/kg
- 10% - 5 ml/kg IV
- 50% - 1 ml/kg IV

**ETT**
- Length Age/2 + 12cm teeth
- Diameter >1yr - Age/4 + 4 mm

**FENTANYL**
- 1 mcg/kg IV (0.5mcg/kg IN)

**FENOTIGMINE**
- 0.05 mg/kg IV

**PARACETAMOL**
- Load 20mcg/lg first dose
- then 15 mg/kg 6hrly

**PROPOL**
- 1-3.5 mg/kg IV

**REMIFENTANIL**
- 1mcg/20ml = 50 mcg per ml
- Run at 10mcg/kg/min

**ROCRURONIUM**
- 0.6-1.2 mg/kg IV STAT
- 0.1 mg/kg boluses

**SALBUTAMOL**
- Undiluted 5mg/5ml
- 5mcg/kg over 1 min IV

**SUXXAMETHONIUM**
- 2 mg/kg IV
- 3mg/kg neonate
- 4 mg/kg IM

**THIOPENTONE**
- 4 mg/kg IV

**VECURONIUM**
- 0.1 mg/kg IV

**AMIODARONE**
- 5 mg/kg load
- INFUSE 0.5mg/kg/hr

**ATRACURIUM**
- 0.5mg/kg

**ATROPINE**
- 20mcg/kg IV (max 600 mcg)
- Dilute 0.6 mg to 6 mls
  - 100 mcg/5 mls
- So give 1 ml per 5kg IV

**CODEINE**
- 1mg/kg

**DEFIBRILLATION**
- 2-4 J/kg – Biphasic

**DEXTROSE**
- 0.5 gm/kg
- 10% - 5 ml/kg IV
- 50% - 1 ml/kg IV

**ETT**
- Length Age/2 + 12cm teeth
- Diameter >1yr - Age/4 + 4 mm

**FENTANYL**
- 1 mcg/kg IV (0.5mcg/kg IN)

**KETAMINE SEDATION**
- 2-4 mg/kg IM
- 0.25 - 0.5 mg/kg IV
- Repeat as needed

**KETAMINE - ANAESTHESIA**
- 5-10 mg/kg IM
- 1-2 mg/kg IV
- Repeat as needed

**METARANOLOL**
- 0.01 mg/kg IV
- 10mg in 20 mls=0.5 mg/ml

**MIDAZOLAM**
- 0.1 - 0.2 mg/kg IV

**MORPHINE**
- 0.1 mg/kg IV

**NEOSTIGMINE**
- 0.05 mg/kg IV

**EYEDROSE**
- 0.5 gm/kg
- 10% - 5 ml/kg IV
- 50% - 1 ml/kg IV

**ETT**
- Length Age/2 + 12cm teeth
- Diameter >1yr - Age/4 + 4 mm

**FENTANYL**
- 1 mcg/kg IV (0.5mcg/kg IN)

**KETAMINE SEDATION**
- 2-4 mg/kg IM
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- Repeat as needed

**METARANOLOL**
- 0.01 mg/kg IV
- 10mg in 20 mls=0.5 mg/ml

**MIDAZOLAM**
- 0.1 - 0.2 mg/kg IV

**VECURONIUM**
- 0.1 mg/kg IV

**PAEDIATRIC EMERGENCY FORMULARY**

**EMERGENCY**
- Adrenaline 10mcg/kg IV
- IM preferred in anaphylaxis
- Atropine 20mcg/kg
- Metaraminol 10mcg/kg
- Propofol 2mg/kg
- Sux 2mg/kg
- Thio 4mg/kg
- Fluids 20ml/kg
- 2-4J/kg Biphasic

**WEIGHT (kg)**
- Infants < 12 months
  - (age in months + 9) / 2
- Children 1-5 years
  - 2 x (age in years + 5)
- Children 5-12 years
  - 4 x age in years

**VOLUME EXPANSION**
- 20mls/kg N/saline

**ETT**
- Length Age/2 + 12cm teeth
- Diameter >1yr - Age/4 + 4 mm

**FENTANYL**
- 1 mcg/kg IV (0.5mcg/kg IN)

**KETAMINE SEDATION**
- 2-4 mg/kg IM
- 0.25 - 0.5 mg/kg IV
- Repeat as needed

**KETAMINE - ANAESTHESIA**
- 5-10 mg/kg IM
- 1-2 mg/kg IV
- Repeat as needed
Adrenaline IM 1/1000
0.01ml/kg to max 0.5ml
IM lateral thigh, repeat 5 minutely

