

Preoperative assessment and preparation for anaesthesia in children

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Abstract

Paediatric anaesthesia can be challenging but careful preoperative assessment and preparation can make the process positive and successful for the child and their parents and rewarding for the anaesthetic team. During the preoperative assessment, we aim to gather information to plan our anaesthetic technique, assess risk, provide explanations and establish rapport. We describe below the elements of preoperative assessment that will prepare the family and staff for a smooth and safe anaesthetic process.

Keywords Paediatric anaesthesia; premedication; preoperative assessment

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There is a huge variation in children's previous hospital experience and levels of co-morbidity. The content of the discussion at preoperative assessment will depend on whether the surgery, the patient or both present particular anaesthetic challenges. The overall aim is to exchange information, allowing an appropriate plan to be constructed for the anaesthetic, postoperative care and analgesia. Importantly, it also allows us as anaesthetists to build a rapport with the child and family and to minimize preoperative anxieties by providing explanations and reassurance. The preoperative assessment may range from a brief discussion with uncomplicated patients on the day of surgery, to dedicated multidisciplinary pre-assessment appointments for those who have complex medical backgrounds and/or are scheduled for major surgery.

A structured approach to preoperative assessment is essential in either scenario. Such an approach is suggested in [Box 1](#).

Assessment – gathering information from the patient

Setting the scene – before meeting the patient

Understand the proposed surgery: anaesthetists must have a basic understanding of the planned surgical procedure. Important details of the operation include the benefits and risks, the likely duration, the required patient position, the anticipated blood loss, the incision site and the anticipated postoperative pain. Preoperative discussion with the surgeon

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Learning objectives

After reading this article, you should be able to:

- use a structured approach for paediatric preoperative assessment
- gather appropriate information to form an anaesthetic plan tailored for each patient
- understand the importance of using questions and explanations that are appropriate for each child's age and development

will clarify any special requirements. The team brief in the World Health Organization's Safer Surgery Checklist has formalized this process across the UK but it is of particular importance in children as inadequate analgesia and unexpected surgical complications can have long term negative consequences.

Review the patient's notes: the patient's file should be checked prior to starting discussions, in order to review the medical history, family background and previous hospital experiences and to allow familiarization with any relevant uncommon syndromes or diseases. Previous anaesthetic charts can help highlight a previous difficult airway, ease of bag mask ventilation and grade of laryngoscopy view. It is often useful to know the size of tracheal tube used last time and helpful to be alerted to previous difficult cannulations or a previous traumatic induction which may influence decisions about premedication, induction technique and airway management.

Meet the patient

Anaesthetists should introduce themselves and their role to children in a way that they can understand and should direct their attention to the child rather than the parent where appropriate. This is the first step in building up the rapport which will allow a successful anaesthetic induction. Sitting down and making eye contact at the child's eye level helps to engage them. The anaesthetist can then assess how interactive the child is and sense any anxieties that may cause difficulty in the anaesthetic room. Ideally the meeting should be in a child-friendly environment where they feel comfortable ([Figure 1](#)).

History

Perinatal: this is most relevant in babies under a year in whom gestational age at birth may affect anaesthetic management. Ex-premature infants are a complex heterogeneous group and require individual assessment of risk. Factors to consider include apnoeas, chronic lung disease, duration of oxygen dependency, neurological morbidity and anaemia <100 g/L. Most tertiary centres will proceed with day case surgery for healthy term babies greater than 44 weeks post conception age (PCA). Most ex-premature babies are suitable for day case care at greater than 60 weeks PCA. Prior to 60 weeks PCA an overnight stay for postoperative saturation and apnoea monitoring is recommended for premature infants.

Structured approach to preoperative assessment

Gathering information

- Read notes
- Establish a rapport

History

- Perinatal
- Anaesthetic
- Medical (co-morbidity and concurrent illness)
- Drugs and Allergies
- Immunization history
- Starvation times
- Previous experience of pain and medical procedures

Examination

- Weight, height and BMI
- Baseline observations
- Airway (including potential difficult intubation and loose deciduous teeth)
- Cardiovascular (examination of peripheral veins and auscultation of heart)
- Respiratory
- Neurological (baseline functional level in children with special needs)
- Resuscitation as indicated
- Review investigations
- Request and review other relevant investigations
- Optimize medical condition
- Formulate anaesthetic plan, including premedication

Delivering information

- Age-appropriate information
- Role of parent
- Risks
- Consent for specific procedures
- Opportunity for child and parent to ask questions

Box 1

Anaesthetic: in addition to a review of previous anaesthetic charts, the child and parent's recollections of the mode and their experience of previous inductions will guide the current plan. The child and family may express preferences for the anaesthetic management this time, which should be considered. Malignant hyperthermia and suxamethonium apnoea should be excluded.

Medical (co-morbidity and concurrent illness): prior to surgery, other medical conditions should be optimized. It is also important to exclude any concurrent illnesses which might increase the risk of anaesthesia and surgery on the day. Of particular importance are upper respiratory tract infections, gastrointestinal upsets and infectious diseases such as chicken pox. This aspect of preoperative preparation is discussed in a separate article in this issue (pages 401–412).



Figure 1 Preoperative assessment in a child-friendly environment. Eye contact with the child can aid in establishing a rapport.

Adolescent patients: it may be appropriate to question teenage patients about smoking, recreational drugs and alcohol intake and also, in accordance with NICE (www.nice.org.uk CG3), the NPSA (www.nrls.npsa.nhs.uk RRR 011 2010) and the Royal College of Paediatrics and Child Health (<http://www.rcpch.ac.uk/pregnancy> checks) to ask post-pubertal girls about the possibility of pregnancy and possibly perform a pregnancy test (dependent on local hospital protocol). These questions should be asked in private as parental presence may affect the responses. Informed verbal consent is required for pregnancy testing and should be clearly documented.

Drugs and allergies: any longstanding medications should be continued except for anti-diabetic treatment which requires an individualized plan. Children can take oral medicines during preoperative fasting as long as the total volume of fluid does not exceed 30 ml.

A careful allergy history helps differentiate between true allergies and common side effects. Steroids and antihistamines may be required for blood products in patients who have received multiple transfusions. It is important to note a history of latex allergy, which may be responsible for up to 19% of perioperative allergic reactions. Latex allergy may be associated with food allergies to kiwi fruit, bananas, avocados and chestnuts. Latex-free precautions are also appropriate for patients with spina bifida or a history of repeated catheterizations, due to recurrent exposure.

Immunization history: pyrexia or acute illness after recent immunization can make diagnosis of surgery-related complications difficult postoperatively. Such symptoms can occur up to 2 days after inactive infant vaccines and 3 weeks after live attenuated vaccines such as MMR (mumps, measles, rubella). Although there are no absolute contraindications to concurrent anaesthesia and immunization, it is probably prudent to delay routine surgery for 48 hours after immunization with inactive vaccines and to be ready to postpone surgery within 3 weeks of MMR if the child is unwell.¹

Starvation times: recommended starvation times are shown in [Table 1](#).

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