Paediatric Preoperative Anxiolytic Medication

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Key amendments to this guideline

Date	Amendment	Approved by:
12/12/2018	New Document approved	Paediatric QI Meeting
02/09/2019	Document approved at Medicines Safety Committee	MSC
19th Nov 2020	Document extended for 1 year	Dr J West/ Paediatric QIM
26th March 2021	Approved with no amendments	Paediatric QIM
15th May 2024	Updated – includes Dexmedetomidine & SOBAUK dose adjustment recommendations	Paediatric QIM

Paediatric Anxiolytic Premedication

Introduction

The primary goal of anxiolytic premedication use in children is to ease the induction of anaesthesia by facilitating a smooth separation from their parents. All medications referred to in this guideline have the potential to produce profound sedation and should always be administered with caution and close monitoring. These guidelines are designed to help clinicians to select the most appropriate preoperative, anxiolytic medication for their patients aged between 2 and 18years of age. Important pharmacological (dosage and route of administration) considerations are discussed. The essential, good clinical care required when looking after children who receive preoperative sedation is highlighted for medical and nursing staff.

This guideline is for use by the following staff groups: Anaesthetists, Paediatric Staff, Theatre Staff, Surgeons

Introduction

The primary goal of anxiolytic premedication in children is to ease the induction of anaesthesia by facilitating a smooth separation from their parents. All medications referred to in this guideline have the potential to produce profound sedation and should always be administered with caution and close monitoring. The child's age, body weight, drug history, allergy status and underlying medical and surgical conditions must all be taken into account when deciding upon which premedication to use. Premedication should be avoided in children with airway abnormalities (especially airway obstruction), sleep apnoea, haemodynamic instability/intolerance or deteriorating mental status. Extra caution must be taken before administering premedication to any child who is acutely unwell or has systemic organ failure. Appendix 1 provides detailed but not exhaustive lists of patient conditions where preoperative sedation is contra-indicated.

Intravenous cannulation after adequate topical anaesthesia e.g. AMETOP® gel is often well tolerated by children. However, in most cases drug administration without a needle is more pleasant for children, their family and the medical team. Oral administration of small volumes of medication does not increase the risk of aspiration pneumonia in appropriately starved patients who follow the trust's fasting policy for general anaesthesia.

The main factors predicting anxiety and distress in children at induction of anaesthesia are: age, shy/withdrawn temperament, parental anxiety, previous negative hospital experiences and negative reactions to immunisations. Premedication is only one means by which preoperative anxiety can be reduced in children undergoing surgery. Simple, non-pharmacological methods and age appropriate communication strategies can be very effective and possess favourable risk/benefit profiles.

Intervention	Comment
Pre-hospital programmes (videos, tours etc.)	Most effective in children over 4years old
Play therapy	Trained therapists will tailor it accordingly
Parents present at induction is generally beneficial (separation anxiety is a particular problem in children aged 1-3years)	Depends on parental and patient factors and anaesthetists preference (may discourage if <5kg, difficult airway, acutely unwell)
Distraction methods (e.g. playing tablet computer game) versus engagement with the anaesthetic process (e.g. blowing up the balloon)	It is important to select the method that will work best for an individual child at that particular time

Children react to the stress of surgery and anaesthesia in an age-dependent manner. A small minority of children display abnormal reactions related to behavioural and psychological disorders. For the anxious but cooperative child, midazolam or 50-65% Nitrous oxide with oxygen is often adequate. In more anxious and uncooperative children, midazolam combined with either clonidine or ketamine is more effective. However, polypharmacy in this context requires closer supervision by medical and nursing staff. Intranasal clonidine is useful in the child refusing oral medication. Intramuscular ketamine should be reserved for extreme circumstances, administered only by anaesthetists experienced in its use, with full monitoring and resuscitative equipment immediately available.

