GUIDELINE REVIEW

COMPARISON OF TWO OTITIS MEDIA GUIDELINES

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Acute otitis media is common in children, with approximately 1 in 4 having an episode in the first 10 years of life. It is particularly common in young children. In the USA infants average 1.2 and 1.1 episodes of acute otitis media in the first and second year of life, respectively, and it is the most common infection for which antibiotics are prescribed. Antibiotic use is currently less common in the UK.

Two clinical guidelines have recently been published, one from the Scottish Intercollegiate Guidelines Network (SIGN),[1] and the other from the American Academy of Pediatrics (AAP) and American Academy of Family Physicians.[2] Both were developed largely using current best practice, in the context of different health care systems. This review compares and contrasts their recommendations (tables 1 and 2). Both cover the diagnosis and treatment in primary care of uncomplicated acute otitis media in otherwise healthy children without facial or genetic abnormalities.

COMMENTARY

There is strong agreement between the two guidelines where both provide recommendations, despite the different health care systems. They largely agree on the antibiotics to be used, the option of delayed antibiotic treatment, and on the diagnostic features of acute otitis media.

The grading systems differ (appendices 1 and 2), which makes direct comparisons of the perceived strength of evidence difficult. The supporting discussion includes details of the research evidence, although individual studies are not assigned an explicit level of evidence in the AAP guideline.

The SIGN guideline makes a stronger statement against the use of antibiotics; it does not qualify its recommendation in children under 2 years of age despite acknowledging the lack of good evidence in these children. The AAP guideline qualifies its statement on whether to use antibiotics (table 3).

The AAP guideline recommends a 10 day course of antibiotics except in older children with mild to moderate illness (in whom observation is the recommended option); it does not refer to the relevant Cochrane review,[3] which recommends a five day course in uncomplicated ear infections. The SIGN guideline acknowledges that the optimum duration of antibiotics in young children or those with severe illness has yet to be established.

In summary, both guidelines recommend against routine antibiotic use in healthy children presenting with acute otitis media in primary care. However, in the USA, children with otitis media are more likely to receive antibiotics, as a 10 day course, based on the recommendations in their guidelines. There are many aspects of this common condition that still need further research, particularly in younger children.

Table 1 Key points of the two guidelines: diagnosis

Scottish Intercollegiate Guideline Network	American Academy of Pediatrics
Diagnostic features: ▶ Earache, fever, and irritability ▶ Middle ear effusion ▶ Opaque drum ▶ Bulging drum ▶ Impaired drum mobility ▶ Hearing loss Ear related symptoms may include earache, tugging or rubbing of the ear, irritability, restless sleep and fever Otoscopic appearances include bulging tympanic membrane with loss of normal landmarks, change in colour (typically red or yellow), and poor mobility	Recommendation: The clinician should confirm a history of acute onset, identify signs of middle ear effusion: ▶ Bulging of the tympanic membrane ▶ Limited or absent mobility of the tympanic membrane ▶ Air-fluid level behind the tympanic membrane ▶ Otorrhea and evaluate for the presence of signs and symptoms of middle ear inflammation: ▶ Distinct erythema of the tympanic membrane or ▶ Distinct otalgia (discomfort clearly referable to the ear(s) that results in interference with or precludes normal activity or sleep)

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Table 2 Key points of the two guidelines: management

Scottish Intercollegiate Guideline Network	American Academy of Pediatrics
Parents should give paracetamol for analgesia but should be advised of the potential danger of overuse [grade D]	The management should include an assessment of pain If pain is present, the clinician should recommend treatment to reduce pain. Strong recommendation based on randomised, clinical trials with limitations and a preponderance of benefit over risk A table indicates that acetaminophen (paracetamol), ibuprofen are the mainstay of pain management
Insertion of oils should not be prescribed for reducing pain in children with acute otitis media [grade B]	Oil may have limited effectiveness
Children with acute otitis media should not be prescribed decongestants or antihistamines [grade A]	
Children diagnosed with acute otitis media should not routinely be prescribed antibiotics as the initial treatment [grade B]	Observation without use of antibacterial agents in a child with uncomplicated acute otitis media is an option for selected children based on diagnostic certainty, age, illness severity, and assurance of follow up. Option based on randomised, controlled trials with limitations and a relative balance of benefit over risk
Broad spectrum antibiotics such as amoxicillin, or amoxicillin with clavulanic acid, are the drugs of choice if an antibiotic is to be used	If a decision is made to treat with an antibacterial agent, the clinician should prescribe amoxicillin for most children. Recommendation
If an antibiotic is to be prescribed, the conventional five day course is recommended [grade B]. The optimum duration of treatment for infants and very young children, and for children with severe acute otitis media, has yet to be established	For younger children and for children with severe disease, a standard 10 day course is recommended. For children 6 years of age or older with mild to moderate disease, a 5–7 day course is appropriate
Delayed antibiotic treatment (antibiotic to be collected at parents' discretion after 72 hours if the child has not improved) is an alternative approach which can be applied in general practice [grade B]	If the patient fails to respond to the initial management option within 48–72 hours, the clinician must reassess the patient to confirm acute otitis media and exclude other causes of illness. If acute otitis media is confirmed in the patient initially managed with observation, the clinician should begin antibacterial treatment. If the patient was managed with an antibacterial agent, the clinician should change the antibacterial agent
No recommendation can be made regarding the use of homeopathy in the treatment of acute otitis media	No recommendations for complementary and alternative medicine for treatment of acute otitis media are made based on limited and controversial data

Table 3 AAP guideline on use of antibiotics

Age	Certain diagnosis	Uncertain diagnosis
<6 months	Antibacterial treatment	Antibacterial treatment
6 months to 2 years	Antibacterial treatment	Antibacterial treatment if severe illness; observation option if non-severe illness
⩾2 years	Antibacterial treatment if severe illness; observation option if non-severe illness	Observation option

