

PAEDIATRICS & CHILD HEALTH DIVISION – GENERAL PAEDIATRICS: TESTS, TREATMENTS AND PROCEDURES HEALTH PROFESSIONALS AND CONSUMERS SHOULD QUESTION.

The Paediatrics & Child Health Division represents 5,000 Fellows and trainees of The Royal Australasian College of Physicians (RACP). We aim to improve the health and wellbeing of neonates, infants, children and young people through education and training, research, and policy and advocacy.

1. Do not routinely prescribe oral antibiotics to children with fever without an identified bacterial infection.

The vast majority of children presenting with fever do not have a bacterial infection and therefore will not benefit from being prescribed oral antibiotics. For instance, one study of febrile infants found overall bacteraemia frequency of well below one per cent. Sometimes, in exception to this, oral antibiotics are prescribed to treat an unapparent bacterial infection or prevent development of severe bacterial infection and appear to have beneficial effects, though even the significance of these effects is disputed. Given that inappropriate prescribing of antibiotics is a major cause of antibiotic resistance and antibiotics have adverse effects, it is not considered good clinical practice to prescribe antibiotics in children without a specific bacterial infection.

Supporting Evidence

- Hahné SJM, Charlett A, Purcell B, et al. Effectiveness of antibiotics given before admission in reducing mortality from meningococcal disease: systematic review. *British Medical Journal*. 2006; 332(7553): 1299-1303.
- Rudinsky SL, Carstairs KL, Reardon JM, et al. Serious bacterial infections in febrile infants in the post-pneumococcal conjugate vaccine era. *Academic Emergency Medicine*. 2009; 16(7):585-90.

2. Do not routinely undertake chest radiography for the diagnosis of bronchiolitis in children or routinely prescribe salbutamol or systemic corticosteroids to treat bronchiolitis in children.

Chest radiography *Chest x-rays for patients with acute lower respiratory tract infections rarely affect clinical treatments and outcomes. Chest x-ray films do not discriminate well between bronchiolitis and other forms of lower respiratory tract infection and in mild cases do not offer information that is likely to affect treatment. It is estimated that 133 children with typical bronchiolitis would have to undergo radiography to identify one radiograph that is suggestive of an alternate diagnosis.*

Salbutamol *With the exception of improving clinical scores in infants treated as outpatients, the evidence overwhelmingly shows that bronchodilators, including salbutamol, do not improve oxygen saturation, reduce hospital admissions or shorten the duration of hospitalisation and time to resolution of illness in children with bronchiolitis. Compared with these minimal benefits, salbutamol is associated with adverse impacts such as tachycardia, oxygen desaturation and tremors. If a bronchodilator is required, epinephrine appears to be a superior alternative to salbutamol in reducing the severity of bronchiolitis.*

Steroids *The majority of randomised controlled trials have not found a clinically relevant, sustained impact of systemic or inhaled glucocorticoids on admissions or length of hospitalisation in children with bronchiolitis or other forms of lower respiratory tract infection.*

Supporting Evidence

- Beigelman A, King TS, Mauger D, et al. Do oral corticosteroids reduce the severity of acute lower respiratory tract illnesses in preschool children with recurrent wheezing? *Journal of Allergy and Clinical Immunology*. 2013; 131(6):1518-25.
- Bordley WC, Viswanathan M, King VJ, et al. Diagnosis and testing in bronchiolitis: a systematic review. *Archives of Pediatric Adolescent Medicine*. 2004; 158(2):119-26.
- Cao AY, Choy JP, Mohanakrishnan L, Bain RF, van Driel M. Chest radiographs for acute lower respiratory tract infections. *Cochrane Database of Systematic Reviews*. 2013; 12: CD009119.
- Fernandes RM, Bialy LM, Vandermeer B, et al. Glucocorticoids for acute viral bronchiolitis in infants and young children. *Cochrane Database of Systematic Reviews*. 2013; 6:CD004878.
- Gadomski AM, Scribani MB. Bronchodilators for bronchiolitis. *Cochrane Database of Systematic Reviews*. 2014; 6:CD001266.
- Hartling L, Fernandes RM, Bialy L, et al. Steroids and bronchodilators for acute bronchiolitis in the first two years of life: systematic review and meta-analysis. *British Medical Journal*. 2011; 342:d171.
- Modaressi MR, Asadian A, Faghihinia J, et al. Comparison of epinephrine to salbutamol in acute bronchiolitis. *Iranian Journal of Pediatrics*. 2012; 22(2):241-4.
- Schuh S, Lalani A, Allen U, et al. Evaluation of the utility of radiography in acute bronchiolitis. *Journal of Pediatrics*. 2007; 150(4):429-33.
- Yong JH, Schuh S, Rashidi R et al. A cost effectiveness analysis of omitting radiography in diagnosis of acute bronchiolitis. *Pediatric Pulmonology*. 2009; 44(2):122-7.

3. Do not routinely order chest radiography for the diagnosis of asthma in children

There is extensive evidence that the majority of x-rays ordered for children admitted for asthma and wheezing disorders do not provide clinically relevant information and therefore do not contribute to their diagnosis and management.

Clear clinical criteria outlining the indications for radiography in asthma should be defined to avoid unwarranted chest radiography in children with acute wheeze.