Consent

For any procedure involving sedation, the parents and if appropriate, the child should be given information about the rationale for sedation, the technique to be used and the risks and side effects. Although not specific to preoperative anxiolytic medication to facilitate induction of anaesthesia, NICE Guidance concerning the use of sedation in children and young people undergoing diagnostic and therapeutic procedures is available via the following link: https://pathways.nice.org.uk/pathways/sedation-in-children-and-young-people#content=view-node%3Anodes-information-and-consent. The Royal college of anaesthetists (RCOA) have produced Information leaflets explaining what to expect when you have an anaesthetic and what choices there may be. 5 different leaflets, specifically designed for children of different ages and their carers are available via the following link: https://www.rcoa.ac.uk/childrensinfo

Risks of Sedation

Although rare, even if patient selection is appropriate and drugs are used within recommended doses, serious adverse events can still occur with sedative medications. The major risks are of the patient entering an excessively deep level of sedation and losing their ability to maintain a patent airway or effective breathing. This leads to hypoxia and its consequences. It is vital that systems are in place to minimise these risks, recognise any such problems immediately and to rescue the patient if they occur. As long as appropriate steps are taken to re-establish the airway and assist breathing if needed, there should be no harm to the patient.

The staff attending the patient must have the necessary skills to recognise and manage an obstructed airway and to assist breathing with bag and mask. They must be able to urgently obtain assistance from persons with advanced airway management skills (e.g. intubation) and the equipment to secure the airway and to support the circulation must be immediately available.

Side effects of sedative agents include nausea and vomiting, agitation or dysphoria and prolonged drowsiness. Children given sedation in the afternoon who are affected by prolonged drowsiness are more likely to require admission. It is important to remember that sedative premedication can potentially delay the discharge of children undergoing elective day case surgery.

Guideline Content

Table 4.1 summarises dosage recommendations, approximate onset and offset times (there will be individual variation) and some other important pharmacological considerations for these drugs.

The Society for Obesity and Bariatric Anaesthesia UK (SOBAUK) recommends dose adjustments of pre-medication drugs based on their pharmacokinetic properties in overweight and obese children (BMI above 91st centile).

Drug	**Dose adjustment**
Midazolam PO/Buccal	Total Body Weight* (TBW)
Ketamine PO/IM	Ideal Body Weight (IBW)
Clonidine PO	IBW
Dexmedetomidine Intranasal	Adjusted Body Weight (AdjBW)

*Midazolam per kg dose should be reduced if OSA
Maximum recommended adult doses must not be exceeded.

Table 4.1 – Details of Guideline

Drug	Route	Dose (adjust dose if BMI above 91st centile for age)	Onset Time (min)	Duration (hours)	Advantages	Disadvantages
FIRST LINE SEDATIVE: ORAL MIDAZOLAM 0.5mg/kg (TBW) BUCCAL MIDAZOLAM 0.3mg/kg (TBW) if oral route not tolerated or quicker onset desirable) Avoid Midazolam in OSA (consider risk/benefits reduce dose to 0.25mg/kg) If Midazolam previously ineffective or caused paradoxical reaction discuss with consultant anaesthetist and consider alternative						
Midazolam	Buccal Oral	0.3mg/kg (max 10mg) 0.5mg/kg (max 20mg)	10-20 30-40	1-2 1-2	Sedation, anxiolysis & anterograde amnesia	Paradoxical reaction seen in some children
SECOND LINE SEDATIVES: ORAL CLONIDINE 2 to 4micrograms/kg (IBW) when given alone (maximum dose 150micrograms) Oral Clonidine 2micrograms/kg (IBW) when combined with Midazolam INTRANASAL DEXMEDETOMIDINE 2micrograms/kg (AdjBW)						
Clonidine Dexmedetomidine	Oral Intranasal Intranasal	2 to 4microgram/kg (max 150micrograms) 2microgram/kg (max 150micrograms) 2microgram/kg (max 150micrograms)	45-60 30-60 30-60	4-6 4-6 1-2	Clonidine IV preparation is tasteless & can be given nasally to children refusing oral medication	Slower onset than midazolam when given as single agent. Bradycardia & Hypotension can occur, no amnesia
THIRD LINE SEDATIVE: ORAL KETAMINE 3mg/kg (IBW) - maximum dose 200mg when combined with Midazolam Oral Ketamine 5 to 7mg/kg (IBW) if given alone (maximum dose 400mg)#						
Ketamine	Oral	5 to 7mg/kg (max 400mg)	15-30	4-6	Sedation and analgesia	Increased salivation, nystagmus, dissociative state with higher doses. Injectable Ketelar® is extremely bitter to taste alone
TEMAZEPAM 0.5mg/kg (IBW) MAY BE USED AS AN ALTERNATIVE TO MIDAZOLAM IN OLDER CHILDREN (OVER 11YEARS)						
Temazepam	Oral	0.5mg/kg (max 20mg)	45-60mins	2-3	For patients >40kg or where a longer period of anxiolysis is desirable	Longer duration of action

