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Research Article

**ATTITUDE AND KNOWLEDGE OF SAUDI PEDIATRICIANS OF THE
GUIDELINES FOR DIAGNOSIS AND MANAGEMENT OF ACUTE
OTITIS MEDIA AND OTITIS MEDIA WITH EFFUSION: A NATIONAL
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Salem Eid Alosaimi²**¹MBBS, College of Medicine, Imam Mohammed Bin Saud Islamic University² College of Medicine, Imam Mohammed Bin Saud Islamic University**Abstract**

Background: Historically, acute otitis media (AOM) had been the most common complaint of parents bringing preschool age children to physicians for urgent assessment and treatment. In 2013 and 2016 the clinical guidelines related to the treatment of acute otitis media (AOM) without complications, and guidelines related to otitis media with effusion, were updated. Adoption of these guidelines by pediatricians is critical. As the issue is not only increased costs of care, but also contributing to antibiotic resistance strains of bacteria as well as negative outcomes that can include permanent or temporary hearing loss, impacts on the development, and risks of infection.

Aims: The aim of the study was to evaluate the attitude and knowledge of Saudi pediatricians about the clinical guidelines regarding the diagnosis and management of acute otitis media and otitis media with effusion in pediatric medicine. The objective was to develop an understanding of potential areas of strength and weakness in relation continuous improvement of health care through better patient safety and quality of care.

Methods: This quantitative, cross-sectional design tested and captured attitudes and knowledge using two separately administered questionnaires. The questionnaires included demographic questions, and statements that participants responded to on a five-point Likert scale to indicate their level of agreement. The sample was composed of 358 Saudi pediatricians from 32 hospitals in 13 cities in Saudi Arabia.

Results: The results of this study included a wide variation of attitudes with fairly even distribution between negative and positive attitudes towards clinical guidelines, along with a knowledge score of the clinical guidelines that was below 50% in every category of role, gender and facility.

Conclusion: our study revealed low knowledge of Saudi pediatricians about the guidelines for diagnosis and management of acute otitis media and detected that their opinions vary widely regarding the importance of guidelines. The general attitude reflects a lack of interest and belief in the use of evidence-based guidelines.

Keywords: knowledge, otitis media, effusion, pediatricians, guidelines.

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INTRODUCTION:

Historically, acute otitis media (AOM) had been the most common complaint of parents bringing preschool age children to physicians for urgent assessment and treatment. [1]

In 2013, the 2004 clinical guidelines related to the treatment of acute otitis media (AOM) without complications was updated by the American Academy of Pediatrics. This update included significant details and justification in terms of research evidence and evidence quality on a provision by provision basis. [2]

Clinical practice guidelines related to otitis media with effusion, published by the American Academy of Otolaryngology–Head and Neck Surgery Foundation, were updated in 2016. [3]

Unfollowing of guidelines of treatment by doctors not only leads to increased costs of care, but also contributes to emergence of antibiotic resistance strains of bacteria as well as negative outcomes that can include permanent or temporary hearing loss, impacts on the development of speech and vocabulary, and risks of infections of surrounding tissues. [4]

On the contrary, increased follow up of clinical guidelines resulting from high quality research evidence is correlated with a reduction of AOM prevalence and improved outcomes. It is also associated with reduction of treatment costs, unnecessary use of antibiotics and AOM complications. [5,6]

Some of these guidelines include use of pneumatic otoscopy for diagnosing otitis media with effusion in a child, administration of pneumococcal vaccines and the reduction of antibiotic and intra-nasal or systemic steroids use in the treatment of AOM. [5,7]

Reduction of inappropriate antibiotic prescriptions in the treatment of pediatric AOM is very important, as the main cause of AOM is typically viral upper respiratory infection, a condition which cannot be treated using antibiotics which are intended for bacterial infections and it is also a part of a national action plan for combating and preventing conditions leading to antibiotic-resistant bacteria. [8]

Further, this is part of a global effort to control the conditions that could lead to the fatal outcomes of increased incidence of antibiotic resistant bacteria. [9]