- Non-severe illness is mild otalgia and fever <39°C in the past 24 hours
- Severe illness is moderate to severe otalgia or fever ⩾39°C
- A certain diagnosis meets all three criteria: (1) rapid onset, (2) signs of middle ear effusion, and (3) signs and symptoms of middle ear inflammation

Appendix 1 US guideline

Statement	Definition	Implication
▶ Strong recommendation	Anticipated benefits of the recommended intervention clearly exceed the harms (or vice versa if the recommendation is against an intervention) and the quality of the supporting evidence is excellent. In some clearly identified circumstances, when high quality evidence is impossible to obtain and the anticipated benefits strongly outweigh the harms	Clinicians should follow a strong recommendation unless a clear and compelling rationale for an alternative approach is present
▶ Recommendation	The anticipated benefits exceed the harms, but the quality of evidence is not as strong. In some clearly identified circumstances, when high quality evidence is impossible to obtain but the anticipated benefits outweigh the harms	Clinicians would be prudent to follow a recommendation but should remain alert to new information and sensitive to patient preferences
▶ Option	Courses that may be taken when either the quality of the evidence is suspect or carefully performed studies have shown little clear advantage to one approach over another	Clinicians should consider the option in their decision making, and patient preference may play a substantial role
▶ No recommendation	A lack of pertinent published evidence and the anticipated balance of benefits and harms is unclear	Clinicians should be alert to new published evidence that clarifies the balance of benefit versus harm

Appendix 2 Recommendation grades and levels of evidence in Scottish guidelines

Grades of recommendation	
A	At least one high quality meta analysis, systematic review of RCTs, or RCT with a very low risk of bias, and directly applicable to the target population; or A body of evidence consisting principally of well conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias, directly applicable to the target population, and demonstrating overall consistency of results.
B	A body of evidence including high quality systematic reviews of case–control or cohort studies, or high quality case–control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal, directly applicable to the target population and demonstrating overall consistency of results; or Extrapolated evidence from high quality or well conducted meta analyses, systematic reviews of RCTs, or RCTs with a low or very low risk of bias
C	A body of evidence including well conducted case–control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal, directly applicable to the target population and demonstrating overall consistency of results; or Extrapolated evidence from high quality systematic reviews of case–control or cohort or studies or high quality case–control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal.
D	Non-analytic studies—for example, case reports, case series, or expert opinion; or Extrapolated evidence from well conducted case–control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal.

RCT, randomised controlled trial.

REFERENCES

1 **Scottish Intercollegiate Guidelines Network**. *Diagnosis and management of childhood otitis media in primary care*. Royal College of Physicians of Edinburgh. SIGN 66, 2003.

2 **American Academy of Pediatrics, American Academy of Family Physicians**. Diagnosis and management of acute otitis media. *Pediatrics* 2004;**113**:1451–65.

3 **Kozyrskyj AL**, Hildes-Ripstein GE, Longstaffe SEA, *et al*. Short course antibiotics for acute otitis media (Cochrane Review). In: *The Cochrane Library*, Issue 2. Oxford: Update Software, 2002.

ARCHIVIST

Some risk factors for asthma

Since infants and young children spend much of their time in the home and the factors that lead to asthma probably act in early life, the home environment is an obvious place to look for such factors. The authors of recent papers from Australia have concentrated on volatile organic compounds (VOCs) and household heaters.

Household sources of VOCs include solvents, floor adhesive, paint, cleaners, furnishings, polishes, and room fresheners. Exposure has previously been related to asthma and asthmatic symptoms. In Perth (K Rumchev and colleagues *Thorax* 2004;**59**:746–51) a case-control study included 88 cases (children aged 6 months to 3 years who attended the emergency department with asthma) and 104 population controls in the same age group but without asthma. Health status and home environment characteristics were assessed by standardised questionnaire and the concentration of VOCs in air was measured in the home living room soon after the emergency room visit (in winter) and approximately 6 months later (in summer). Controls were monitored at the same times. Measurements were obtained for benzene, toluene, *m*-xylene, *o,p*-xylene, ethylbenzene, styrene, chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1, 4-dichlorobenzene, and total VOCs. Almost all homes contained benzene, toluene, and xylene and VOC concentrations were significantly higher after recent inside painting. Total VOC concentrations were significantly higher in cases than in controls (median total VOCs 78.5 $\mu g/m^3$ *v* 36.2 $\mu g/m^3$). After controlling for potential confounding factors a high living room VOC concentration (above the median) was associated with a fourfold increase in risk of asthma and high exposure to benzene with an eightfold increase. Benzene, ethylbenzene, and toluene were the particular VOCs associated with greatest risk. VOC concentrations were significantly related to recent painting, new carpets, new furniture, and smoking indoors.

The combustion products of unvented heaters and cookers include nitrogen dioxide, sulphur dioxide, carbon monoxide, and water vapour, and gas stoves have been associated with an increase in respiratory symptoms in children. In New South Wales (*Thorax* 2004; **59**:741–5) schoolchildren aged 8–11 years were studied by parent completed questionnaire, skin prick testing, and histamine challenge testing. Exposure to fume emitting heaters during the first year of life, but not currently, was associated with increased risk of airway hyperresponsiveness (AHR), recent wheeze, and recent wheeze plus AHR, but not with atopy or doctor diagnosed asthma. The risk of AHR was increased by 47%, of recent wheeze by 44%, and of recent wheeze plus AHR by 108%. The most common types of fume emitting heaters were non-flued gas heaters and wood stoves.

Exposures at home of young children to VOCs and of infants to fume emitting heaters both increase the risk of childhood asthma.