*Consider giving oral atropine 30micrograms/kg (max 900micrograms) 1 hour preoperatively for patients with excessive salivation or bradycardia.

#Avoid using Ketamine as sole agent sedative premedication because a higher dose is required for adequate sedation, leading to increased side effects.

Use undiluted drugs for intranasal administration to allow a small volume to be dispensed quickly. A nasal MAD (mucasal atomisation device) can make intranasal administration quicker and easier.

If administration by no other route is possible, but sedation is considered essential for successful induction of anaesthesia, intramuscular (IM) ketamine can be used as a last resort (see table 4.2). A dose of 5mg/kg IM is recommended to produce adequate sedation within 5-10 minutes. Sedation can be profound so IM ketamine must be prescribed and administered by an experienced paediatric anaesthetist only. Administration should ideally be in the anaesthetic room/operating theatre or anaesthetic suite in the radiology department (if undergoing a radiological procedure under GA). This avoids the need to transfer of such patients. Anaesthetist, paediatric trained ODP/anaesthetic nurse, monitoring and resuscitation equipment must be immediately available throughout.

Drug	Route	Dose (based on IBW if BMI above 91st centile for age)	Onset Time (min)	Duration (hours)	Advantages	Disadvantages
Ketamine	IM - Use 50mg/ml concentration to restrict injection volume and minimise injection pain	5mg/kg (Max 500mg)	5-10	1-3	Sedation and analgesia	Increased salivation, nystagmus, dissociative state with higher doses

Other routes of administration are possible for some of the medications listed in Table 2.1 but they should only be used at the discretion of a consultant anaesthetist because of potential side effects e.g. intranasal midazolam causes a very unpleasant stinging sensation. Lower doses are required via non-enteral routes which avoid first pass metabolism but absorption can be variable.

5.0 Summary of cautions & contraindications (see Table 5 below)

If in doubt please consult BNFc or your paediatric pharmacist for advice.

Drug	Contraindications	Cautions
Benzodiazepines	Severe respiratory depression, upper airway compromise, neuromuscular weakness, previous hyper-excitability	Cardiorespiratory disease, neuromuscular disease, drug and alcohol abuse. Hypovolaemia, hypothermia, vasoconstriction. Hepatic or renal impairment, severe personality disorders
Clonidine and Dexmedetomidine	Bradyarrhythmias secondary to second or third degree AV block or sick sinus syndrome	Concomitant administration of Methylphenidate. Mild/moderate bradyarrhythmia, constipation, polyneuropathy, Raynaud's syndrome or other occlusive peripheral vascular disease, history of depression.
Ketamine	Hypertension, stroke, acute porphyria	Severe cardiac disease. Epilepsy/seizures, psychosis, thyroid disorder, glaucoma. Dehydration, respiratory infection.
Atropine	Myasthenia Gravis, paralytic ileus, pyloric stenosis, toxic megacolon	Down's syndrome, autonomic neuropathy, hypertension, pyrexia

Reversal Drugs

Flumazenil 20micrograms/kg IV
can be used to reverse benzodiazepine sedation (maximum single dose 200micrograms) – can be repeated as necessary up to maximum of 50micrograms/kg per course

Naloxone 10micrograms/kg IV
can be used to reverse opioid induced respiratory depression (repeat as necessary)

BEWARE: the half-life of Flumazenil and Naloxone are less than some benzodiazepines and opioids respectively, there is a risk of delayed re-sedation.

