Acute otitis media: From diagnosis to prevention. Summary of the Italian guideline

Paola Marchisio a,1,∗, Luisa Bellussi b,1, Giuseppe Di Mauro c,1, Mattia Doria d,1, Giovanni Felisati e,1, Riccardo Longhi f,1, Andrea Novelli g,1, Annamaria Speciale h,1, Nicola Mansi i,1, Nicola Principi a,1

a Department of Maternal and Pediatric Sciences, University of Milan and Foundation, IRCCS Cà Granda Ospedale Maggiore Policlinico, Italy
b Italian Society of Pediatric Otolaryngology, Siena, Italy
c Italian Society for Preventive and Social Pediatrics, Caserta, Italy
d Primary Care Pediatrician, Venice, Italy
e Department of Otolaryngology, University of Milan, Italy
f Italian Society of Pediatrics, Como, Italy
g Department of Pharmacology, University of Florence, Italy
h Department of Microbiology, University of Catania, Italy
i Italian Society of Pediatric Otolaryngology, Naples, Italy

ARTICLE INFO

Article history:
Received 6 July 2010
Received in revised form 17 August 2010
Accepted 18 August 2010
Available online 16 September 2010

Key words:
Acute otitis media
Otitis media
Antibiotic treatment
Watchful waiting
Vaccines
Prevention

ABSTRACT

Acute otitis media (AOM) is the most common disease occurring in infants and children and has major medical, social and economic effects. If we consider the Italian pediatric population and the incidence rates in different age ranges it can be calculated that almost one million cases of AOM are diagnosed in Italy every year. Various attempts have been made internationally to clarify the most appropriate ways in which AOM should be managed. In Italy, this has been done at local or regional level but there have so far been no national initiatives. The objective of this guideline is to provide recommendations to pediatricians, general practitioners and otolaryngologists involved in the clinical management of acute otitis media in healthy children aged 2 months to 12 years. After a systematic review and grading of evidences from the literature, the document was drafted by a multidisciplinary panel with identified key clinical questions related to diagnosis, treatment of the acute episode, management of complications and prevention.

© 2010 Elsevier Ireland Ltd. All rights reserved.

Contents

1. Introduction ............................................................ 1210
   1.1. Reasons for an Italian guideline ....................................... 1210
   1.2. Objective of the guideline ............................................. 1210
   1.3. Development and implementation of the guideline ............... 1210
2. Diagnosis ............................................................ 1211
   2.1. Certain diagnosis .................................................... 1211
   2.2. Diagnostic instruments .............................................. 1211
   2.3. Ear wax removal .................................................... 1211
3. Treatment ............................................................ 1212
   3.1. Earache .......................................................... 1212
   3.2. Selection of patients to be immediately treated with antibiotics ....................... 1212
   3.3. Choice of antimicrobial drug ...................................... 1212

∗ Corresponding author. Tel.: +39 0255032690.
E-mail address: paola.marchisio@unimi.it (P. Marchisio).
1 On behalf of the Italian AOM Guideline Multidisciplinary Working Group. See Appendix A.
1. Introduction

Acute otitis media (AOM) is the most common bacterial disease occurring in infants and children: almost all children experience at least one episode, and about one-third experience two or more episodes in their first 3 years of life [1,2]. The European data, which also include a sample of Italian subjects, indicate that the annual incidence of AOM in children is 268 episodes per 1000 children [3]. If we consider the Italian pediatric population and the incidence rates in different age ranges, it can be calculated that almost one million cases of AOM are diagnosed in Italy every year.

The disease has major medical, social and economic effects [4]. It always requires considerable clinical and financial implications as it involves at least one examination by a doctor, and the prescription of antibiotic(s) and, depending on the country, vaccines that have undeniable preventive efficacy. However, acceptance of these variations by healthcare workers has been slower, and this means that there is a need to translate the newly acquired knowledge into precise and scientifically correct recommendations that combine the latest findings with what should be preserved from the past.