Early estimates are that more than half of all

antibiotic prescriptions are in fact unnecessary or even harmful. The best choice of antibiotic therapy, and duration is an ongoing part of research which may contribute to future clinical guidelines for AOM and related treatment. [5]

An important trend to be aware of in Saudi Arabia, is the frequent casual seeking of non-prescription antibiotics, with considerable risks for patient safety as well as global trends in relation to the development of antibiotic resistant bacteria. [10]

There are multiple risk factors for AOM and its complications, including external microbial and immunological factors as well as genetics and individual features of the Eustachian tube characteristics. [11]

Otitis media with effusion is prevalent in the developing countries and also in high-risk populations of children in developed countries such as those with tympanostomy tubes. [4]

In Saudi Arabia, it was detected that only 1.05% of children below age of 12 years were diagnosed with AOM, although the rate was highest in children under five years old and in male children. The highest rates of AOM were found in the poorest socioeconomic conditions in the Southern part of the country, where there was also a higher rate of preventable hearing impairment. [12]

The chronic infection, inflammation and development challenges created by persistent acute otorrhea were best prevented through the quality treatment of AOM prior to the progression of the problem. [13]

Despite ongoing awareness efforts in relation to the reduction of antibiotic prescription and appropriate treatment according to clinical guidelines today, most pediatricians and family practitioners at that time in a cross section of countries continued to prescribe antibiotics as a default method for AOM management without further investigation. There are many problems related to poorly managed chronic otitis media (COM) which include intracranial complications as meningitis and brain abscess and extra-cranial complications as sub-periosteal abscess, mastoid and Bezold's abscess. The mortality rate for those patients with complications related to COM was between 16% and 26.3%, with intra-cranial complications representing the most risk. [14]

In general, studies regarding physician attitudes towards clinical guidelines were popular in the final decades of the twentieth century. And now, there is a shift towards ways of improving the usability of

guidelines and reducing barriers to their implementation. The dual approach of increasing those factors, such as how guidelines are communicated, which make adoption easier, while increasing the positive attitude towards evidence-based practice has the best potential outcome. [15]

The aim of the study is to evaluate the attitude and level of knowledge of Saudi pediatricians in relation to clinical guidelines regarding the diagnosis and management of acute otitis media and otitis media with effusion in pediatric medicine. The objective is to develop an understanding of potential areas of strength and weakness in relation continuous improvement of health care through better patient safety and quality of care.

This is significant because the attitude towards clinical guidelines is hypothesized to have an impact on the subsequent attention to clinical guidelines and therefore the level of knowledge and awareness that a physician has in relation to them. This, in turn, has a great impact on facility outcomes. Evidence-based practice, as presented in clinical management guidelines, represent one of the most important factors in achieving improved patient outcomes and lower costs. [16,17]

The research questions driving this study were as follows:

RQ1. What are the attitudes of Saudi pediatricians practicing in accredited Saudi hospitals in relation to clinical guidelines generally?

RQ2. What is the level of knowledge of Saudi pediatricians in relation to AOM without complications and otitis media with effusion for children from 6 months to 12 years of age?

RQ3. What are the strengths and the areas for potential improvement in relation to the adoption of evidence-based practice represented in clinical guidelines as a means of improving the quality of health care, patient safety and cost efficiency?

MATERIALS AND METHODS:

The questionnaire for this study was delivered in July of 2018 after selection, recruitment and instrument development. The main conceptual basis for this cross-sectional study was the assumption that evidence-based practice leads to continuous improvement of patient safety and wellness outcomes. Positivist science and the assumption of the efficacy of evidence-based practice was the foundation for the research questions and study.

The sample was composed of 358 Saudi pediatricians working in 32 hospitals in thirteen different cities in the Kingdom of Saudi Arabia. All hospitals in the

study have a pediatric training program that is accredited by Saudi Commission for health specialties.

The inclusion criteria for the sample included Saudi pediatricians of either gender serving as pediatric residents, specialists or consultants who were working in one of the hospitals that is accredited by Saudi Commission for Health Specialties.

The exclusion criteria were foreign status.