Supporting Evidence

- Hederos C-A, Janson S, Andersson H, Hedlin G. Chest x-ray investigation in newly discovered asthma. *Pediatric Allergy and Immunology*. 2004; 15(2): 163–165.
- Muthukrishnan L, Raman R. Analysis of clinical & radiological findings in children with acute wheeze. *Pulmonary and Respiratory Research*. 2013; 1:1 <http://dx.doi.org/10.7243/2053-6739-1-1>.
- Narayanan S, Magruder T, Walley SC, et al. Relevance of chest radiography in pediatric inpatients with asthma. *Journal of Asthma*. 2014; 51(7):751-5.

4. Do not routinely treat gastroesophageal reflux disease (GORD) in infants with acid suppression therapy

Gastroesophageal reflux is common in preterm infants, infants and children and uncomplicated gastroesophageal reflux typically does not require medical therapy. However, gastroesophageal reflux may evolve into gastroesophageal reflux disease (GORD), a condition where the persistent leaking of stomach contents back into the oesophagus results in heartburn and other troublesome symptoms. Proton pump inhibitors (PPI) are sometimes prescribed in cases of GORD to achieve a pronounced and long-lasting reduction of gastric acid production.

However, numerous randomised controlled trials have concluded that PPIs are no more effective than placebo in treating GORD in infants, though there is some evidence (of moderate quality) of their effectiveness in treating GORD in older children. Moreover, there is still a paucity of trials confirming the long term safety of PPI use in children more generally while there is considerable evidence that PPIs have significant negative side effects such as headache, diarrhoea, constipation, nausea, increased rates of infection and increased rates of food allergy.

Supporting evidence

- Davidson G, Wenzl TG, Thomson M, et al. Efficacy and Safety of Once-Daily Esomeprazole for the Treatment of Gastroesophageal Reflux Disease in Neonatal Patients. *Journal of Pediatrics*. 2013; 163(3):692-8.
- Tighe M, Afzal NA, Bevan A, et al. Pharmacological treatment of children with gastro-oesophageal reflux. *Cochrane Database of Systematic Reviews*. 2014; 11:CD008550.
- van der Pol RJ, Smits MJ, van Wijk MP, et al. Efficacy of proton-pump inhibitors in children with gastroesophageal reflux disease: a systematic review. *Pediatrics* 2011; 127(5):925-35.

5. Do not routinely order abdominal radiography for the diagnosis of non-specific abdominal pain in children.

Retrospective studies of medical records of children and adults admitted for constipation and other forms of non-specific abdominal pain conclude that in only a very small minority (under five per cent) of cases do abdominal x-rays make a difference in patient treatment. A recent study also showed that abdominal x-rays were performed more frequently in misdiagnosed children. Numerous studies yield significantly varying estimates of the sensitivity and specificity of abdominal x-rays and insufficient evidence of a diagnostic association between symptoms of constipation and faecal loading seen on abdominal radiographs. There is significant scope for reducing the number of abdominal x-rays performed without sacrificing diagnostic accuracy for children with abdominal pain.

Supporting evidence

- Berger MY, Tabbers MM, Kurver MJ, et al. Value of abdominal radiography, colonic transit time, and rectal ultrasound scanning in the diagnosis of idiopathic constipation in children: a systematic review. *Journal of Pediatrics*. 2012; 161(1):44-50.
- Freedman SB, Thull-Freedman J, Manson D, et al. Pediatric abdominal radiograph use, constipation, and significant misdiagnoses. *Journal of Pediatrics*. 2014; 164(1):83-88.
- Kellow Z, MacInnes M, Kurzenewyg D, et al. The Role of Abdominal Radiography in the Evaluation of the Nontrauma Emergency Patient. *Radiology*. 2008; 248(3):887-93.
- Rothrock SG, Green SM, Harding M, et al. Plain abdominal radiography in the detection of acute medical and surgical disease in children: a retrospective analysis. *Pediatric Emergency Care*. 1991; 7(5):281-5.

How was this list created?

The Paediatrics & Child Health Division (PCHD) formed a group of interested Fellows to comprise a General Paediatrics EVOLVE Working Group. A review of low-value practices relevant to general paediatrics was conducted drawing on lists published by Choosing Wisely US and Canada, contributions to Choosing Wisely Australia by other medical colleges and published EVOLVE lists developed by other specialities in order to identify low-value practices of relevance while avoiding duplicating the mention of practices already identified in other EVOLVE lists.

Based on this review the Working Group shortlisted 15 items for further consideration. These 15 items were then reviewed and discussed by participants at a workshop held at the RACP Annual Congress 2016. Following these deliberations, the list was further narrowed down to 10 items.

These 10 items were incorporated into an online survey which also summarised the recent evidence on each of these items. A link to the survey was distributed to all Fellows and advanced trainees of the RACP Paediatrics & Child Health Division. Survey respondents were asked whether they agreed, disagreed or were unsure about whether each item was undertaken in a significant number of paediatric patients, whether there was good evidence that the item should be undertaken less often and whether reducing use of that item was important in terms of reducing harm and/or costs to the healthcare system. Each item was assigned a score based on respondents' answers to these three questions on each item. There were 269 respondents representing a survey response rate of approximately 22 per cent. The five highest scoring items were selected to be on this 'top 5' list.



Disclaimer:

All reasonable care has been taken during the process of developing these recommendations. The health information content provided in this document has been developed by the members of the Paediatrics & Child Health Division of the RACP. The health information presented is based on current medical knowledge and practice as at the date of publication.