Adrenaline IV 1,10,000
1mg/10ml 1/10,000 IV
10mcg (0.1ml) per kg of 1/10,000

Adrenaline Infusion
1/1,000 = 1mg/ml
3mg in 50ml N saline
0.3mg/kg - 60mcg/ml
2mcg/min = 2ml/hr to
20mcg/min = 20ml/hr

Amiodarone
5mg/kg over 20 min
can push over 2 mins
central access IV

Amiodarone Infusion
600mg in 50mls 5% dextrose
0.5mg/kg/hr central access

Atracurium
0.5 mg/kg (0.3-0.6mg/kg) IV induce,
then 1/3rd dose subsequently

Atropine
600mcg in 6ml NS
10-20mcg/kg kids
300-600mcg adults

Cis-atracurium
0.15mg/kg IV

Dextrose
0.5 gm/kg
10% - 5 ml/kg IV
50% - 1 ml/kg IV

Ephedrine
3-6mg bolus IV

Esmolol
0.5mcg/kg
100mg/ml dilute in 10ml = 10mg/ml
100kg=50mg=5ml

ETT Length
Age/2 + 12cm to teeth

ETT Diameter
>1yr - Age/4 + 4

Fentanyl
100mcg/2ml
2-3 mcg/kg IV
0.5-1 mcg/kg intranasal

GTN Infusion
50mg in 50ml 5% dextrose
1ml/kg at 3-12ml/hr

Heparin Infusion
25,000 units in 500ml (50U/ml)
1000U/hr = 20ml/hr

Insulin IVI
50 units in 50ml
5-10 U/hr = 5-10ml/hr

Isoprenaline
1mg in 50ml 5% dextrose
Give 20mcg (1ml)
then infuse at 1-4mcg/min (3-12 ml/hr)

Ketamine Induction
1-2 mg/kg IV
5-10mg/kg IM

Ketamine Sedation
0.2-0.5 mg/kg IV sedation
2-4mg/kg IM sedation

Ketamine Infusion
0.25mg/kg/hour

Ketamine/Midazolam Infusion
200mg Ketamine : 50mcg fentanyl
in 50ml run @ 2-5ml/hr

Magnesium Sulphate Infusion
4 ampoules (2.47g x 4 = 9.88g) to
100ml N saline = 120ml
Load 4g (50ml) over 20 mins
(150ml/hr over 20 mins)
then 1g/hr (12ml/hr)

Metaraminol
0.5mg bolus

Midazolam
0.1-0.2 mg/kg IV

Morphine
0.1 mg/kg IV

Morphine/Midazolam Infusion
50mg each in 50ml NS
at 1mg/ml (1mg/10ml)
at 10mcg/kg/hr
= 2.5 - 15ml/hr

Naloxone
0.1 to 0.2 mg IV 2-3 minute to
desired degree of reversal

Neostigmine
005mg/kg IV

Paracetamol
20mg/kg first dose
then
15mg/kg/hr

Propofol
2mg/kg titrate

Remifentanil
1mg/20ml = 50 mcg per ml
Run at 0.1mcg/kg/min

Rocuronium
0.6-1.2 mg/kg IV STAT
(get same intubating conditions as
sux if use roc 1.2mg/kg)
0.1 mg/kg boluses thereafter

