

# Intercurrent illness in paediatric day stay anaesthesia

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Midlands Society of Anaesthesia October 2006

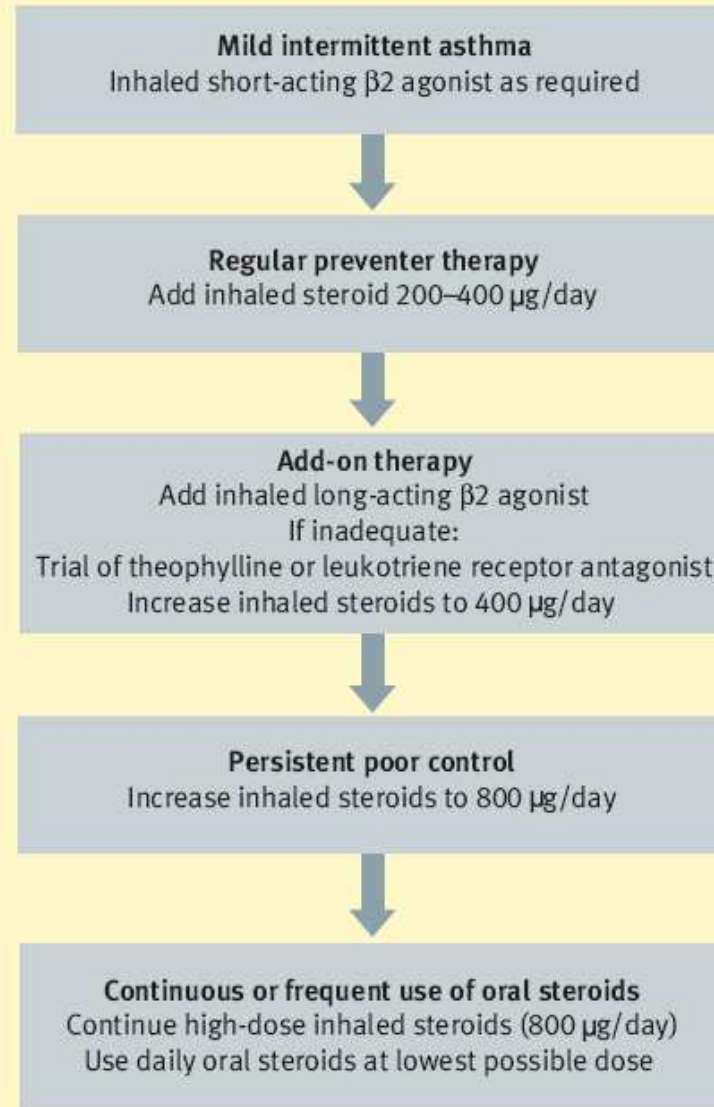


# Asthma



- 1:10 children on asthma medication
- Poor compliance common
- Less than 10% have severe asthma
- Brittle asthma-uncommon