A convenience sample was used to select research participants given the specialized nature of the respondents. The study was completed on paper by those pediatricians who provided informed consent to voluntary participate in the research study.

Data collection occurred through a questionnaire. The questionnaires were delivered on paper using the questionnaire collection instrument that was developed, which can be found in Appendix A. The determination was made to use a paper-based approach, despite certain efficiencies in data collection and accuracy, because of concerns regarding capturing the attention of busy physicians. By incorporating it as a collective moment where all completed the data instrument, this helped to ensure the high retention rate of selected candidates for participation. The paper scores were then transcribed into an Excel worksheet. There was no identifying information regarding the participants beyond their role, their facility and their gender.

The questionnaire had forty-eight items organized into three parts. The first part had questions about gender, position and type of hospital. The second part contained twelve statements measuring attitudes regarding clinical practice guidelines in general. Participants responded to the statements using a 5-point Likert scale. The third part had two parts which consisted of thirty-three statements, and the participants were asked to answer with "True", "False" or "I don't know". First, data related to the knowledge and awareness of clinical management of acute otitis media was captured, and this was followed by questions to assess the knowledge about the diagnosis and management of otitis media with effusion.

The questionnaire statements were derived from the most recent guidelines developed by the American Academy Of Pediatrics for the management of acute otitis media and the American Academy of Otolaryngology–Head and Neck Surgery Foundation clinical practice guideline of otitis media with effusion. [2,3]

RESULTS:**Demographic information**

There were three questions concerning demographic information: gender, facility type and pediatrician type. As shown in table 1, of 358 respondents, 44.7% were females, and 55.3% were males. Of the four facility types, 23.5% reported that they worked at a children's hospital, 37.7% reported that they worked at a general hospital, 19.6% reported that they worked at a military hospital, and 19.3% reported that they worked at a university hospital. The largest

single group composed of the three demographic variables were male pediatric residents who worked at a general hospital, who as a group were 15.6% of the sample, followed by female pediatric residents who worked at a general hospital who were 11.2% of the sample, together composing more than one quarter of all respondents. Concerning the position of pediatricians, there were 47 reporting working as a pediatric consultant, 243 reported working as a pediatric resident and 68 reported working as a pediatric specialist.

Table 1: Demographic details of respondents

Facility/Pediatrician type	Female(n),%	Male(n),%	Grand Total(n),%
Children hospital	36	48	84(23.5%)
Pediatric Consultant	6	9	15
Pediatric resident	24	28	52
Pediatric specialist	6	11	17
General hospital	60	75	135(37.7%)
Pediatric Consultant	7	5	12
Pediatric resident	40(11.2%)	56(15.6%)	96(26.8%)
Pediatric specialist	13	14	27
Military hospital	34	36	70(19.6%)
Pediatric Consultant	5	6	11
Pediatric resident	22	24	46
Pediatric specialist	7	6	13
University hospital	30	39	69(19.3%)
Pediatric Consultant	5	4	9
Pediatric resident	21	28	49
Pediatric specialist	4	7	11
Grand Total	160(44.7%)	198(55.3%)	358(100%)

ATTITUDES:

There were no clear professional attitudes towards guidelines among Saudi pediatricians based on their responses to the attitude questions of the survey. The sentiment of the responses were fairly evenly

distributed across the Likert continuum on every single question. Therefore, there are no significant findings in terms of difference, except that opinions vary widely among Saudi pediatricians regarding the importance of guidelines as shown in table 2.