Sodium Bicarbonate 8.4%
1-2 ml/kg

Suxamethonium
1 mg/kg adult
2 mg/kg paed

Thiopentone
3-5 mg/kg

Vecuronium
0.1 mg/kg load
bolus every 30m with 5-10mg vec

Volume Expansion
20mls/kg N/saline
<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose/Preparation</th>
<th>Rate/Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADRENALINE</strong></td>
<td>3mg in 50ml N/saline = 60mcg/ml</td>
<td>run at 2 - 20 ml/hr</td>
</tr>
<tr>
<td></td>
<td>1mg/1ml amp</td>
<td>incr. to keep MAP &gt; 70</td>
</tr>
<tr>
<td><strong>AMIODARONE</strong></td>
<td>dilute 600mg (12ml) up to 50ml 5% DEX = 12mg/ml</td>
<td>run at 0.5mg/kg/hr</td>
</tr>
<tr>
<td></td>
<td>150mg/3ml amp</td>
<td>central access</td>
</tr>
<tr>
<td><strong>ESMOLOL</strong></td>
<td>load 500 mcg/kg over 60secs</td>
<td>100kg = 5ml (100mg/10ml)</td>
</tr>
<tr>
<td></td>
<td>100mg/10ml</td>
<td>100kg = 30ml/hr</td>
</tr>
<tr>
<td></td>
<td>maintain 50mcg/kg/min</td>
<td>run at 0 - 100 mcg/hr</td>
</tr>
<tr>
<td><strong>FENTANYL</strong></td>
<td>100 mcg/2ml or 500 mcg/50ml premix</td>
<td>run at 3 - 12 ml/hr</td>
</tr>
<tr>
<td></td>
<td>50mcg/10ml</td>
<td>titrate to BP/pain</td>
</tr>
<tr>
<td><strong>HEPARIN</strong></td>
<td>25,000 U in 50ml 500 U/ml</td>
<td>load 5000 U IV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>then 2ml/hr, titrate APTT</td>
</tr>
<tr>
<td><strong>INSULIN IVI</strong></td>
<td>50U in 50ml = 1 U/ml</td>
<td>load 10U IV (not kids)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>then run @ 5-10 ml/hr</td>
</tr>
<tr>
<td><strong>ISOPRENALINE</strong></td>
<td>1mg in 50ml 5% DEX = 20mcg/ml</td>
<td>1 ml bolus to response</td>
</tr>
<tr>
<td></td>
<td></td>
<td>then 3-12 ml/hr</td>
</tr>
<tr>
<td><strong>KET/MIDAZ</strong></td>
<td>200mg ketamine /50 mcg fent in 50ml</td>
<td>run at 2-5 ml / hr</td>
</tr>
<tr>
<td><strong>MgSO4 (eclampsia)</strong></td>
<td>Add 4 amps (2.47g) to 100ml N/saline = 120 ml total volume (1g/12ml)</td>
<td>bolus 50ml (4g) over 20mins ie : 150ml/hr for 20 mins then 1g/hr (12 ml/hr)</td>
</tr>
<tr>
<td><strong>MORPH/MIDAZ</strong></td>
<td>50mg each to 50ml with N/saline (1mg/ml)</td>
<td>run 100 mcg/kg/hr (2.5-15 ml/hr)</td>
</tr>
<tr>
<td><strong>PROPOFOL</strong></td>
<td>1-4 mg/kg 500mg/50ml (10mg/ml)</td>
<td>dose range 0.5 mg/kg/hr (use body wt = ml/hr eg 70kg = 70ml/hr)</td>
</tr>
<tr>
<td><strong>REMIFENTANIL</strong></td>
<td>1mg in 20ml = 50mcg/ml</td>
<td>run at 0.1 mcg/kg/min (100kg = 12ml/hr)</td>
</tr>
<tr>
<td><strong>VECURONIUM</strong></td>
<td>1mg/ml reconstitute in water for injection</td>
<td>0.1 mg/kg/hr eg: 8mg/hr in 80kg patient</td>
</tr>
</tbody>
</table>

**INSULIN SLIDING SCALE**

<table>
<thead>
<tr>
<th>BGL mmol</th>
<th>RATE U/hr = ml/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 4</td>
<td>0 - STOP IV</td>
</tr>
<tr>
<td>4.1 - 9</td>
<td>2</td>
</tr>
<tr>
<td>9.1 - 13</td>
<td>3</td>
</tr>
<tr>
<td>13.1 - 17</td>
<td>4</td>
</tr>
<tr>
<td>17.1 - 28</td>
<td>6</td>
</tr>
<tr>
<td>&gt; 28</td>
<td>8</td>
</tr>
</tbody>
</table>

*check running (see Sliding Scale above)*

**INFUSIONS**

Ideally use dedicated syringe driver (10 - 50ml capacity) eg Niki T34L
### SAFE PSYCH SEDATION MATRIX