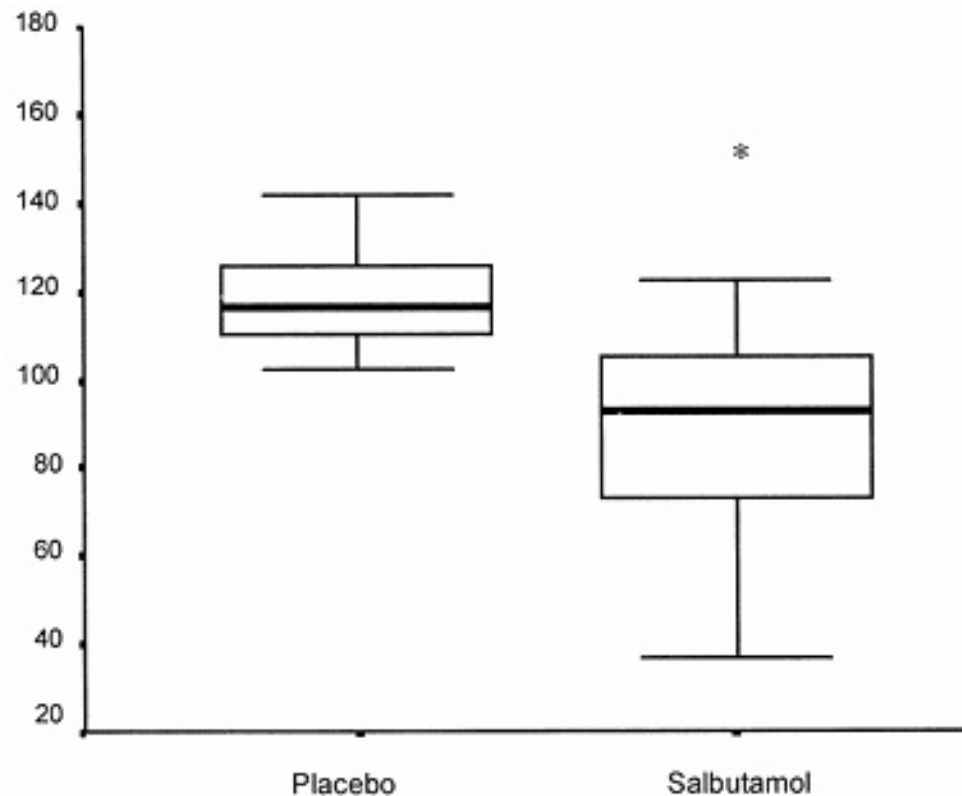
**British Thoracic Society guidelines: stepwise management of asthma in children aged 5–12 years**



# Preoperative management

- Optimise treatment
- Postpone if wheezy
- Premedication
  - Midazolam if anxious
  - $\beta_2$  agonist
- Steroid cover