Opioids are important pre-anaesthetic medications for children with preoperative pain. In addition to providing analgesia they can help to calm some children. However, the opioid related side effects such as respiratory depression, dysphoria, pruritis, nausea and vomiting limit their usefulness as sedatives. Apnoea is more likely when opioids are combined with other sedatives, so this should be avoided. If deemed unavoidable caution must be exercised and reductions in the dose of both drugs considered. Appendix 2 provides further details about important drug interactions with sedative drugs.

Drug Doses in Obese Children

Childhood obesity is defined in children aged 2years and above as a body mass index (BMI) above the 98th percentile for children and teens of the same age and sex. BMI for age above 91st centile suggest that a child is overweight.

BMI Centile	Weight Category	ASA Grade
>91st	Overweight	2
>98th	Obese	2
>99.6th	Severely Obese	3

BMI = weight (kg) / Height (m)^2

Having calculated your patient's BMI this result can then be plotted on the RCPCH age and sex-specific BMI chart and their BMI centile identified. These charts are available via the link below:

https://www.rcpch.ac.uk/sites/default/files/2018-03/boys_and_girls_bmi_chart.pdf

Ideal body weight (IBW) = BMI_{50} x height (m)^2

BMI_{50} is the age and sex specific BMI at the 50th centile. This is readily identified using the sex specific BMI chart.

Adjusted body weight (AdjBW) = IBW + 0.35 x (TBW – IBW)

Please use the specified dose adjustments for all overweight and obese children (BMI above 91st centile).

Dosing based upon IBW or AdjBW is prudent when using longer acting sedative drugs such as Clonidine and Temazepam.

BMI centile quick look-up charts also exist on the standard 2-18 years RCPCH growth charts for use in less complex cases. These are available via the links below and an electric version is also available in eZnotes (Appendix 3 summarises how to use the eZnotes growth charts).

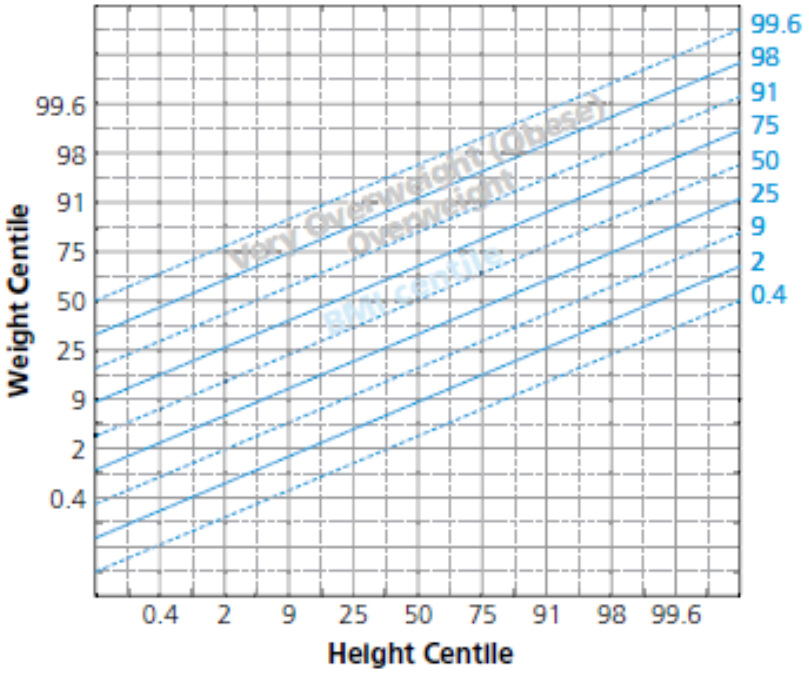
https://www.rcpch.ac.uk/sites/default/files/Girls_2-18_years_growth_chart.pdf