Table 2: Responses to attitude questions

<i>Question</i>	<i>Strongly Agree</i>	<i>Agree</i>	<i>Neutral</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
1-There are so many guidelines available that is nearly impossible to keep up.	18.7%	21.2%	16.2%	17.6%	26.3%
2-I don't have the time to stay informed about available guidelines	20.4%	15.1%	21.2%	19.8%	23.5%
3- Guidelines are too “cookbook” and prescriptive.	19.6%	24.6%	15.9%	19.8%	20.1%
4-Generally, practice guidelines are cumbersome and inconvenient.	20.7%	21.5%	16.5%	19.3%	22.1%
5-Guidelines are difficult to apply and adapt to my specific practice.	17.6%	23.2%	20.4%	20.1%	18.7%
6-Generally, the costs of practice guidelines outweigh the benefits.	21.5%	16.8%	21.8%	17.6%	22.3%
7- Guidelines interfere with my professional autonomy.	23.2%	22.3%	15.6%	18.2%	20.7%
8- Generally, I would prefer to continue my routines and habits rather than to change based on practice guidelines.	17.3%	20.9%	20.7%	21.8%	19.3%
9- Publishing practice guidelines increases the risk of malpractice liability.	19.8%	18.2%	19.3%	22.9%	19.8%
10- In this organization, practice guidelines are important.	19.6%	22.1%	18.4%	24.9%	15.1%
11-Guidelines improve patient outcomes	19.0%	21.2%	18.2%	21.8%	19.8%
12-Guidelines help to standardize care and assure that patient are treated in a consistent way	17.9%	22.9%	21.8%	18.7%	18.7%

In relation to results that indicate negative attitude regarding the use of clinical guidelines as indicated in table 3, nearly half or 45.5% indicated agreement or strong agreement with that guidelines interfered with their professional autonomy. There were 44.2% of respondents who agreed or strongly agreed that clinical guidelines were too prescriptive. Over four in ten respondents, 42.2% agreed or strongly agreed that practice guidelines are cumbersome and inconvenient. A similar amount 40.8% agreed or strongly agreed that clinical guidelines to be difficult to apply and adapt.

Nearly four in ten (39.9%) found it impossible to keep up with guidelines, and 38.3% agreed or strongly agreed that the costs of practice guidelines outweigh the benefits. Fully 38% of respondents agreed or strongly agreed that publishing practice guidelines increased the risk of malpractice liability. Just over one third (35.5%) indicated that they do not have time to keep up with clinical guidelines. This strong negative attitude pervades one third to nearly

one half of the respondents, and additionally there are 15% to almost 22% who indicate neutrality in relation to clinical guidelines as in table 2. If it can assume that this is representative of Saudi pediatricians and physicians generally, this indicates a great opportunity for improvement in health care across the system by improving adherence to evidence-based practice through clinical guideline adoption.

The strong evidence to build on is that 38.2% to 41.7% of respondent answers indicate respect and use for clinical guidelines as shown in table 3. What is needed is closing the gap in regard to those pediatricians, and physicians generally, who are either neutral towards the guidelines, or passively or actively hostile towards clinical guidelines. Education and awareness of the meaning and importance of clinical guidelines has to be translated practice, which then supports greater levels of patient safety and improved outcomes at lower cost.

Table 3: summation of positive and negative attitudes towards clinical guidelines

Question	agree (strongly agree + agree)	Disagree (strongly disagree + disagree)
questions that indicate negative attitude		
Interfere with my professional autonomy	45.5%	38.9%
Too prescriptive	44.2%	39.9%
Practice guidelines are cumbersome and inconvenient	42.2%	41.4%
difficult to apply and adapt	40.8%	38.8%
Impossible to keep up.	39.9%	43.9%
The costs of practice guidelines outweigh the benefits	38.3%	39.9%
Publishing practice guidelines increases the risk of malpractice liability.	38%	42.7%
don't have the time	35.5%	43.3%
Questions that indicate positive attitude		
Practice guidelines are important	41.7%	40%
helps to standardize care	40.8%	37.4%
improves patient outcomes	40.2%	41.6%
prefer to continue my routines and habits	38.2%	41.1%

Knowledge

This section presents the result of knowledge assessment of Saudi pediatricians in

Relation to clinical guidelines for the management of AOM without complications and otitis media with effusion.