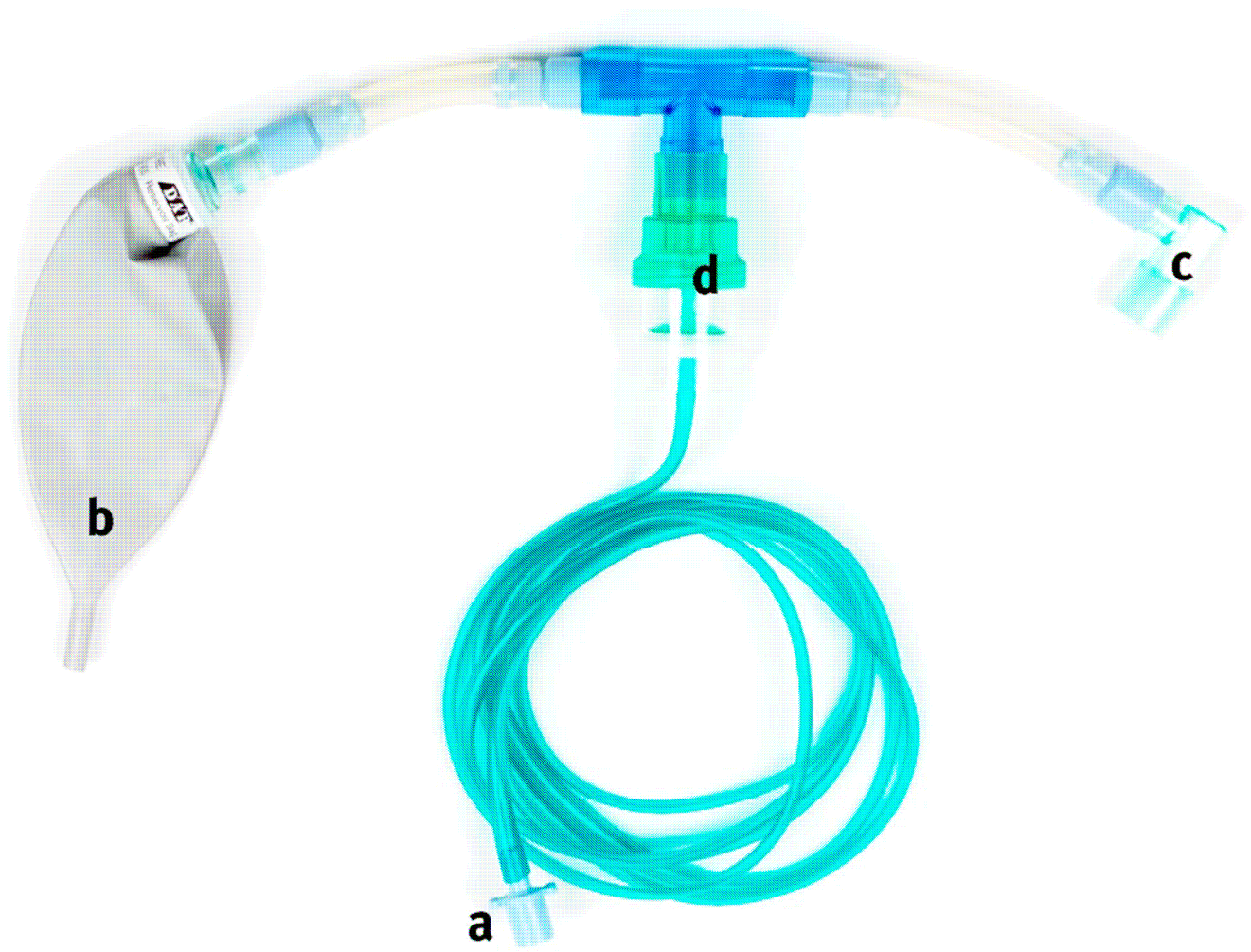
# Pretreat with a $\beta_2$ agonist



Scalfaro, P. et al. Salbutamol Prevents the Increase of Respiratory Resistance Caused by Tracheal Intubation During Sevoflurane Anesthesia in Asthmatic Children. *Anesthesia & Analgesia* 2001; 93:898-902

# Intraoperative management

- Induce with propofol or sevoflurane
- Minimise airway instrumentation
- Extubate deep if possible
- Avoid histamine releasing drugs
- Means to deliver a bronchodilator
- Analgesia



# NSAIDs in asthma

- Prevalence ibuprofen sensitive asthma is 2%
- Less morbidity with ibuprofen than with paracetamol
- Diclofenac: No significant fall in PFR or symptoms

Avoid in brittle asthma

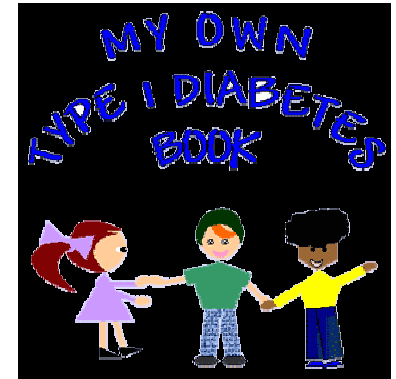
Debley JS., et al. The prevalence of ibuprofen-sensitive asthma in children: a randomized controlled bronchoprovocation challenge study. *Pediatrics* 2005 Aug;147(2):233-8

Lesko SM., et al. Asthma morbidity after the short-term use of ibuprofen in children. *Pediatrics* 2002 Feb;109(2):E20

Short JA., et al. Use of diclofenac in children with asthma. *Anaesthesia* 2000 Apr;55(4):334-7



# Diabetes mellitus



- Involve Diabetes team
- Use a protocol
- Put 1<sup>st</sup> on list
- Monitor blood glucose
- Rapid return to normal oral intake

Chadwick V. and Wilkinson KA. Diabetes mellitus and the pediatric anesthetist. Pediatric Anesthesia 2004; 14: 716-723.