1.1. Reasons for an Italian guideline

Various attempts have been made nationally and internationally to clarify the most appropriate ways in which AOM should be managed (see Appendix B). Large differences exist with respect to diagnostic criteria and diagnostic methods used (e.g. pneumatic otoscopy, tympanometry and otoscopy). In most guidelines antibiotic are indicated for children with AOM below the age of 2 months, whereas others recommend to prescribe antibiotics according to the presence of effusion, fever, duration of complaints and comorbidity. In most guidelines amoxicillin is the first choice [9,10]. No international consensus exist. In Italy, the problem of the management of AOM has been faced at local or regional level with a large variety of recommendations, without an official endorsement by any Scientific society. There was on overall consensus of pediatricians that the 2004 AAP and AAFP Clinical Practice guideline [11] could be somewhat applicable for Italian patients, but this attitude was not shared by otolaryngologists. In addition, the 2004 AAP guideline has not been updated and, in meanwhile, new data literature has become available. Finally, peculiarities of microbiological data exclude the immediate transfer of other European guidelines to the Italian reality. The gap was filled by the Italian Society of Pediatrics, driven by the Italian Preventive Pediatrics Society and the Italian Society of Pediatric Otolaryngology, which coordinated the preparation of the Italian National Multidisciplinary guideline. The participation of both pediatricians and otolaryngologists in the same project would not have been possible until a few years ago, but it was agreed that this strategy was indispensable, as AOM is encountered by both types of specialists, and their use of different diagnostic and therapeutic approaches may cause confusion and prevent the adoption of a common clinical language, thus hampering an optimal multidisciplinary approach. The synthesis of the guideline is here reported. It includes the most relevant recommendations (highlighted by quotation marks) for the management of AOM, and brief comments concentrating on differences with international guidelines. The entire document, in Italian, and full references, is accessible at the websites of the Italian Society of Pediatric Otolaryngology (www.siop.it) and of the Italian Society of Pediatrics (www.sip.it).

1.2. Objective of the guideline

The Italian guideline examines only the management of AOM in children, whereas the management of recurrent acute otitis media, otitis media with effusion or chronic suppurative otitis media are intentionally excluded [12]. The guideline deals only with children aged 2 months to 12 years, excluding subjects with acquired or congenital immunodepression, spontaneous chronic perforation of the eardrum or tube, an underlying chronic disease favouring nasopharyngeal colonisation by unusual pathogens (e.g. cystic fibrosis), or cranio-facial malformations. The neonatal period (extended to the first 2 months of life) is also excluded because the disease is rare during this period, its etiology is somewhat different from that commonly observed in children, and there are few published studies.

1.3. Development and implementation of the guideline

This document was created in accordance with the recommendations made in the Manual for Writing Clinical Practice Guidelines of the Programma Nazionale Linee Guida (PNLG: the Italian National Guideline Programme) [13]. The above mentioned Scientific Societies convened a multidisciplinary group of experts from all pertinent areas (including representatives of laypeople and consumers), which identified key clinical questions related to (a) diagnosis, (b) treatment, (c) complications and (d) prevention of AOM, concentrating on those about which there was the greatest uncertainty. The literature search included systematic reviews and protocols, either developed by the Cochrane collaboration or not, existing guidelines and other documents providing evidences of...
the effectiveness of treatment, randomised controlled trials and other types of primary studies on clinical issues not covered in the systematic reviews. The working group decided to consider the 2004 Guideline of the American Academy of Pediatrics (AAP) an optimal model and starting point. The search covered the period January 2003 to October 2009, with no language restrictions. Of the approximately 700 references initially identified and shared in a protected web site, data were extracted and summarised for 285 studies. The published evidence was then reviewed and assessed using the grading system adopted by the PNLG (see Tables 1 and 2). In case of conflict between the assessment of the two subspecialists (pediatricians versus otolaryngologists), it was decided to emphasize the differences, and make them live together instead of having one position dominating the other one. The draft document was discussed with external reviewers, including representatives of professional association and then finalised. The document was developed from June 2009 to February 2010. Dissemination implied multiple techniques, including mailing, publications, symposia, educational courses, internet and opinion leaders involvement. The impact on practice will be evaluated at country level assessing the trend in the incidence of AOM, in variations of antibiotic use and of inappropriate hospital admissions.