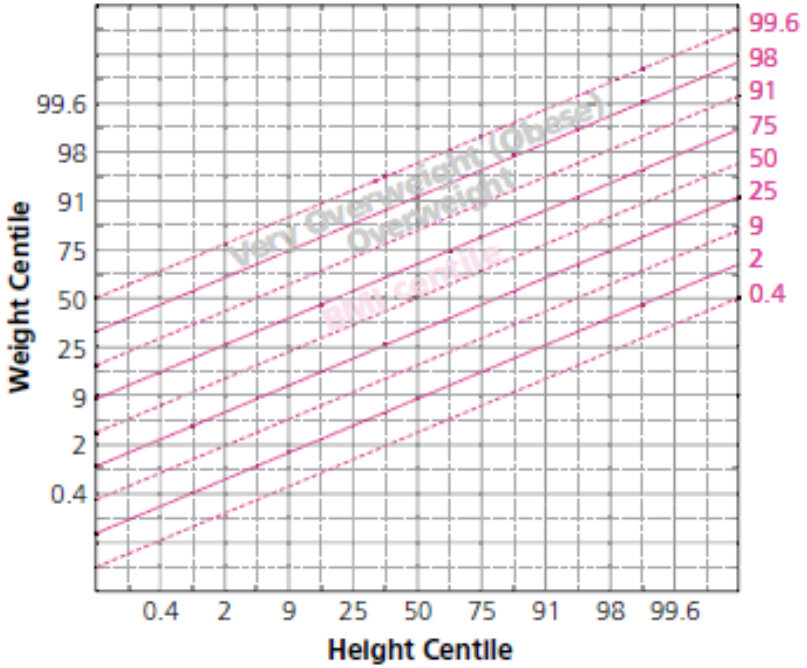
https://www.rcpch.ac.uk/sites/default/files/Boys_2-18_years_growth_chart.pdf

Using this method to quickly look up a BMI centile:

1. Plot the child's measured height (cm) and weight (kg)
2. Note the weight and height centiles from the growth chart
3. Plot the weight centile against the height centile on the Body Mass Index (BMI) centile look-up chart
4. Read off the corresponding BMI centile from the slanting centile lines

BMI centile look-up charts from the RCPCH are shown below (blue colour – boys, pink colour –girls)





Summary

Pharmacokinetic principles are not be discussed in detail here but remember that for loading doses of drugs the calculation is based on VD (volume of distribution).

The VD for hydrophilic drugs should theoretically be based on IBW. The BNFc specifies for this group of drugs, that doses should be calculated on the basis of IBW in order to avoid excessive doses in obese children. Note: Suxamethonium is an exception which despite its hydrophilicity should be dosed according to TBW (Total Body Weight) because of an increased pseudocholinesterase activity in this population.

The VD of lipophilic (hydrophobic) drugs should be based on measured TBW, but bearing in mind toxicity and never exceeding adult recommended doses.

Not all drugs fit neatly into these 2 categories, some partially distribute into fat and their increased VD in obese children is therefore based on an adjusted body metric (IBW plus a proportion of overall body weight as a correction factor). This concept of ABW (Adjusted Body Weight) takes into account the fact that in obese children 20-40% of the excessive weight is due to an increase in muscle, bone and other lean body tissue mass.

Please see appendix 4 SOBAUK Anaesthesia for Children living with obesity - single sheet guideline for further details about drug dosing and anaesthetic management of children living with obesity.

The BNFc buccal midazolam dosing guide is based on age category. Please use this weight based guideline to calculate the midazolam premedication dose to be prescribed and given up to a maximum dose of 10mg buccal and 20mg oral.

Intramuscular premedication should be avoided in all children wherever possible but particularly in those who are obese because drugs might only reach the adipose tissue rather than muscle and result in erratic absorption.