# Diabetes

## Morning list

### Pre op

Omit breakfast

Omit insulin

Check BM

Clear fluids until 3 hours before

### Post op

Give 60% of short acting insulin

Snacks / drinks when conscious

Monitor glucose

## Afternoon list

### Pre op

Breakfast to 7.30

Give 60% of short acting insulin

Clear fluids until 3 hours before

Hourly BM

?Start iv fluids at midday

### Post op

Snacks / drinks when conscious

Monitor glucose

# Obesity

- Preoperative anxiety
- Difficult venous access
- Risk of reflux
- Altered pharmacokinetics
- Syndromes



Smith HL., et al. Childhood obesity: a challenge for the anaesthetist?  
Paediatric Anaesthesia. 2002 Nov;12(9):750-61.

Holm-Knudsen RJ., et al. Distress at induction of anaesthesia in children.  
A survey of incidence, associated factors and recovery characteristics.  
Paediatric Anaesthesia 1998; 8: 383-392.

# Pharmacokinetics

Ideal weight (height – 100)	Total weight	Corrected weight
Propofol	Suxamethonium	Propofol infusion
Rocuronium	Atracurium	Fentanyl
Vecuronium	Neostigmine	Alfentanil
Remifentanil	Midazolam	
Morphine		

$$\text{Corrected weight} = \text{ideal weight} + 0.4 * (\text{Total} - \text{Ideal})$$

De Baerdemaeker LEC., et al. Pharmacokinetics in obese patients.  
Continuing Education in Anaesthesia, Critical Care and Pain. 2004; 4;152-155.

# Children with special needs

- Learning and behavioural difficulties
- Chronic ill health
- Variable understanding
- Anxiety
- Parents

Patience  
Love  
Understanding  
**AUTISM**



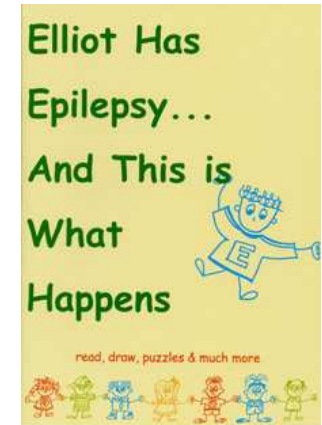
# Children with special needs

- Preoperative visit
- Induction
- Recovery / Discharge

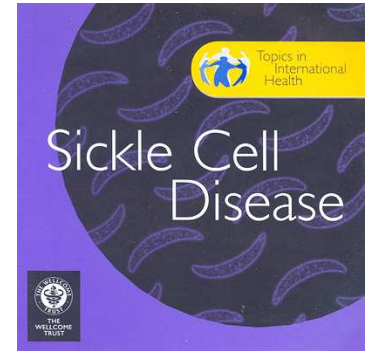


# Epilepsy

- Continue anti-epileptic drugs
- Seizure features
- Early on list
- ?Midazolam premedication
- Propofol or sevoflurane



# Sickle cell disease



- Routine sickledex testing?
- Sickle cell disease
  - Exclude infection
  - 1<sup>st</sup> on list
  - Maintain oxygenation, hydration, temperature
  - Transfusion?

Crawford MW., et al. Preoperative screening for sickle cell disease in children: clinical implications. *Can J Anaesth* 2005; 52: 1058-1063

Marchant WA., et al. Anaesthesia management of the child with sickle cell disease. *Paediatric Anaesthesia* 2003;13:473-489.