2. Diagnosis

2.1. Certain diagnosis

The panel stated that a correct diagnosis of AOM is essential in order to avoid useless, unjustified, costly and potentially harmful therapeutic procedures. Experts agreed that all the efforts of the practitioners, either pediatricians or otolaryngologists, should be devoted to a certain diagnosis of AOM. The recommendation was: “The diagnosis of AOM is certain only when the following can be simultaneously demonstrated: (1) acute, recent onset of symptoms; (2) signs of inflammation in the tympanic membrane; (3) the presence of middle ear effusion [II/A]”. In addition, the guideline reminded that the demonstration of tympanic membrane inflammation and middle ear effusion should be based on: (a) otoscopic findings of marked erythema of the tympanic membrane, with bulging and absence mobility due to the presence of middle ear effusion or (b) otoscopic finding of a yellowish membrane by observing in transparency the presence of purulent material in the middle ear or (c) the presence of spontaneous perforation with otorhoea. Bulging was the clinical sign considered optimal for detecting middle ear effusion as, alone, has the closest correlation with bacterial AOM confirmed by tympanocentesis [11,14]. Redness alone of the tympanic membrane was considered insufficient for diagnosis.

2.2. Diagnostic instruments

The panel decided that “the use of a pneumatic otoscope was the most simple and efficient means of supporting a diagnosis of AOM [II/B]”. It also made clear that “the otoscopic examination should lead to the identification and description of all of the features of the tympanic membrane on both sides [II/B]” and thus the pediatrician should always detail otoscopic findings in child’s records [15]. In uncertain cases, and in the absence of a pneumatic otoscope, pediatricians are allowed to use a static otoscope in combination with a tympanometer or reflectometer. In alternative, the pediatrician should refer the patient to an ENT who can use otomicroscopy and/or otoendoscopy in addition to the previously mentioned instruments [II/A].

Pneumatic otoscope is indicated as the optimal instrument by several guidelines (Canada, England, Finland, France, Germany, Israel, Scotland, Sweden, USA) but so far it has been not been largely used in Italy [16]. However the multidisciplinary panel, having in mind the certain diagnosis, thought that the instrument, beyond the pneumatic phase, was the best aid in diagnosing AOM. The guideline highlighted the importance of often underestimated characteristics of an optimal otoscope such as an appropriate light source (with batteries that should be periodically replaced) and equipment with non-coloured speculum of different sizes in order to avoid light dispersion and allow the speculum to be selected on the basis of the size of the auditory canal [17].

2.3. Ear wax removal

In contrast to the majority of guidelines, which neglect the importance of earwax, the panel decided to emphasize that “the external canal has to be completely free and the tympanic membrane fully visible”. In order to overcome possible conflicts between specialists and, at the same time, to value the different capabilities, the experts recommended that “Ear wax should be removed by the pediatrician or an otolaryngologist depending on the methodological difficulties and peculiarities of local settings; any other obstructions of...
the external auditory canal should only be removed by an otolaryngologist [I/A]."

However, no particular method was suggested, as no system of ear eav removal (irrigation, eardrops or manual removal) has yet been shown to be superior to others [18,19].

3. Treatment

3.1. Earache

The panel accorded that the first aim of treatment is to limit symptoms, of which pain is the most clinically relevant [11]. The recommendations were: “The main treatment of earache is the systemic administration of appropriate doses of analgesics (paracetamol or ibuprofen) [I/A]; the use of topical analgesic formulations as the only means of treating pain is not advised. Local anesthetics should be systematically used in association with systemic analgesic therapy only in children aged more than three years of age and only in the documented absence of perforation [I/A]." It was suggested that if the earache is associated with fever, oral paracetamol or ibuprofen is sufficient to relieve pain at doses that control the fever. Considered the limited evidence of efficacy, a statement was added against the use of natural extracts.