Medicinal forms

Drug	Medicinal Form	Comment
Ketamine (Ketalar® injection)	Single use vials - 200mg/20ml, 500mg/10ml	Very bitter taste orally 50mg/ml concentration should be used for IM to minimise injection volume
Midazolam Buccal	Oromucosal pre-filled oral syringes (2.5mg, 5mg, 7.5mg and 10mg)	Round dose to nearest multiple of 2.5mg
Midazolam oral solution	Midazolam 12.5mg/5ml oral solution	Various flavours
Midazolam solution for injection	Single use vials – 1mg/ml (2ml vial) and 10mg/2ml vial	Irritant when given intranasally. Very bitter taste (must be diluted with 5-10ml juice prior to oral administration).
Clonidine (Catapres®) solution for injection	Single use vial – 150micrograms/1ml	Can be used IV, IN, IM and PO. Tasteless
Clonidine oral suspension	50microgram/5ml oral suspension	Oral route only
Dexmedetomidine (Dexdor®)	200microgram/2mls solution for injection	Intranasal
Temazepam	10mg Tablets and 10mg/5mls elixir	Suitable for children 12years and over

References

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A.Tatman. Birmingham Children's Hospital Sedation Policy. 2013.

K.Russell, F.Saddington, M.AbouDaya, Z.Burton. Anaesthesia for Children living with obesity - single sheet guideline SOBAUK 2022. https://www.sobauk.co.uk/_files/ugd/373d41_3b3579306e3243578be51701903efbd3.pdf Accessed 1/2/24

Appendix 1 - Contraindications to Sedation

Airway and Respiratory Disease
Structural airway abnormality e.g. micrognathia (small mandible)
Functional airway abnormality e.g. adenotonsillar enlargement, laryngo/tracheomalacia, macroglossia (note stridor, snoring, sternal recession)
Obstructive sleep apnoea
Oxygen dependency
Respiratory failure (high respiratory rate, oxygen treatment)
Severe brittle asthma (controlled/stable asthma is not a contra-indication)

Cardiovascular Disease
Stable congenital heart disease is not a contra-indication, but discuss with cardiology if there is a clinical concern.
Cardiovascular instability
Hypotension/hypovolaemia
Cardiac failure
Cardiac arrhythmia
Pulmonary hypertension

Metabolic or Liver Disease
End-stage liver failure
Certain metabolic disorders prone to acute decompensation without other concurrent treatment
Patients with mucopolysaccharidoses
Reduce doses to 50-75% of the recommended dose in cholestasis i.e. visible jaundice or serum bilirubin >70 mmol/l
Normal oral sedation doses can be given following successful liver transplantation, if liver function is normal
Prolonged fasting may cause hypoglycaemia and acidosis in some metabolic conditions: BMs should be checked regularly i.e. hourly or half hourly if falling and appropriate action taken. A glucose infusion is likely to be needed.

Neurology/neurosurgery/neuromuscular Disease
Raised intracranial pressure (drowsiness, headache, vomiting)
Craniofacial patients with a syndrome
Depressed conscious level
History of central apnoea
Respiratory failure secondary to neuromuscular disease
Acutely uncontrolled epilepsy
Convulsion requiring emergency drug administration in the preceding 24hrs
Convulsions associated with cyanosis
Failure to regain full consciousness after a recent convulsion
Epilepsy if controlled is not a contra-indication to sedation, but take careful history regarding recent/type of convulsions

Renal Disease
Uraemic patients with evidence of impaired consciousness and/or raised serum potassium
Oral sedation is not contra-indicated in patients stabilised on dialysis

Gastro-intestinal Disease
Severe gastro-oesophageal reflux, such as frequent vomits
Acute bowel obstruction (abdominal distension, large naso-gastric losses, hypovolaemia)

Well controlled gastro-oesophageal reflux is not contraindicated but consider nursing the child upright and aspirate any NGT pre- sedation.

