

division of

Pediatric Anesthesia & Pain Management

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Guidelines for the Pediatric Preoperative Anesthetic Evaluation

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NPO Guidelines

Breast Milk	Clear Liquids	Milk or Formula	Solids
3 Hours	3 Hours	<6 months: 4 Hours >6 months: 6 Hours	6 Hours

While once thought to be contraindicated prior to surgery, recent studies have shown that gum-chewing does not increase the risk of gastric aspiration. We ask that children refrain from candy or gum, but do not delay or cancel surgery if this occurs.

Preoperative Medical Evaluation

General Health Issues

Probable or documented bacterial illness, any febrile illness, or any illness any findings (râles, rhonchi, lower airway secretions such as bronchitis, wheezing): elective surgery should be postponed for 4-6 weeks. Exception: asthmatic with mild wheezing may be anesthetized in less than six weeks after optimization of bronchodilator therapy. This could take a few hours, or several days, and each case must be individualized.

The URI:

The child with seasonal or viral rhinitis, who does not have fever or lower respiratory findings, may undergo anesthesia under selective circumstances:

The provision of anesthesia to children with URI's causes a small but finite increase in the risk of perioperative respiratory complications such as airway obstruction, post-extubation croup, pulmonary atelectasis, etc., and also exposes the medical caregivers and other hospitalized children to viral pathogens. Sneezing and coughing in the postoperative period may be extremely painful following thoracic or abdominal surgery, and may be frankly dangerous after neurosurgery. Therefore in the ideal world no child would receive an elective anesthetic if there were any intercurrent illness or infection. However this is unrealistic for several reasons. Some children, particularly those with cleft palates, or those undergoing ENT procedures, have such frequent upper respiratory illnesses that to find a disease-free window is impossible. Some parents travel from distances to come for surgery, or undergo financial hardship by taking time away from work; others have relatives who travel from out of town. For these the nominal increase in perioperative risk may be balanced by personal hardship.

Follow this algorithm for children with URI's:

- Discuss with a pediatric anesthesia attending.
- If the attending and you feel the case should be canceled, call the surgery service to discuss the merits of canceling the case from our viewpoint; they may have compelling reasons to proceed. If so, notify the anesthesia attending of this decision.
- If not, cancel the case and explain why to the family. Facilitate rescheduling

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surgery if possible. If you are going to cancel, it makes no sense to reschedule surgery in less than 7-10 days.

If all agree to proceed, then on the day of the case the case will not be canceled unless there is a substantial change in the medical condition of the child on the day of surgery.

Common Coexisting Illnesses

1. History of prematurity: Formerly premature infants must remain overnight in the hospital on cardiorespiratory monitors if their post-conceptual age (the gestational age at birth plus the chronological age) is <50 weeks. These infants are ideal candidates for regional anesthesia (e.g. subarachnoid block or epidural block for surgery below the diaphragms, usually without additional sedatives/hypnotics/anesthetics because this technique diminishes the risk of postoperative apnea and desaturation associated with prematurity. This option must be discussed with the family.
2. Intellectual impairment: Children with severe developmental delay often have several coexisting diseases, most often seizure disorders, gastroesophageal reflux, and chronic lung disease; they must be premedicated and anesthetized as appropriate for these conditions.
3. Seizure disorders: Anticonvulsant levels should be documented on present dosing regimen in the past 6 months. Children receiving valproic acid (Depakote, Depakane) should have LFT's documented within 6 months. Anticonvulsants should not be withheld the day of surgery.
4. Trisomy 21: Children with Down Syndrome have macroglossia, a narrowed cricoid cartilage, and a greater frequency of postoperative airway obstruction/croup. A history of sleep apnea should be sought. Children with T21 are often resistant to sedative premedication.

There is also a risk of subluxation of the atlanto-occipital joint and subsequent spinal cord injury with neck flexion. Routine screening cervical spine radiographs in the asymptomatic child are not indicated. A history of symptoms (weakness or paresthesias of the upper extremities) should be sought; the child with symptoms (by history or physical examination) of cervical cord compression should be radiographically studied prior to elective surgery.

5. Cleft palate/lip: Contrary to expectation, these children have easy airways and require no special handling prior to or on induction.
6. Congenital Heart Defects: Define the nature of the defect preoperatively and determine all prior palliative and corrective surgery performed. Locate the results of the most recent ECG and echo's. Determine baseline oxygen saturations in room air as well as routine vital signs preop. Blood pressure should be measured in both arms. Children with complex lesions and/or repairs and all children with pacemakers should have an ECG to determine the cardiac rhythm. A routine CXR is not generally indicated.
7. Diabetes: All children with diabetes should be operated upon as first cases in the morning. Determine the insulin regimen of the child and the degree of outpatient control. For minor outpatient surgery half the total morning dose of insulin should be given s.c. as regular insulin after starting an IV on the morning of surgery. The IV should be a dextrose containing solution (typically D5-LR). Serum glucose should be monitored hourly thereafter and a sliding scale used to re-dose s.c.