3.2. Selection of patients to be immediately treated with antibiotics

The panel agreed that the fact that a very high number of cases of AOM resolve spontaneously advises against the universal antibiotic treatment of all children affected by AOM. Moreover, the panel has considered that several studies have demonstrated that watchful waiting has been shown to be able to reduce the need for antibiotic prescription, thus reducing medical and treatment costs, limiting side effects secondary to treatment, and reducing selective pressure on the saprophitic flora, thus lowering the risk of the emergence of new drug-resistant strains [20–22]. On the other hand, contrasting data indicate that immediate treatment can have a significant beneficial effect in terms of pain duration and intensity, analgesic doses and medical visits, even taking into account the increased risk of side effects related to antibiotic administration. Based on systematic reviews [23,24] which agree that immediate antibiotic treatment is advantageous in the short term in patients with certain AOM aged less than 2 years, in those with a bilateral episode, and in those with spontaneous otorrhea, the recommendation was “Antibiotic treatment should be prescribed immediately for severe cases of AOM, in children aged less than two years with bilateral AOM, and in the case of spontaneous perforation. In all other cases, and in agreement with the parents, it is possible to wait watchfully and prescribe antibiotic treatment only if the episode worsens or does not improve within 48–72 hours [I/A]” (Table 3). The statement differs from the 2004 AAP and AAFP clinical practice guideline as it includes and emphasized the assessment of the type of score to be used to grade the severity of the episode. The data validating the watchful waiting approach have come from children suffering mild episodes. However, it is known that the episodes associated with a high fever and substantial earache most frequently have a negative outcome, the panel thought to be sufficient the presence of these symptoms to consider severe a certain AOM.

A special attention was given to the fact that the successful and riskless application of watchful waiting requires the active participation of parents/caregivers, who need to be adequately informed concerning the potential risks and benefits of treatment and the management of disease outcome. It was emphasized that parents/caregivers have to be made to feel part of the decision-making process and patient control during the disease, be able to communicate promptly with a physician and, if necessary, have access to a clinical examination.

3.3. Choice of antimicrobial drug

The panel stated that the choice of the optimal drug for the treatment of AOM should be primarily based on microbiological considerations: i.e. an analysis of the most frequent causative bacterial pathogens and their susceptibility to the most widely used drugs. The ideal situation, the one in which it is possible to identify the otopathogens responsible for the infection and the antibiotic treatment is based on susceptibility results, rarely happens in clinical practice: when the eardrum is ruptured and it is possible to collect middle ear effusion within 12–24 h, or when tympanocentesis is possible. The panel recognized that the antibiotic treatment of AOM is mainly empirical, and based on a knowledge of the most common bacterial pathogens in a given geographical area and their antibiotic susceptibility. Streptococcus pneumoniae (S. p.), nontypable Haemophilus influenzae (NTHI), Moraxella catarrhalis (M. c.) and Streptococcus pyogenes (S. pys.) are the most common causes of AOM in almost any geographical area and age range [29]. Italy has specific microbiobioc characteristics which influence the choice of the antibiotic: (a) resistance to S. p. penicillin is still limited to 20%, with only half of the resistant strains having MIC values of more than 4 mcg/mL, whereas there is 30% to 50% resistance to macrolides and azalides, (b) NTHI is characterised by 20–40% aminopenicillin resistance due to the production of β-lactamases, (c) M. c. is quite rare in Italian children but penicillin and aminopenicillin resistance reaches 80%, (d) S. pys. is responsible for a quite relevant percentage of AOM, is still highly susceptible to beta-lactam drugs, but has developed resistance to macrolides and azalides in about 40% of cases [30,31].