Haematological Disease

Sickle cell crisis

Uncompensated anaemia i.e. acute, unstable anaemia (chronic stable anaemia is not a contra-indication to sedation)

Porphyria

Caution in homozygous sickle cell disease, as hypoxia and/or dehydration can precipitate a crisis

Appendix 2 - Drug Interactions with sedative drugs

Opioids
High risk of drug interaction, leading to unpredictable and uncontrollable level of sedation if sedation is given to patients who are receiving opioids

IV anti-convulsants
Sedation is contra-indicated with concurrent IV anti-convulsants

Diazepam and lorazepam
Sedation is contra-indicated with regular or recent (i.e. within the preceding 24 hours) diazepam or lorazepam

Drugs which inhibit hepatic enzymes e.g. Clarithromycin, Erythromycin, Fluconazole, Omeprazole, Grapefruit Juice etc.
Sedative effects can be increased when midazolam is given with these drugs/foods

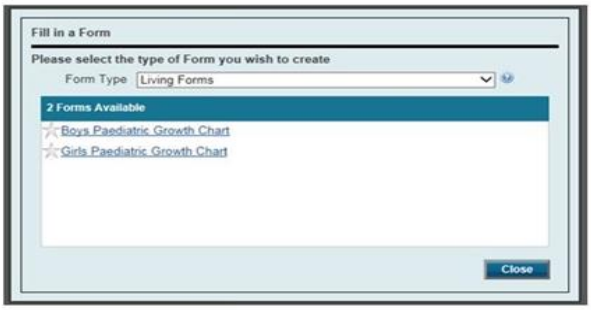
Drugs which induce hepatic enzymes e.g. phenobarbitone, phenytoin, rifampicin etc
There is an increased sedation failure rate in patients who are taking such as drugs

Drugs that have sedative side effects e.g. anti-psychotics, anti-depressants, anti-convulsants
Care should be taken regarding the additive sedative actions of these drugs

Appendix 3 - Summary of how to use eZnotes growth charts

1. Within the case note viewer, go to the "little man" icon and select 'Fill in a Form'

2. Select 'Living Forms' to show the Growth Chart options:



3. Choose the correct gender and the form will open ready for completion:

4. Once completed the growth chart will be saved in the Outpatient tab under the sub folder Growth Chart. You can also search using the word" growth chart" or "WR4207", via the magnifying glass.

5. **Once a chart is opened, please continue to use this chart – do not create another chart. If there are problems with the chart, please discuss with Dr Baylon Kamalarajan or an experienced user to rectify.**

6. **Please do not finalise charts until the child is 18 years of age (or will no longer been seen in a paediatric setting). Current data can be exported to PDF format to share with other professionals if needed without finalising charts.**

Appendix 4

ANAESTHESIA FOR CHILDREN LIVING WITH OBESITY

SOBAUK – THE SOCIETY FOR OBESITY & BARIATRIC ANAESTHESIA

PRE-OPERATIVE

PRE-ASSESSMENT

Screen for co-morbidities	
CVS	Hypertension (QR1), cardiac dysfunction
Respiratory	OSA, asthma, smoke exposure
GI	Fatty liver disease (NAFLD), GORD
Endocrine	Insulin resistance, Type II DM
Other	2° causes of obesity, metabolic syndrome, psychological

Investigations to consider:
⇒ Fasting blood tests: Glucose + insulin, HbA1c, LFTs, TFTs, lipids, Vitamin D
⇒ Sleep study, ECG, echocardiogram, spirometry

- Refer to paediatric specialists if necessary
- Perform full airway assessment
- Safeguarding concerns?

DEFINING OBESITY

WEIGHT (kg) / HEIGHT (m)² = BMI
⇒ Determine BMI centile
⇒ Establish weight category

BMI centile	Weight category	ASA grade
> 91st	Overweight	2
> 98th	Obese	2
> 99.6th	Severely obese	3

Royal College of Paediatrics and Child Health (QR2)

CONSENT

- ↑ likelihood of critical events
- Encourage shared decision making
- Avoid negative language (QR3)