Table 4: Correct, incorrect and I don't know rate of response by facility, position and gender

	Incorrect	Correct	I don't know
By facility			
Children hospital	20.5%	55.4%	24.0%
General hospital	18.4%	56.6%	25.0%
Military hospital	18.5%	57.5%	24.0%
University hospital	18.9%	56.4%	24.7%
By position			
Pediatric Consultant	17.9%	56.3%	25.9%
Pediatric resident	19.2%	56.6%	24.2%
Pediatric specialist	19.2%	56.2%	24.7%
By gender			
Female	19.2%	56.8%	24.1%
Male	18.9%	56.2%	24.9%

It can be seen from table 4 results that, as with the results of the attitude survey, the results are very evenly distributed, and do not appear to have significant differences between demographic categories. In order to confirm that the differences were not statistically significant, the extent of variance was measured between the grouping with

the highest number of correct scores (respondents working in military hospitals), and the group with the lowest number of correct scores (respondents working in a children's hospital). In general, the differences between facilities have the widest variation but it can be seen that this variation is quite small.

Table 5: Attitude demographics

<i>Attitude category</i>	<i>Overall</i>	<i>Female</i>	<i>Male</i>
Antagonistic	20.7%	23.8%	18.2%
Somewhat Negative	22.6%	20.6%	24.2%
Neutral	10.6%	10.6%	10.6%
Somewhat Positive	32.4%	30.6%	33.8%
Positive	13.7%	14.4%	13.1%

In order to assess correlation of attitude and knowledge, categorization of attitudes was noted as an aggregate average of correct answers within that subgroup. Attitude categories were determined by the sentiment of responses, with positive responses received 1, neutral responses receiving 0, and negative responses receiving -1. This was

summarized for each respondent, with each respondent being assigned to one of the groups indicated in Table 5 based on that exercise.

Demographic investigation revealed that males were slightly more likely to be more positive in their attitude towards clinical guidelines, however the results were fairly similar.

Table 6: Correlation of attitude and knowledge

<i>Attitude Profile</i>	<i>Average of % CORRECT</i>
Antagonistic	56.3%
Somewhat negative	57.5%
Neutral	54.6%
Somewhat positive	56.5%
Positive	56.3%
Total average	56.4%

The results of correlation between the knowledge and attitude scores shown in table 6 did not indicate very significant differences or any indications of correlation, with average correct scores ranging from 54.6% to 57.5%, with a total average of 56.4%.

DISCUSSION:

In relation to the attitudes of Saudi pediatricians practicing in accredited Saudi hospitals towards the clinical guidelines generally, the answer is that it appears to vary widely. The diversity is, however, fairly evenly distributed across demographic categories used in the study.

Based on the survey, it is certainly true that less than half of Saudi pediatricians have a positive attitude towards the clinical guidelines in relation to AOM and otitis media effusion.

These results agree with Vernacchio L, [18] whose results showed that over 60% of surveyed physicians follow diagnostic guidelines for AOM in less than 50% of children and 12% reported that they never used any of these diagnostic guidelines. This may be due to lack of availability of diagnostic equipment for

pediatricians or may be due to lack of their knowledge about their use.

Also, the lack of pediatrician's attitude towards following guidelines agrees with Gauthier et al, [19] whose results showed that guidelines for treatment of resistant cases of AOM are applied only in 22.4% of cases. This may be due to that there are a number of factors as cultural or location specific aspects that are not captured in the clinical guidelines. Location specific aspects, including genetics, climate and local bacteria prevalence all play a potential role in making guidelines developed elsewhere less applicable.

The second question was regarding the level of knowledge of Saudi pediatricians in relation to AOM without complications and otitis media with effusion for children from 6 months to 12 years of age. Overall, the level of knowledge in relation to the clinical guidelines was poor, with many respondents

failing important questions. These results agreed with Ghalehbaghi et al, [20] whose results showed that only 14.5% of surveyed physicians have chosen the appropriate antibiotics for treatment of bacterial AOM according the guidelines. It would appear that patient safety and quality of care could be at risk because of the lack of adherence to evidence-based clinical guidelines. Further investigation is warranted in order to determine whether the low rate of correct answers in relation to knowledge questions in this survey had other influences and factors.