<table>
<thead>
<tr>
<th>CONSIDER</th>
<th>ANAESTHETIC RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MENTAL HEALTH SAFETY/RISK</strong></td>
<td><strong>LOW</strong> thin, fit, fasted</td>
</tr>
<tr>
<td><strong>LOW</strong> flat, depressed, no Hx violence, low risk suicidal patient “happy” drunk thought disordered but compliant</td>
<td>low risk</td>
</tr>
<tr>
<td><strong>MEDIUM</strong> intoxicated / disinhibited unpredictable delusional with poor insight anxious +++</td>
<td>sedation needed single agent antipsychotic (+/- benzo)</td>
</tr>
<tr>
<td><strong>HIGH</strong> violence / weapons physical threats persecutory delusions around care “big guy” you whom cannot restrain</td>
<td>as above then ketamine sedation or RSI/ETT</td>
</tr>
</tbody>
</table>

**Olanzapine** - first line oral antipsychotic; wafer 10-20mg oral, rapid onset

**Quetiapine** - second line oral antipsychotic; mania, behavioural-based agitation or previous use

**Haloperidol** - 5mg ORAL or 10mg IM to max 50mg; 5-10mg IV up to max 20mg benztpine 1-2mg IV should be available to treat acute dystonia

**Midazolam** - IM 5-20mg, IV 0.1-0.2mg/kg in aliquots, IN 0.2mg/kg, ORAL 0.5mg/kg flumazenil 0.2-0.5mg IV should be available if acute reversal required

**Ketamine** - PRE-KETAMINE SEDATION ESSENTIAL to MINIMISE DELIRIUM ie : BDZ IM 5mg/kg, IV 0.5-1.5mg/kg sedation. Ketamine infusion has been used for transport. Consider antisialagogue adjunct (atropine or glycopyrrolate)

See also: Minh Le Cong et al. “Ketamine sedation for patients with acute agitation and psychiatric illness requiring aeromedical retrieval” EMJ May 2011 - ketamine sedation used to avoid RSI/ETT of red/black patients in risk matrix above

**MINIMUM SEDATION MONITORING** - SpO2, ECG, NIBP. Consider ET CO2 via HM. SUPPLEMENTAL OXYGEN AT ALL TIMES RFDS restraints or net, 45 degree head up to maximise SV and minimise aspiration risk. CHECK BGL!

**LIAISE WITH RETRIEVAL TEAM**

**RAPID ASSESSMENT ACUTE AGITATION**

- **AIRWAY?**
- **BREATHING?**
- **CIRCULATION**
- **DISABILITY, DRUGS?**
- **ENVIRONMENT, ECG**
- **FULL BLADDER?**
- **GLUCOSE?**
- **HEAD INJURY?**

**SUGGESTED ALGORITHM**

**NO IV ACCESS**

- oral olanzapine 10-20mg stat and/or
- IMI midazolam 5-10mg and/or
- IMI ketamine 4mg/kg

**IV ACCESS OBTAINED**

- IV midazolam 2-5mg and/or
- IV haloperidol 5-10mg and/or
- IV ketamine 1-1.5mg/kg

repeat every 5-10 mins, target RASS 0 to -3
Procedure

(i) observe patient - patient is alert, restless, agitated or combative (0 to +4)

(ii) if not alert, state patient’s name and say to open eyes and look at speaker
    -1 if awakens with sustained eye contact to voice > 10s to voice
    -2 if awakens with eye contact to voice < 10s
    -3 if moves or opens eyes to voice but no eye contact

(iii) if no response to voice, use physical stimulus (shoulder shake, trapezius squeeze, jaw thrust)
    -4 if any movement to physical stimulation
    -5 if no response to physical stimulation

