Pediatric Otolaryngology

Ten Things Clinicians and Patients Should Question

by
Canadian Society of Otolaryngology–Head & Neck Surgery
Pediatric Otolaryngology Subspecialty Interest Group

Last updated: May 2024

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1 Don't routinely order a plain film x-ray in the evaluation of pediatric nasal fractures.

Nasal fractures are one of the most common facial fractures in the pediatric population. The decision to perform a closed reduction procedure in the operating room is based on factors such as breathing difficulty and external deformity, which are not assessed effectively by x-ray. Plain film x-rays are unable to accurately evaluate nasal fractures given its low sensitivity and specificity, at 72% and 73% respectively. Physical examination is often sufficient to make a diagnosis for children with displaced nasal fractures. Overall, x-rays do not add value to the diagnosis or treatment plan for children with nasal fractures and should not be ordered to avoid their associated costs and radiation exposure.

2 Don't order imaging to distinguish acute bacterial sinusitis from an upper respiratory infection.

Acute bacterial sinusitis (ABS) is a diagnosis that is made based on clinical criteria and has a low prevalence amongst children presenting with respiratory symptoms. Although a normal radiograph, CT, or MRI can help to rule out ABS, an abnormal result does not confirm the diagnosis. Given that many children will have abnormal imaging due to a viral upper respiratory infection during certain times of the year, combined with the potential for exposure to radiation, routine imaging is not recommended. Instances in which imaging would be warranted include if the child is immunocompromised, or if orbital, central nervous system, or other suppurative complications are present.

The American Academy of Pediatrics recommends diagnosing pediatric ABS when (1) cough, nasal discharge or both are persistent for >10 days without improvement; (2) there is worsening or new onset of cough, nasal discharge, or fever; or (3) there is a severe onset, with a fever greater ≥39°C, concurrently with purulent nasal discharge for at least 3 consecutive days.

3 Don't place tympanostomy tubes in most children for a single episode of uncomplicated otitis media with effusion of less than 3 months' duration.

Although tympanostomy tube insertion can be associated with short-term quality of life improvements, the natural history of otitis media with effusion (OME) is sufficiently favorable and most OME in children will spontaneously resolve within 3 months. Cases of OME which last longer than 3 months are typically chronic in nature, and less likely to resolve without intervention. Limited data exists regarding the efficacy of tympanostomy tube insertion in children with OME for less than 3 months. By delaying the consideration for tympanostomy tube insertion, potentially unnecessary procedures are avoided, along with the associated risks, tube related side effects, and costs. Children excluded from this recommendation include those who have risk factors for developmental difficulties such as trisomy 21, Autism-spectrum disorder, blindness, and permanent hearing loss independent of OME.

4 Don't routinely prescribe intranasal/systemic steroids, antihistamines or decongestants for children with uncomplicated otitis media with effusion.

In most cases, medical treatment using antihistamines, decongestants, systemic antibiotics and steroids have shown little to no effect on the long-term outcomes of uncomplicated otitis media with effusion (OME) in children. Because of this, and the costs and potential side effects, it is not recommended to prescribe these medical treatments for children with uncomplicated OME. The exception to this would be for children with coexisting conditions in which these medications are indicated for primary management.

5 Don't prescribe oral antibiotics for children with uncomplicated tympanostomy tube otorrhea or uncomplicated acute otitis externa.

The use of oral antibiotics where they are not necessary can promote antibiotic resistance and increase the risk of opportunistic infections. Topical antibiotics achieve higher concentrations in the ear canal, demonstrate improved patient satisfaction, are associated with fewer adverse events, and are shown to have equal efficacy for treatment of acute tympanostomy tube otorrhea (TTO) and acute otitis externa (AOE) when compared to oral antibiotics. For these reasons, topical antibiotics rather than oral antibiotics should be prescribed as first line treatment for acute uncomplicated TTO and uncomplicated AOE.

6 **Don't prescribe codeine for post-tonsillectomy/adenoidectomy pain relief in children.**
Codeine has been associated with a high rate of adverse drug reactions in children. This includes life-threatening respiratory depression. Appropriate dosing of codeine is challenging due to the genetic heterogeneity amongst patients for the CYP2D6 enzyme, which is responsible for codeine metabolism. Genetic screening of CYP2D6 is not routinely performed and can not reliably identify variations in codeine metabolism rates amongst patients. As such, children who are ultra-fast metabolizers of codeine are placed at increased risk of severe adverse drug reactions. Alternative analgesia should be used post-tonsillectomy/adenoidectomy.