# Upper respiratory tract infection



# Upper respiratory tract infection

3-8 episodes per year

Parental smoking

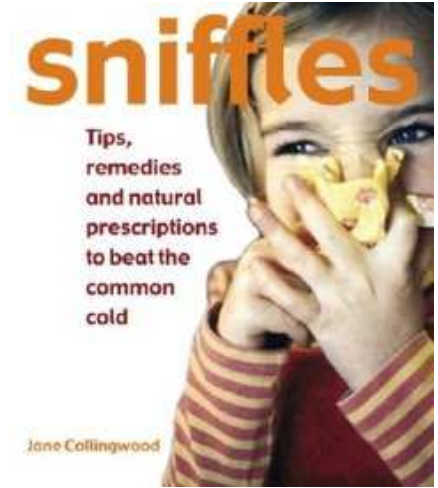
Day nursery

Crowded housing

60% chance of URTI in next two weeks

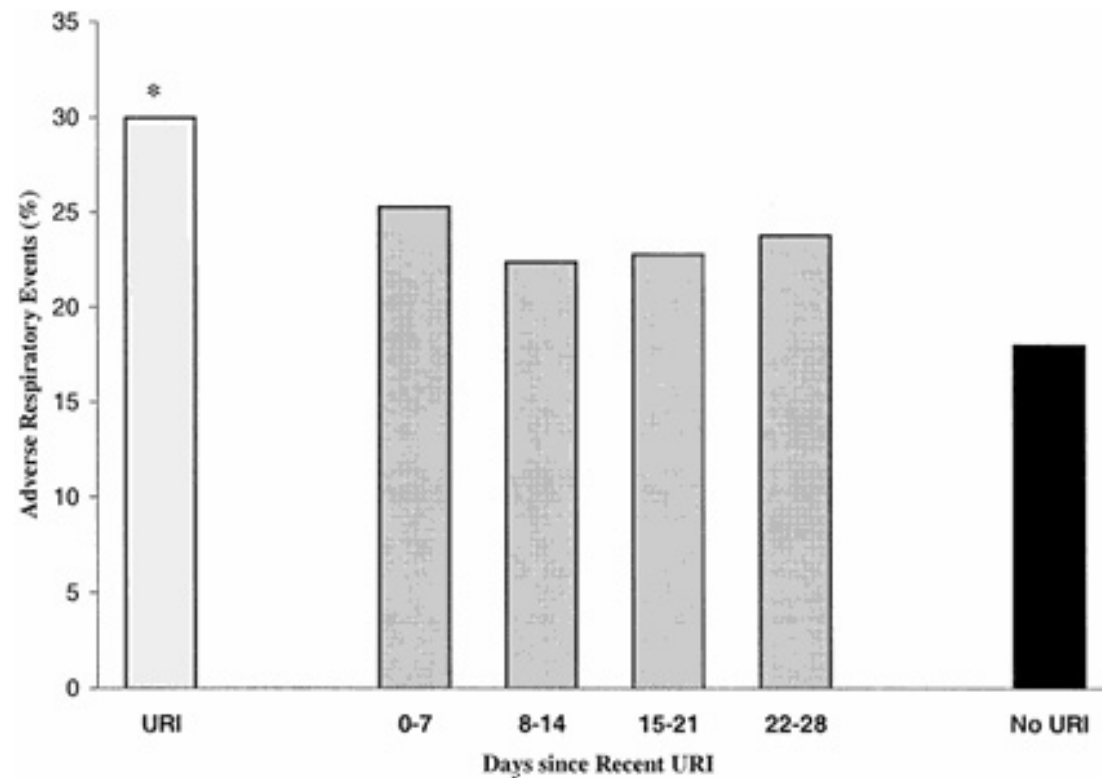
# Adverse events with an URTI

- Breath-holding
- Coughing
- Laryngospasm
- Bronchospasm
- Desaturation



Should you postpone the child  
with an URTI?

# Risk of adverse event following URTI



Tait AR., et al. Risk Factors for Perioperative Adverse Respiratory Events in Children with Upper Respiratory Tract Infections  
Anesthesiology 95:299-306, 2001

# Anaesthetic agent

- Induction agent
  - Propofol or sevoflurane

	URI	Recent	No URI
Induction–maintenance			
Halothane–halothane	10 (20.8)	8 (27.6)	5 (10.9)
Halothane–isoflurane	11 (47.8)	9 (40.9)	3 (42.9)
Sevoflurane–sevoflurane	3 (8.3) <sup>†</sup>	5 (21.7)	6 (23.1)
Sevoflurane–isoflurane	70 (32.6)	45 (23.3)	42 (18.6)