RICHMOND AGITATION SEDATION SCALE

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMBATIVE</td>
<td>overtly combative, violent, immediate danger to self/others</td>
<td>+4</td>
</tr>
<tr>
<td>VERY AGITATED</td>
<td>pulls or removes tube(s), catheter(s), aggressive</td>
<td>+3</td>
</tr>
<tr>
<td>AGITATED</td>
<td>frequent non-purposeful movement, fights ventilator</td>
<td>+2</td>
</tr>
<tr>
<td>RESTLESS</td>
<td>anxious but movements not aggressive or vigorous</td>
<td>+1</td>
</tr>
<tr>
<td>ALERT &amp; CALM</td>
<td>Doctor or Nurse</td>
<td>0</td>
</tr>
<tr>
<td>DROWSY</td>
<td>Not fully alert, but sustained awakening to voice (eyes open &gt; 10s)</td>
<td>-1</td>
</tr>
<tr>
<td>LIGHT SEDATION</td>
<td>briefly awakens with eye contact to voice &lt; 10s</td>
<td>-2</td>
</tr>
<tr>
<td>MODERATE SEDATION</td>
<td>movement or eye opening to voice but no eye contact</td>
<td>-3</td>
</tr>
<tr>
<td>DEEP SEDATION</td>
<td>no response to voice, but movement or eye opening to physical stimulation</td>
<td>-4</td>
</tr>
<tr>
<td>UNROUSABLE</td>
<td>no response to voice or physical stimulation</td>
<td>-5</td>
</tr>
</tbody>
</table>

TARGET RASS is 0 to -3
AIRWAY EQUIPMENT and MONITORING must be available
1:1 NURSING, 10 minutely obs
LIAISE WITH RETRIEVAL SERVICE
TRANSFER INFORMATION

Sometimes important details can get forgotten. I use the ABC approach to handover to retrieval team, as follows: “Thank God you’re here! OK, this is John Doe age 21 involved in a motor vehicle accident with prolonged extrication and transferred via ambulance to us. He needs transfer to a trauma centre for a laparotomy for internal bleeding. In terms of summary, here’s his ABC…”

<table>
<thead>
<tr>
<th>A - Airway</th>
<th>Intubated on arrival for GCS M3V1E1 - grade I view. Airway now patent, protected with size 8.5 ETT tube 22cm teeth and tied. Cervical collar in situ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B - Breathing</td>
<td>Paralysed with vecuronium and on volume control TV 600 RR 12 R sided HTX and a 34Fr intercostal catheter in place, drained 400ml blood. SpO2 96%</td>
</tr>
<tr>
<td>C - Circulation</td>
<td>Haemodynamically stable after 750ml crystalloid titrated to radial pulse in 250ml aliquots. HR 90 BP 100/70 Bleeding likely from HTX, abdomen and pelvis (binder on)</td>
</tr>
<tr>
<td>D - Disability/Drugs</td>
<td>M3V1E1 PEARLA initially, now M1V1E1 on propofol/vecuronium infusion.</td>
</tr>
<tr>
<td>E - Exposure</td>
<td>R HTX drained as above. Abdomen tense and tender in LUQ, suspect splenic injury. No other injuries on log roll, pelvic binder applied. Warm blankets and Bair hugger</td>
</tr>
<tr>
<td>F - Fluids</td>
<td>3 x 250ml crystalloid aliquots titrated to radial pulse (SBP 70) IDC in situ and drained 300ml clear urine</td>
</tr>
<tr>
<td>G - Gut</td>
<td>Last ate 7pm. NG passed and on free drainage.</td>
</tr>
<tr>
<td>H - Haematology</td>
<td>Hb 114 on iStat, INR 1.1 No ACoTS.</td>
</tr>
<tr>
<td>I - Infusions</td>
<td>Not needed vasopressors On propofol and vecuronium infusions for transport</td>
</tr>
<tr>
<td>J - JVP</td>
<td>Not elevated - no signs tPTX/tamponade.</td>
</tr>
<tr>
<td>K - Kelvin</td>
<td>Temp is 36 degrees with active warming</td>
</tr>
<tr>
<td>L - Lines</td>
<td>14G IV R wrist 8Fr rapid infuser L ACF</td>
</tr>
<tr>
<td>M - Micro</td>
<td>Has been given ADT</td>
</tr>
<tr>
<td>N - Notes/NOK</td>
<td>His notes are in this envelope, including copies of plain X-rays Next Of Kin (NOK) are aware and here are their contact details.</td>
</tr>
</tbody>
</table>

The above would take 90 seconds and is an ordered summary of the patient for handover.