The lack of interest in and awareness of guidelines related to pediatric AOM and its complications may be threatening to patient safety and putting the hearing of children living in Saudi Arabia at risk. Evidence-based practice should be considered primary in the determination of practice, but it has been a struggle to convince physicians to stay up to date. More recently trained health care providers are more likely to have been trained around the idea of always changing evidence-based practice, and it can be assumed that much of the resistance stems from older physicians. In the context of Saudi pediatricians, data is needed in order to determine whether this is true. This could be achieved by using the same or similar survey, and adding a demographic question in relation to age, or year of graduation from medical school.

The current study was unable to find the variable or factor which might account for or influence attitudes towards and knowledge of clinical guidelines. Future studies should explore regression analysis of different segments of attitude and knowledge profiles in relation to specific clinical guidelines as a means of identifying the variables which predict attitude towards clinical guidelines. This would allow for more targeted efforts to change attitudes, as well as to better understand the outcomes of negative attitudes towards clinical guidelines by pediatricians and physicians.

CONCLUSIONS:

There is low knowledge among Saudi pediatricians about the guidelines for diagnosis and management of acute otitis media. The general attitude of them reflects a lack of interest and belief in the use of evidence-based guidelines and their opinions vary widely regarding the importance of guidelines. So, there is a great opportunity for improvement in health care across the system by improving adherence to evidence-based practice through clinical guideline adoption and making many focused sessions for pediatricians to increase their knowledge about the guidelines, its importance and its latest updates.

LIMITATIONS:

All studies have limitations, and technical limitations due to research design were related to time and resource constraints, as well as the exploratory nature of this research. In this case, the purposive selection of the sample leads to a lack of representational validity. This was justified because of the difficulty of implementing a random and controlled sample given the specialized nature of the inclusion criteria.

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Knowledge of Saudi Pediatrician in The Diagnosis and Management of Acute Otitis Media and Otitis Media with Effusion, A National Survey

Questionnaire

1. Gender:

- Male
- Female

2. You are a:

- Pediatric resident
- Pediatric specialist
- Pediatric consultant

3. You currently working at:

- University hospital
- General hospital
- Children hospital
- Military hospital

Attitudes Regarding Clinical Practice Guidelines in General

1- There are so many guidelines available that is nearly impossible to keep up.

Strongly Agree

- 1- Agree
- 2- Neutral
- 3- Disagree
- 4- Strongly Disagree

2- I don't have the time to stay informed about available guidelines.

- 1- Strongly Agree
- 2- Agree
- 3- Neutral
- 4- Disagree
- 5- Strongly Disagree

3- Guidelines are too “cookbook” and prescriptive.

- 1- Strongly Agree
- 2- Agree
- 3- Neutral
- 4- Disagree
- 5- Strongly Disagree

4- Generally, practice guidelines are cumbersome and inconvenient.

- 1- Strongly Agree
- 2- Agree
- 3- Neutral
- 4- Disagree
- 5- Strongly Disagree

4- Guidelines are difficult to apply and adapt to my specific practice.

- 1- Strongly Agree
- 2- Agree
- 3- Neutral
- 4- Disagree
- 5- Strongly Disagree

6- Generally, the costs of practice guidelines outweigh the benefits.

- 1- Strongly Agree
- 2- Agree
- 3- Neutral
- 4- Disagree
- 5- Strongly Disagree

7- Guidelines interfere with my professional autonomy.

- 1- Strongly Agree
- 2- Agree
- 3- Neutral

- 4- Disagree
- 5- Strongly Disagree

8-Generally, I would prefer to continue my routines and habits rather than to change based on practice guidelines.

- 1- Strongly Agree
- 2- Agree
- 3- Neutral
- 4- Disagree
- 5- Strongly Disagree

9-Publishing practice guidelines increases the risk of malpractice liability.

- 1- Strongly Agree
- 2- Agree
- 3- Neutral
- 4- Disagree
- 5- Strongly Disagree

10-In this organization, practice guidelines are important.

- 1- Strongly Agree
- 2- Agree
- 3- Neutral
- 4- Disagree
- 5- Strongly Disagree

11-Guidelines improve patient outcomes.