7 **Don't administer perioperative antibiotics for elective tonsillectomy in children.**
Administration of perioperative antibiotics for children undergoing tonsillectomy shows no significant benefits in regard to common post-tonsillectomy morbidities. Overuse of systemic antibiotics increases bacterial resistance and the risk of adverse drug events unnecessarily. These concerns outweigh the reduction in postoperative fever which is the only potential benefit of perioperative antibiotic administration for elective tonsillectomy. Therefore, perioperative antibiotics are not indicated for children undergoing elective tonsillectomy, unless specific indications are present (e.g., cardiac conditions or those with a peritonsillar abscess or acute infection).

8 **Don't perform tonsillectomy for children with uncomplicated recurrent throat infections if there have been fewer than 7 episodes in the past year, 5 episodes in each of the past 2 years, or 3 episodes in each of the last 3 years.**
For children who have a lower number of recurrent throat infections, tonsillectomy has significantly less benefits when compared to those with more frequent infections, and many children with recurrent throat infections naturally improve without intervention. Therefore, where safely possible, avoidance of tonsillectomy for children with lower numbers of acute infections is recommended. This avoids unnecessary tonsillectomy and the costs and complications associated with the procedure (i.e., bleeding, pain, infection). If tonsillectomy is not indicated, children should be closely monitored and reconsidered for tonsillectomy if the infection frequency increases, as they would be less likely to naturally improve, and more likely to benefit from tonsillectomy. Families should be counselled on the limited benefits and potential harms of performing tonsillectomy for children and adolescents with low rates of recurrent throat infections. Shared decision making is of importance when considering tonsillectomy as individual patient and family factors can impact the decision.

9 **Don't perform endoscopic sinus surgery for uncomplicated pediatric chronic rhinosinusitis prior to failure of maximal medical therapy and adenoidectomy.**
While endoscopic sinus surgery (ESS) has been found to be an effective therapy in children with chronic rhinosinusitis, comparable outcomes can be achieved with medical therapy and adenoidectomy. A stepwise approach of medical therapy, progressing to adenoidectomy, then to ESS allows children to be treated with a less invasive and more cost-effective interventions as initial therapy, while saving ESS for those who are refractory to primary interventions. Maximal medical therapy should be exhausted prior to surgical intervention for uncomplicated patients. In cases with complications such as orbital or skull base involvement, ESS can be employed more readily.

10 **Don't include unnecessary or rarely used surgical instruments and supplies on surgical trays for routine otolaryngology procedures.**
Waste in procedures from reusable surgical instruments and disposable surgical supplies can be reduced through tray optimization. Tray optimization aims to only include surgical instruments and supplies that are necessary and remove instruments and supplies that are rarely or never used. At one hospital, optimizing tonsillectomy/adenotonsillectomy trays was projected to decrease annual waste by 1.48 tons and save $830 in waste disposal costs annually (Penn et al.). In a 2023 UK study, which looked at five of the most common surgeries, the three highest carbon footprint contributing products for tonsillectomy included the single-use instrument table drape, single-use suction tubing, and reusable tonsillectomy set container (Rizan et al.) Most studies in the Otolaryngology-Head and Neck surgery literature on surgical instrument tray optimization have focussed on tray size reduction, improved OR efficiency metrics, reduced OR and turnover time, reduced tray processing and rebuilding times, and cost reduction/savings. Carbon footprint savings can be extrapolated from these results although it may not be explicitly stated in the present studies.

How the list was created

This list was created by the Pediatric Otolaryngology Subspecialty Interest Group of the Canadian Society of Otolaryngology–Head & Neck Surgery. A list of 25 recommendations regarding unnecessary tests and interventions along with evidence supporting them were compiled. These unnecessary tests and interventions are often invasive and incur risk to patients and unwarranted costs to our public health care system. The members of the Subspecialty Interest Group were asked to provide feedback on the recommendations and to rate them regarding five factors: potential to affect clinical practice; cost-benefit ratio; evidence supporting recommendation; pervasiveness of test/intervention; and potential to cause harm. The final list was then selected and edited based on the group members ratings and feedback.

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