

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

$$\text{WEIGHT (kg) / HEIGHT (m)}^2 = \text{BMI}$$

- ⇒ 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
<b>Dexmedetomidine (AdjBW)</b>	
• IN 2-3mcg/kg (max 150mcg)	30-60 minutes
<b>Ketamine (IBW)</b>	
• PO 5-10mg/kg	10-20 minutes
• IM 5mg/kg	3-5 minutes
<b>Midazolam (TBW)*</b>	
• 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 upper airway obstruction in OSA. Consider risks / benefits. Severe OSA ↓ dose to 0.25mg/kg



QR1



QR2



QR3

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**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: • Topical analgesia (hands, volar aspect wrist) • USS guidance / IO availability	• May take longer due to airway obstruction • Use O <sub>2</sub> and volatile • Avoid N <sub>2</sub> O

- 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 2<sup>nd</sup> 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)
$\text{BMI}_{50} \times \text{height (m)}^2$ <small>BMI<sub>50</sub> = age + sex specific BMI at 50<sup>th</sup> centile</small>	$\text{IBW} + 0.35 \times (\text{TBW} - \text{IBW})$

Total body weight (TBW)	Ideal body weight (IBW)	Adjusted body weight (AdjBW)
Atropine	Propofol [induction bolus]	Propofol [TCI infusion]
Glycopyrrrolate	Ketamine	Alfentanil
Dexamethasone	Morphine	Fentanyl
Ondansetron	Non-depolarising	Remifentanyl
Suxamethonium	muscle relaxants	[Minto infusion]
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

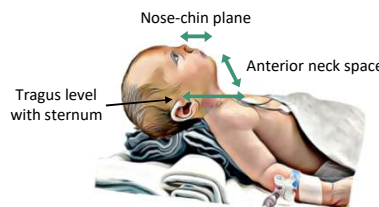
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## POSITIONING + EQUIPMENT

“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)

POST-OPERATIVE

## EMERGENCY

- ↑ FiO<sub>2</sub> and more upright positioning
- Full reversal with neuromuscular monitoring
- Awake extubation recommended
- Insert soft bite block e.g. rolled gauze (QR7)
- No evidence that obesity increases PONV risk
- NIV should be readily available
- Usual PACU discharge criteria should be met
- SpO<sub>2</sub> should be maintained at pre-operative levels with minimal O<sub>2</sub>

## VTE

- Perform risk assessment + follow guidance

Total body weight (TBW)	Subcutaneous enoxaparin dose
<45kg	0.5mg/kg BD (max 40mg/day)
45-100kg	40mg OD
100-150kg	40mg BD
>150kg	60mg BD

- Limited literature available. Low threshold for consulting haematologist

## OTHER

- Prioritise early mobilisation where possible
- Ensure good hydration
- BM monitoring if insulin resistance / T2DM

### Day case *versus* inpatient care

- Surgery and comorbidity dependent
- Consider need for higher level care e.g. HDU
- Obesity as a sole co-morbidity does not preclude day case surgery, but does allow a prolonged period of post-operative observation (AM list)



QR7

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