On the basis of the pharmacokinetic characteristics of the various antibiotics and their MICs for the potential otopathogens, the panel decided that the usual 40–50 mg/kg/day dosage of

### Table 3

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Certain</th>
<th>Bilateral</th>
<th>Monolateral</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Severe</td>
<td>Mild</td>
</tr>
<tr>
<td>Age &lt;6 months</td>
<td>Immediate antibiotics</td>
<td>Immediate antibiotics</td>
<td>Immediate antibiotics</td>
</tr>
<tr>
<td>Age 6–24 months</td>
<td>Immediate antibiotics</td>
<td>Immediate antibiotics</td>
<td>Immediate antibiotics</td>
</tr>
<tr>
<td>Age &gt;24 months</td>
<td>Immediate antibiotics</td>
<td>Watchful waiting</td>
<td>Watchful waiting</td>
</tr>
</tbody>
</table>

*a Absence of otorrhea, intracranial complications or a history of recurrences.
*b Laterality.
*c Severity.
amoxicillin maintain useful concentrations for long enough to eradicate the pathogen in the case of infections due to penicillin-susceptible S. p. and with intermediate susceptibility. Thus amoxicillin was indicated as the first choice drug in the case of AOM in the absence of complications in children at low risk of resistant pathogens (those aged more than 3 years who are not attending a day-care centre, have not received antibiotics in the previous 30 days, do not have older siblings attending day-care, and have not been vaccinated with PCV-7 in the first year of life) and without a recent history of recurrent AOM. As alternative to amoxicillin, and in contrast to the 2004 AAP guidelines, the panel indicated cefaclor, which is characterised by good palatability and bioavailability [32]. In all other cases, amoxicillin + clavulanic acid were recommended as the first choice drug, and, as alternatives, cefpodoxime proxetil and cefuroxime axetil were suggested (Table 4). Macrolides and azalides were considered unsuitable choices.

### 3.4. Duration of antibiotic therapy

AOM treatment is traditionally recommended for 10 days, although some national guidelines (Finland, Germany, Sweden, Netherlands, South Africa) recommend short 5-day regimens and others (The Netherlands or South Africa) recommend 7 days. In other countries (Canada, France, USA and Luxembourg), the duration may be differentiated on the basis of patient age: 10 days for children aged less than 2 (or 5) years, and 5 days for children aged more than 2 (or 5) years.

The panel consented that among the oral beta-lactams, controlled randomised clinical studies demonstrating the possibility of reducing AOM therapy to 5 days are available only for amoxicillin + clavulanic acid, cefpodoxime proxetil, cefuroxime axetil and cefaclor. Moreover, as it has been shown that an age of less than 2 years, the presence of otorrhea due to spontaneous perforation of the tympanic membrane, and a history of recurrent AOM episodes increase the risk of therapeutic failure when treatment is shortened to 5 days [33], the final recommendation was “Antibiotic therapy should be administered for 10 days. This can be reduced to 5 days in children aged more than two years without risking a negative outcome [I/B].”

### 3.5. Therapeutic failure

While considering that the clinical course of antibiotic-treated AOM is usually characterised by an improvement of symptoms within 48–72 h, with a progressive reduction in fever and pain, it was stated that “After 72 hours of adequate antibiotic, the children with AOM episodes who do not show any improvement or who worsen should be considered therapeutic failures. If they were treated with amoxicillin or cefaclor, they should receive amoxicillin plus clavulanic acid or cefpodoxime proxetil or cefuroxime axetil. If they were being treated with a broad-spectrum antibiotic, they should be prescribed intramuscular or intravenous ceftriaxone [II/B]. The use of quinolones should be avoided in treatment failures [IV/E].”

### 3.6. Long-term benefits of antibiotic treatment

The panel stated that immediate antibiotic therapy does not prevent the development of otitis media with effusion, and does not reduce the persistence of middle ear effusion [34]. Similarly, it does not seem to reduce the risk of recurrent episodes (although the data are less robust). As regards complications, there was an agreement on the fact that even if the incidence of complications and complication-related mortality were both significantly reduced after the introduction of antibiotic treatment, the correlation between the incidence of acute mastoiditis and antibiotic prescription remains debatable because, in some countries (such as Australia and the UK), a significant reduction in antibiotic prescriptions was not associated with any increase in the frequency of complications and thus “the universal use of antibiotics in every case of AOM cannot be considered a valid means of reducing the risk of mastoiditis [IV/E]” [35,36].