Parnis SJ., et al Clinical predictors of anaesthetic complications in children with respiratory tract infections. Paediatric Anaesthesia 2001; 11: 29-40

Tait AR., et al. Risk Factors for Perioperative Adverse Respiratory Events in Children with Upper Respiratory Tract Infections  
Anesthesiology 95:299-306, 2001

# ETT Vs Facemask

Factor	Relative odds
URI	8.94
No URI, intubated	5.21
URI and intubated	11.13

Cohen, MM et al., Should You Cancel the Operation When a Child Has an Upper Respiratory Tract Infection?  
Anesth Analg 1991; 72:282-8

# LMA vs ETT

	Total	
	LMA	ETT
Coughing	26 (63.4)	33 (80.5)
Breath-holding	10 (24.4)	11 (26.8)
Laryngospasm	4 (9.8)	2 (4.9)
Bronchospasm	0 (0.0)	5 (12.2)*
Spo <sub>2</sub> 90%–94%	13 (32.5)	13 (32.5)
Spo <sub>2</sub> <90%	4 (10.0)	10 (25.0)

Risk of adverse event	<b>25%</b>	<b>50%</b>
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Tait AR., et al. Use of the Laryngeal Mask Airway in Children with Upper Respiratory Tract Infections: A comparison with Endotracheal Intubation  
Anesth Analg 1998; 86:706-11

Parnis SJ., et al. Clinical predictors of anaesthetic complications in children with respiratory tract infections. Paediatric Anaesthesia 2001; 11: 29-40



# Airway management

%	Facemask	LMA	ETT
Breath holding	9.8	31.7	40.2
Severe coughing	4.3	8.9	13.0
Sats < 90%	8.7	10.7	21.9
Laryngospasm	2.2	4.8	5.4
Bronchospasm	3.3	4.1	7.6
<b>Total</b>	<b>16.5</b>	<b>24.2</b>	<b>40.5</b>

Tait AR., et al. Risk Factors for Perioperative Adverse Respiratory Events in Children with Upper Respiratory Tract Infections  
Anesthesiology 95:299-306, 2001

Cohen, MM et al., Should You Cancel the Operation When a Child Has an Upper Respiratory Tract Infection?  
Anesth Analg 1991; 72:282-8

# Minimizing problems

- Induce with sevoflurane or propofol
- Maintain with sevoflurane
- Minimise airway instrumentation
  - Facemask >> LMA > ETT
- Special care
  - Infants
  - Airway surgery

# Minimising extubation problems

- Extubate deep
- Extubate awake
  - Maintain neuromuscular paralysis until
    - $\text{PaCO}_2 > 5.5$
    - $E_t\text{Sevoflurane} < 0.5$
    - Pharynx is clear
  - Extubate at end inspiration

# Risk factors for adverse events

Copious secretions	14.87
ETT in child aged < 5 yr	13.52
History of prematurity (< 37 weeks)	7.25
Nasal congestion	6.00
Paternal smoking	5.61
History of reactive airway disease	4.86
Surgery involving the airway	4.09

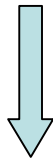
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Tait AR., et al. Risk Factors for Perioperative Adverse Respiratory Events in Children with Upper Respiratory Tract Infections  
Anesthesiology 95:299-306, 2001

# Elective surgery for child with an URTI

## Mild URTI

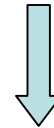
Not unwell  
Dry tickly cough  
Bit of a sniffle  
Clear chest



Consider proceeding

## Acute URTI

Temperature > 38°C  
Copious secretions  
Malaise / reduced appetite  
Productive / croupy cough  
Lower respiratory tract signs  
Parent says child is unwell



Postpone 4-6 weeks

Patience  
Love  
Understanding  
**AUTISM**

I'm not bad...



I have Autism



Common Cold