PRE-MEDICATION

Drug (dose adjustment)	Time before GA
Dexmedetomidine (AdjBW)	
• IN 2-3mcg/kg (max 150mcg)	30-60 minutes
Ketamine (IBW)	
• PO 5-10mg/kg	10-20 minutes
• IM 5mg/kg	3-5 minutes
Midazolam (TBW)*	
• PO 0.5mg/kg (max 20mg)	15-30 minutes
• Buccal 0.3mg/kg (max 10mg)	10-15 minutes

IMPORTANT: ↓ dose if combining pre-medications

* Midazolam: risk of of upper airway obstruction in OSA. Consider risks / benefits. Severe OSA ↓ dose to 0.25mg/kg

QR1 QR2 QR3

QR CODES

PREVENTATIVE MEDICINE: Offer lifestyle advice and refer to Tier 2 community weight management programme / dietician

INTRA-OPERATIVE

INDUCTION

Intravenous	Gas
Preferable BUT may be difficult Consider:	• May take longer due to airway obstruction
• Topical analgesia (hands, volar aspect wrist)	• Use O_2 and volatile
• USS guidance / IO availability	• Avoid N_2O

- Priority is to secure the airway in a rapid but controlled manner

AIRWAY

- Consider pre-oxygenation where tolerated (FM / HFNO / nasal cannulae)
- Airway obstruction under GA IS more common
- Difficult facemask ventilation IS more common in children living with obesity (3.7%) vs healthy weight children (0.6%) (QR4)
- Use oropharyngeal airway +/- two-person technique
- Difficult intubation is NOT more common
- Obesity in isolation is NOT an indication for rapid sequence induction
- Low threshold for endotracheal intubation with videolaryngoscopy
- Consider decompressing the stomach with a nasogastric / orogastric tube
- If a supraglottic airway is appropriate, use 2nd generation (TBW)

VENTILATION

- Pressure control ventilation 6-8ml/kg (IBW) to limit barotrauma
- Optimise PEEP to compensate for reduced FRC
- Pressure support if spontaneously ventilating with supraglottic airway

DRUG DOSING

Ideal body weight (IBW)	Adjusted body weight (AdjBW)
BMI_{50} x height (m)² BMI_{50} = age + sex specific BMI at 50th centile	IBW + 0.35 x (TBW – IBW)

Total body weight (TBW)	Ideal body weight (IBW)	Adjusted body weight (AdjBW)
Atropine	Propofol [induction bolus]	Propofol [TCI infusion]
Glycopyrrolate	Ketamine	Alfentanil
Dexamethasone	Morphine	Fentanyl
Ondansetron	Non-depolarising muscle relaxants	Remifentanil [Minto infusion]
Suxamethonium		
Penicillins	Dexmedetomidine [IV]	Paracetamol
Cephalosporins	Local anaesthetics	Ibuprofen
Sugammadex	Adrenaline	Gentamicin
Neostigmine	Phenylephrine	
Enoxaparin		

* Do not exceed maximum adult doses

ANALGESIA

- Use a multimodal approach
- Avoid long-acting opiates in severe OSA. Titrate to effect
- Use opioid sparing techniques: US guided regional anaesthesia, analgesic adjuncts (dexamethasone, dexmedetomidine)
- An opioid PCA is safe to use – refer to drug dose adjustments above

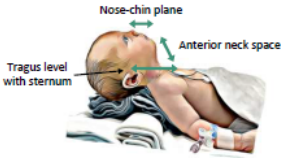
QR4 QR5 QR6

QR CODES

POSITIONING + EQUIPMENT

"Ramp" the patient with pillows / Oxford HELP® pillow at induction
Discuss any additional equipment at team brief:

- Table extenders
- Transfer board and slide sheet
- Hover mattress >90kg
- Gel padding
- Correctly sized / forearm BP cuff
- Arterial line
- Wide straps
- Anti-embolism stockings if >40kg
- Intermittent pneumatic compression (IPC) devices if >13 years old + >40kg + surgery >60 minutes (QR5)



Ramped position
↓ risk of difficult laryngoscopy + improves ventilation

TIVA

- Titrate to effect
- Use depth of anaesthesia monitoring
- Follow AAGBI / SIVA good practice guidance (QR6)