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insulin. The usual afternoon dose should be given at the usual time providing the child is tolerating oral fluids.

Labile diabetics or those scheduled for major surgical procedures should be admitted the night before surgery in consultation with the endocrinology service. Check baseline serum glucose and start a continuous insulin infusion and a dextrose containing IV infusion, and adjust overnight to produce or maintain euglycemia.

8. Malignancies: Know the common complications and side effects of chemotherapeutic agents (adriamycin, bleomycin, vincristine, cisplatin, glucocorticosteroids). Determine recent blood counts, electrolytes, etc.

Preliminary evidence suggests that maintenance of epidural anesthesia for 24 hours preoperatively reduces the incidence of phantom pain after limb amputation. If you see a child prior to scheduled amputation please consult the Pain Service to see the child and evaluate the child for this therapy.

Routine Laboratory Testing:

Except as below, no routine lab testing should be performed. Tests should be specific for the patient's coexisting condition and planned surgery:

1. Infants <6 months: Hct
2. African-American or Mixed Race Ancestry: Determine the results of neonatal sickle cell screening. If unavailable, send a sickle cell screen.
3. T&A or adenoidectomy: Hct (can be performed during IV insertion at beginning of surgery)

Anesthetic Techniques to Discuss with Families

General anesthesia: Discuss in broad terms the process of premedication, inhalation induction, intravenous induction, rectal induction, airway management, etc., in such a way as not to limit the options of the care team on the day of surgery. Avoid answering questions such as "what anesthetic drugs will my child receive?" Rather, defer these to the anesthesia team doing the case.

Regional anesthesia: Most children having surgery can benefit from some form of regional blockade to augment the general anesthesia, rarely to replace general anesthesia. The advantages are (1) maintenance of a lighter plane of anesthesia, (2) more rapid arousal and return of reflexes, (3) excellent postoperative analgesia, (4) avoidance of opiate-related side effects. However, not all the anesthesia attendings are adept at regional anesthesia for children. Therefore, please discuss the option of regional blockade with all parents and children, but make it clear that the final decision regarding the feasibility and advisability of regional blockade will be left to the anesthesia team on the day of surgery.

Premedication

Unless we have plan to induce anesthesia with the parent present, most infants over 9 months and children will benefit from an oral premedication to ease the anxiety of separation from the parent. Don't be fooled by the Joe-Cool 7 year old in the preop clinic. It is the rare child who doesn't come unglued when it's time to leave Mom and Dad and take the long ride with the

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strangers. It is much better to err on the side of medicating too many children than to undermedicate even one who later has major anxiety on induction. Options for premedication are as follows (peak effect times):

Midazolam 0.5-0.75 mg/kg p.o. or p.r., maximum dose 20mg (30-45 minutes)
For p.o. mix with 10 mg/kg of acetaminophen elixir

Midazolam 0.25 mg/kg nasally (ouch) (10 minutes)

Triazolam (Halcion) 0.015 mg/kg sublingual (15 minutes)

Diazepam 0.1 mg/kg p.o. (30 minutes)

If you anticipate an IV induction please order EMLA cream to both hands. The parents may be given a tube and dressings and instructed how to apply it at home before coming in the day of surgery.

Note rectal barbiturates are not a premedication, but rather are an induction agent requiring the presence of an anesthesiologist or RN at the bedside.

What to Tell Families About Postoperative Pain Relief Plans for Inpatients

The options for postoperative analgesia should be introduced during the preoperative visit. Options include:

- PCA: appropriate for inpatients >6yr who have the ability to push the activator button (e.g. not appropriate for children with motor disability).
- Continuous IV opiate infusion: Appropriate for the patient unable to activate a PCA button because of intellectual or motor disability.
- Epidural analgesia: by either bolus opiate injection or continuous I.a. + opiate infusion. Typical duration of infusion is 24-72hr. This is available to all children with the appropriate indication regardless of size or age, and can be provided on a general nursing ward. Children over 6-8yr occasionally object to the resultant lower limb anesthesia and motor weakness. This issue should be discussed with the family and patient to avoid unnecessary anxiety.
- Surgeon managed analgesia: typically intermittent IM or IV injection of opiate.

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