- 1- Strongly Agree
- 2- Agree
- 3- Neutral
- 4- Disagree
- 5- Strongly Disagree

12-Guidelines help to standardize care and assure that patient are treated in a consistent way.

- 1- Strongly Agree
- 2- Agree
- 3- Neutral
- 4- Disagree
- 5- Strongly Disagree

Acute Otitis Media Knowledge Questions

1-Clinicians should diagnose acute otitis media (AOM) in children who present with moderate to severe bulging of the tympanic membrane (TM) or new onset of otorrhea not due to acute otitis externa.

- 1- True
- 2- False
- 3- I don't know

2- Clinicians should diagnose AOM in children who present with mild bulging of the TM and recent (less than 48 hours) onset of ear pain (holding, tugging, and rubbing of the ear in a nonverbal child) or intense erythema of the TM.

- 1- True
- 2- False
- 3- I don't know

3- Clinicians should not diagnose AOM in children who do not have middle ear effusion (MEE) (based on pneumatic otoscopy and/or tympanometry).

- 1- True
- 2- False
- 3- I don't know

4-The management of AOM should include an assessment of pain. If pain is present, the clinician should recommend treatment to reduce pain.

- 1- True
- 2- False
- 3- I don't know

5-In severe AOM: The clinician should prescribe antibiotic therapy for AOM (bilateral or unilateral) in children 6 months and older with severe signs or symptoms (i.e., moderate or severe otalgia or otalgia for at least 48 hours or temperature 39°C [102.2°F] or higher).

- 1- True
- 2- False
- 3- I don't know

6-In non-severe bilateral AOM in young children: The clinician should prescribe antibiotic therapy for bilateral AOM in children 6 months through 23 months of age without severe signs or symptoms (i.e., mild otalgia for less than 48 hours and temperature less than 39°C [102.2°F]).

- 1- True
- 2- False
- 3- I don't know

7-In non-severe unilateral AOM in young children: The clinician should either prescribe antibiotic therapy or offer observation with close follow-up based on joint decision making with the parent(s)/caregiver for unilateral AOM in children 6 months to 23 months of age without severe signs or symptoms (i.e., mild otalgia for less than 48 hours and temperature less than 39°C [102.2°F]). When observation is used, a mechanism must be in place to ensure follow-up and begin antibiotic therapy if the child worsens or fails to improve within 48 to 72 hours of onset of symptoms.

- 1- True
- 2- False
- 3- I don't know

8-In non-severe AOM in older children: The clinician should either prescribe antibiotic therapy or offer observation with close follow-up based on joint decision-making with the parent(s)/ caregiver for AOM (bilateral or unilateral) in children 24 months or older without severe signs or symptoms (i.e., mild otalgia for less than 48 hours and temperature less than 39°C [102.2°F]). When observation is used, a mechanism must be in place to ensure follow-up and begin antibiotic therapy if the child worsens or fails to improve within 48 to 72 hours of onset of symptoms.

- 1- True

- 2- False
- 3- I don't know

9-Clinicians should prescribe amoxicillin for AOM when a decision to treat with antibiotics has been made and the child has not received amoxicillin in the past 30 days or the child does not have concurrent purulent conjunctivitis, or the child is not allergic to penicillin.

- 1- True
- 2- False
- 3- I don't know

10 -Clinicians should prescribe an antibiotic with additional β -lactamase coverage for AOM when a decision to treat with antibiotics has been made, and the child has received amoxicillin in the last 30 days or has concurrent purulent conjunctivitis or has a history of recurrent AOM unresponsive to amoxicillin.

- 1- True
- 2- False
- 3- I don't know

11-Clinicians should reassess the patient if the caregiver reports that the child's symptoms have worsened or failed to respond to the initial antibiotic treatment within 48 to 72 hours and determine whether a change in therapy is needed.

- 1- True
- 2- False
- 3- I don't know

12- Clinicians should not prescribe prophylactic antibiotics to reduce the frequency of episodes of AOM in children with recurrent AOM.