### 3.7. Usefulness of other treatments

As regards possible adjunctive treatments the panel agreed that “The use of other treatments (excluding analgesics) in association with antibiotics is not recommended [VI/D]; the use of systemic or topical decongestants should be avoided [I/D] and the administration of steroids or antihistamines is not recommended [II/D]”. This statement contrasts with other guidelines, which usually do not judge the role of other treatments. In addition, the group highlighted the importance of removal of nasal secretions by means of nasal washings as a useful complementary treatment [VI/B]. The usefulness of nasal washing is still limited by the absolute paucity of scientific evidence, particularly in children and relating to middle ear diseases. However, given the close inter-relationship between the nose, nasopharynx and middle ear, it was hypothesised that the removal of nasal secretions by means of saline irrigation may contribute to improving Eustachian tube function and clearing middle ear effusion, as has already been demonstrated in the case of rhinosinusitis and rhinitis.

Lastly, the panel decided to discourage treatments belonging to complementary and alternative medicine [VI/D].

### 4. Complications

A special section of the Italian guidelines was devoted to complications of AOM, which are neglected by most of the other guidelines. As regards acute mastoiditis, the recommendation was to base the primary diagnosis on clinical examination and to emphasize the need for close monitoring of the patients. The recommendation was “The diagnosis of acute mastoiditis is based on clinical criteria. CT scan of the mastoid area is helpful in evaluating the..."
extension of the process and the presence of complications, and should be systematically performed when acute mastoiditis with periostitis or intracranial complications are suspected [IV/A]. Medical treatment is indicated in all non-complicated cases, whereas medical/surgical treatment is required in the presence of mastoid empyema and/or intracranial complications [IV/A].

5. Prevention

In this multidisciplinary group the role of prevention of AOM, in terms of avoiding the first episode in otherwise healthy children, was recognized as one of the primary goals of pediatric care. Thus a special section was devoted to this issue, in contrast with 2004 AAP and other guidelines which give a limited or no space to prevention. As AOM is favoured by a wide range of predisposing factors, and usually follows a viral infection of the upper respiratory tract, attempts to prevent it mainly rely on reducing risk factors, viral respiratory infections, and nasopharyngeal bacterial colonisation.

5.1. Reducing risk factors

Reviewing the literature, it was clear that (a) home-care can avoid one in five AOM episodes in the general pediatric population, and two in five in children with middle ear diseases, (b) careful handwashing and the use of alcohol solutions in pre-schoolers reduces AOM episodes by 27%, (c) exclusive breastfeeding for at least 3 months reduces the incidence of AOM by 13%, and 6 months’ breastfeeding increases this to 50%, thus providing protective cover for the entire first year of life and (d) a 30% increased risk of AOM has been found in children who use a pacifier continuously, and a 29% decrease when its use is limited to the time immediately before falls asleep [37,38]. Starting from these premises, the panel recommended that “infants are breastfed for at least three months [V/B], attend day-care centres at which accurate hygiene measures are practised [III/B], reduce the use of pacifier to a minimum [III/A], and are not exposed to passive smoking [V/B]”.

5.2. Influenza vaccines

The multidisciplinary group agreed that influenza vaccine reduces the incidence of AOM when the virus is circulating among healthy children. However, the results vary depending on vaccine type and the child’s age: a vaccine containing attenuated live viruses leads to better results (with a reduction of up to 90% in children aged less than 18 months) than an inactivated influenza vaccine (a reduction of up to 50%), especially in children aged less than 18 months [39]. The experts thought that if the only goal of influenza vaccination were AOM prevention, vaccine administration would only be justified in children with a high frequency of recurrent episodes. However, as influenza prevention has the more important aim of preventing a disease whose complications are often more severe than AOM, doubts about the limited efficacy of influenza vaccination in preventing a first episode of AOM in young children are largely outweighed by its other medical, social and economic advantages. Therefore, the recommendation was “Influenza vaccine has to be encouraged because, beyond other more important advantages, it can be useful in preventing a first AOM episode [I/A]”.

