



Investigating respiratory illness in children

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The limits to this presentation



Child admitted to hospital

Is there a lower respiratory illness caused by an infection?

Investigating respiratory illness in children is tricky because



Investigating respiratory illness in children is tricky because

- In young children respiratory illness does not necessarily have a respiratory presentation
- Our approach to investigation is incomplete
- Clinical syndromes overlap
- Pathogens hunt together



In young children respiratory illness does not necessarily have a respiratory presentation

- Infants < 1 year old with influenza
 - Non-respiratory symptoms are the dominant presentation in 30%
- Infants < 3 months old with influenza
 - Fever (48%) is the most common admission
 diagnosis followed by respiratory symptoms (29%)

Ploin D, et al *Pediatr Infect Dis J* 2007;26:142-7. Bender JM, et al. *Pediatr Infect Dis J* 2010;29:6-9

- Investigating respiratory illness in children is complicated by
 - the low yield of blood cultures
 - the difficulty in obtaining adequate sputum specimens
 - the reluctance to perform lung aspiration and broncho-alveolar lavage in children

- The low yield of blood cultures
 - Streptococcus pneumoniae cultured in blood of <5% of children with community acquired pneumococcal pneumonia
 - PCR of blood increased yield 4-fold
- The difficulty in obtaining adequate sputum specimens
- The reluctance to perform lung aspiration and broncho-alveolar lavage in children

Korppi M et al *Eur J Clin Micro Infect Dis* 2008;27:167-75 Resti M et al. *Clin Infect Dis* 2010;51:1042-9.

- The low yield of blood cultures
- The difficulty in obtaining adequate sputum specimens
 - Most young *children* swallow *sputum* rather than spit it out
 - Hence we reply on nasopharyngeal aspirates
 - PCR increases sensitivity
 - Bacterial growth does not indicate bacterial LRTI
 - Except possibly *Mycoplasma pneumoniae*
 - If a virus is isolated it may not be the only cause of the lower respiratory tract infection
 - Bacterial co-infection in up to one-third with pneumonia
- The reluctance to perform lung aspiration and broncho-alveolar lavage in children

Korppi M, et al. *Scand J Infect Dis* 1992;24:445-51 Cevey-Macherel M et al. *Eur J Pediatr* 2009;168:1429-36.

You can't learn everything you need to know from snot









- Investigating respiratory illness in children is complicated by
 - the low yield of blood cultures
 - the difficulty in obtaining adequate sputum specimens
 - The reluctance to perform lung aspiration and broncho-alveolar lavage in children
 - Lung aspirates are rarely performed,
 - The technique is safer than widely perceived
 - Can provide a bacterial diagnosis in > 50% of cases

Vuori-Holopainen E, et al. Clin Infect Dis 2001;32:715-26

Clinical syndromes overlap





Can a chest radiograph differentiate pneumonia from bronchiolitis?



Can a chest radiograph differentiate pneumonia from bronchiolitis?



Chest radiography is too insensitive to reliably determine clinical syndrome or viral versus bacterial aetiology

Harris M et al. Thorax 2011;66 Suppl 2:ii1-23



- Pleural fluid
 - Yield from culture (9%) often low but three-fold higher with PCR (68%)

Fluid in the pleural cavity



- Paired serology
 - Respiratory viruses, mycoplasma & chlamydia
 - Good luck collecting it



- Urinary antigen testing
 - Minimally helpful (can exclude pneumococcal infection)

Eastham KM, et al. *Thorax* 2004;59:522-5.

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