- 1- True
- 2- False
- 3- I don't know

13- Clinicians may offer tympanostomy tubes for recurrent AOM (3 episodes in 6 months or 4 episodes in 1 year with 1 episode in the preceding 6 months).

- 1- True
- 2- False
- 3- I don't know

14- Clinicians should recommend annual influenza vaccine to all children.

- 1- True
- 2- False
- 3- I don't know

15- Clinicians should encourage exclusive breastfeeding for at least 6 months.

- 1- True
- 2- False
- 3- I don't know

Otitis Media with Effusion Knowledge Questions

1-The clinician should document the presence of middle ear effusion with pneumatic otoscopy when diagnosing otitis media with effusion (OME) in a child.

- 1- True
- 2- False
- 3- I don't know

2-The clinician should perform pneumatic otoscopy to assess for OME in a child with otalgia, hearing loss, or both.

- 1- True
- 2- False
- 3- I don't know

3-Clinicians should obtain tympanometry in children with suspected OME for whom the diagnosis is uncertain after performing (or attempting) pneumatic otoscopy.

- 1- True
- 2- False
- 3- I don't know

4-Clinicians should document in the medical record counseling of parents of infants with OME who fail a newborn hearing screen regarding the importance of follow-up to ensure that hearing is normal when OME resolves and to exclude an underlying sensorineural hearing loss.

- 1- True
- 2- False
- 3- I don't know

5-Clinicians should determine if a child with OME is at increased risk for speech, language, or learning problems from middle ear effusion because of baseline sensory, physical, cognitive, or behavioral factors.

- 1- True
- 2- False
- 3- I don't know

6-Clinicians should evaluate at-risk children (Table 3) for OME at the time of diagnosis of an at-risk condition and at 12 to 18 months of age (if diagnosed as being at risk prior to this time).

- 1- True
- 2- False
- 3- I don't know

7-Clinicians should not routinely screen children for OME who are not at risk and do not have symptoms that may be attributable to OME, such as hearing difficulties, balance (vestibular) problems, poor school performance, behavioral problems, or ear discomfort.

- 1- True
- 2- False
- 3- I don't know

8-Clinicians should educate families of children with OME regarding the natural history of OME, need for follow-up, and the possible sequelae.

- 1- True
- 2- False
- 3- I don't know

9-Clinicians should manage the child with OME who is not at risk with watchful waiting for 3 mo. from the date of effusion onset (if known) or 3 mo. from the date of diagnosis (if onset is unknown).

- 1- True
- 2- False
- 3- I don't know

10-Clinicians should recommend against using intranasal steroids or systemic steroids for treating OME.

- 1- True
- 2- False
- 3- I don't know

11-Clinicians should recommend against using systemic antibiotics for treating OME.

- 1- True
- 2- False
- 3- I don't know

12-Clinicians should recommend against using antihistamines, decongestants, or both for treating OME.

- 1- True
- 2- False
- 3- I don't know

13-Clinicians should obtain an age-appropriate hearing test if OME persists for more than 3 months or for OME of any duration in an at-risk child.

- 1- True
- 2- False
- 3- I don't know

14-Clinicians should counsel families of children with bilateral OME and documented hearing loss about the potential impact on speech and language development.

- 1- True
- 2- False
- 3- I don't know

15-Clinicians should reevaluate, at 3- to 6-mo intervals, children with chronic OME until the effusion is no longer present, significant hearing loss is identified, or structural abnormalities of the eardrum or middle ear are suspected.

- 1- True
- 2- False
- 3- I don't know

16-Clinicians should recommend tympanostomy tubes when surgery is performed for OME in a child less than 4 year old; adenoidectomy should not be performed unless a distinct indication (e.g., nasal obstruction, chronic adenoiditis) exists other than OME.

- 1- True
- 2- False
- 3- I don't know

17-Clinicians should recommend tympanostomy tubes, adenoidectomy, or both when surgery is performed for OME in a child 4 years old or older.

- 1- True
- 2- False
- 3- I don't know

18-When managing a child with OME, clinicians should document in the medical record resolution of OME, improved hearing, or improved quality of life.

- 1- True
- 2- False
- 3- I don't know