5.3. Pneumococcal vaccine

The three pneumococcal vaccines that are known to be immunogenic are different in terms of the carrier proteins used to conjugate the capsular polysaccharides and/or the number of serotypes included in the formulation (7, 10 and 13). There are robust data concerning the efficacy of PCV-7 and the impact of its universal use on the incidence of ambulatory AOM visits and antibiotic prescriptions [40]. When administered within the first year of life, PCV-7 prevents 6–7% of all AOM episodes, more than 30% of pneumococcal episodes, and more than 50% of the episodes caused by the serotypes it contains. The impact of PCV-7 on the prevalence of AOM in the pediatric population has been studied in the USA, where the vaccine has been universally administered since 2000: the group acknowledged that comparisons of the data obtained before and after its introduction show that the significant reduction in the number of AOM-related visits (average 20%, range 4–43%) and antibiotic prescriptions is greater than its efficacy rates [6]. It was also noted that there is still a lack of data concerning the effect of PCV-13 on AOM, but the efficacy data so far produced for a 10-valent vaccine (coming from studies of its unmarketed experimental 11-component precursor vaccine) indicate a 33.6% reduction in all AOM episodes, a 57.6% reduction in the episodes caused by pneumococcal serotypes, and a 35.3% reduction in those due to nontypable H. influenzae [41]. The final recommendation was “Pneumococcal conjugate vaccine can significantly reduce the incidence and burden of AOM [I/A]”.

Appendix A

Italian AOM Guideline Multidisciplinary Working Group: A. Affinita (Movimento Italiano Genitori, MOIGE); L. Belluzzi (Società Italiana di Otorinolaringoiatria Pediatrica, SIOP); G. Conforti (Federazione Italiana Medici Pediatri, FIMP and Società Italiana di Cure Primarie Pediatriche, SICuPP); D. Cuda (Società Italiana di Otorinolaringoiatria, SIO); E. Cunsoło (SIOP); G. de Vincentis (SIO); M. Diana (Società Italiana di Medicina Emergenza e Urgenza Pediatrica, SIMEUP); G. di Mauro (SIIPS, FIMP); P. Di Pietro (SIP; SIMEUP); M. Doria (FIMP, Associazione Culturale Pediatri, ACP); E. Dusi (pediatrician, responsible for data retrieval); G. Felisati (SIO); F. Festini (Nursing Society); E. Genovese (SIOP); R. Longhi (SIP); N. Mansi (SIO); P. Marchisio (SIP, Italian Society of Pediatric Infectiology, SITIP); L. Mariniello (FIMP); G. Mele (FIMP); M. Miraglia del Giudice (Italian Society of Pediatric Respiratory Diseases, SIMRI and Italian Society of Pediatric Allergology and Immunology, SIAP); G. Muttullo (IPASVI); C. Navone (SIP); G. Nicoletti (Italian Society of Microbiology, SIM); A. Novelli (Italian Society of Chemotherapy, SIC); F. Paravati (FIMP); C. Piemonte (SIO); L. Pignataro (SIO); P. Pisani (SIO); N. Principi (SITIP); D. Radzik (FIMP); S. Renna (SIP); F. Scaglione (SIC); A. Speciale (SIM); G. Vitali-Rosati (FIMP, SICuPP). *, coordinators

Appendix B. Guidelines on acute otitis media

- **Australia.** Morris P, Ballinger D. Leach a et al. Recommendations for clinical care guidelines on the management of otitis media in aboriginal and Torres Strait Islander populations. Canberra: Office for aboriginal and Torres Strait Islander Health. Commonwealth Department of Health and Aged Care. ACT 2001
References


