Knowledge and Practices of Physicians in Managing Pediatric Community Acquired Pneumonia (CAP) in a Major city in United Arab Emirates (UAE)

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ABSTRACT

Objectives: The study aims to assess the knowledge, attitude and practices of physicians who deal with pediatric CAP in reference to the Infectious Diseases Society of America (IDSA) guidelines on this regard that was published in 2011.

Background: Community acquired pneumonia (CAP) is a common disease and the leading cause of death among children worldwide. However, there seems to be large diversity among physicians when it comes to diagnosis, investigation and treatment of the condition, despite a recent clinical practice guideline that was released in August 2011 by the Pediatric Infectious Diseases Society of America (IDSA guideline).

Method: An anonymous 15-item survey exploring knowledge, attitude and practices related to diagnosis and management of Pediatric CAP was distributed to physicians of different levels of experience (from residents to consultants) in the departments of Pediatrics, Emergency Medicine and Family Medicine in different governmental and private facilities in Al Ain city.

Keywords
Community acquired pneumonia, Children, Knowledge, Clinical practice, Al Ain-UAE.

Method

Study Design and Setting
The study has been approved from Health Research, Ethics and Innovation Program in Tawam Hospital, Al Ain, United Arab Emirates. A cross-sectional survey was conducted during the period of 6 months from October 2017 to March 2018 among randomly selected physicians of different levels of experience (from residents to consultants) in governmental and private facilities in Al Ain city. Al Ain city is one of the major cities in United Arab Emirates with an estimated population of one million people of diverse ethnic and social backgrounds.

The Questionnaire and Data Collection
A pre-tested 15-item questionnaire was used to collect data from participants and composed of two sections. The first section focused on demographic data while the second one consisted of questions and cases scenarios targeting the participant’s knowledge, attitudes and practices in managing CAP. The questions were formulated by the authors themselves and were developed after an extensive review of relevant literature and relevant previous large studies.

Introduction
Pneumonia is the most common infectious disease seen in pediatric age group with high rate of morbidity and mortality worldwide. Despite the availability of several international clinical practice guidelines for the management of this common condition, there seems to be major discrepancies in the way it’s being managed by different physicians. This may have a negative effect on the overall clinical outcome and the cost of caring for those children.

Therefore, the purpose of this study was to assess the knowledge, attitudes, and practices on the diagnosis and management of Pediatric CAP among health care practitioners across various specialties in Al Ain city. This was accomplished through a 15-item survey, in which questions were based on the recently revised 2011 Infectious Disease Society of America (IDSA) guidelines on the diagnosis and management of CAP [1].
The questionnaire was thoroughly revised by the research team and a senior faculty member with extensive experience in survey research for validity, comprehensiveness, and appropriateness to collect the required information from the targeted population. A five-point Likert scale (“Strongly agree”, “Agree”, “Not sure”, “Disagree”, and “Strongly disagree”) was used in all the questions of the second section.

The questionnaire was tested with a group of 20 physicians before being finalized. Minor modifications were suggested and then adopted in the final questionnaire.

Convenient method of sampling was adopted. Physicians who were willing to dedicate 10-15 minutes of their time to complete the survey were selected. Data was collected by the authors of the research themselves and surveys were completed by face-to-face interview. All responses were recorded and saved in protected places to maintain confidentiality and anonymity. About 110 surveys were completed, however 10 surveys were excluded as one or more questions were not answered by the participants.

Statistical Analysis
Data was processed using Microsoft Excel Sheet. The descriptive analysis was shown as percentages. Questions with less than 90% correct answers were identified as “Gaps”.

Results
120 surveys were distributed. 104 were returned. However, four surveys were excluded because they were incomplete. Therefore, one hundred surveys were included in our final analysis. The included surveys were completed by 55 residents, 15 general practitioners, 15 specialists and 15 consultants. 73% were from governmental hospital, 12% from Primary Health Care (PHC) and 15% only from private sector. 63% of the respondents were females and 37% were males. The participants came from three different departments: 68% from general pediatric departments, while only 13% were from Emergency Departments (ED), and 19% were from Primary Health Care Centers. Among the study group, 59% of physicians were having less than 5 years of experience, while 15% had experience of 5-10 years, 9% of 11-15 years and 17% more than 15 years (Table 1).

Table 1: Demographic characteristics of the study population.

<table>
<thead>
<tr>
<th>Number of the Question</th>
<th>Percentage of correct answers</th>
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<tbody>
<tr>
<td>1</td>
<td>91%</td>
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<tr>
<td>2</td>
<td>82%</td>
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<tr>
<td>3</td>
<td>86%</td>
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<td>4</td>
<td>72%</td>
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<td>5</td>
<td>90%</td>
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<td>6</td>
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<td>8</td>
<td>63%</td>
</tr>
<tr>
<td>9</td>
<td>42%</td>
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<td>10</td>
<td>94%</td>
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<td>11</td>
<td>86%</td>
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<td>12</td>
<td>29%</td>
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<td>13</td>
<td>64%</td>
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<td>14</td>
<td>79%</td>
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<td>15</td>
<td>59%</td>
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</table>

Table 3: Summarize the percentage of correct answers provided by the participants for each question.

Discussion
The purpose of this study is to assess the knowledge, attitudes, and practices on the diagnosis and management of CAP amongst health care practitioners across various specialties in Al Ain city.

We included physicians who encounter CAP infections in pediatric population on their daily practice including physicians from general pediatrics department, emergency department and family
The participants had different levels of experience. Most of them had less than five years of experience, which is expected since most of the participants were residents in training. Despite the fact that we were unable to have a meaningful subgroup analysis – based on specialty or level of experience- due to the small number, the survey did identify several gaps in the knowledge and practices of the participants. Due to the fact that CAP is a very common pediatric diagnosis with a relatively high morbidity and mortality; and the fact that there are well established management guidelines, we considered any question with returned correct answers of less than 90% as a “Gap”.

Regarding the participants knowledge of admission criteria of CAP, the participants seemed to recognize several indications for admission since more 91% of the surveyed physicians agreed on admission for patients with respiratory distress, suspected bacterial infection and hypoxemia. However, only 82% believed that admission is indicated when MRSA is a suspected or confirmed cause of CAP; and only 86% believed that admission is indicated if compliance with oral home therapy is not guaranteed.

Regarding laboratory and radiology investigations of CAP, several gaps were identified since only 72% of the respondents disagreed that blood culture is a must in patients with CAP who are previously healthy and fully immunized. And 63% of the respondents only agreed to repeat blood culture if grew *Staphylococcus aureus*. On the other hand, 90% correctly believed that a blood culture is indicated in patients who continue to be febrile after three days of therapy.

When it came to utilization of other diagnostic investigations, the results were variable: >94% knew that acute phase reactant should not be the sole determinant in distinguishing between viral versus bacterial pneumonia. Only 84% believed that viral studies could be helpful and only 63% believed that mycoplasma needs to be considered as a causative pathogen among school aged children. Furthermore, only 42% knew that testing is not indicated when chlamydia infection is suspected.

In regards to imaging, only 86% of the participants believed that a chest x-ray is not needed in a child who is well-enough to be treated in outpatient basis.

Finally, regarding the treatment and prevention of CAP, again, several gaps were identified as follows: Only 29% of the participants were aware that antibiotics is not indicated in most cases of CAP in preschool children since the cause is usually viral. Also, only 64% knew that when treatment is indicated, broad spectrum antibiotics should be avoided and only 79% knew that seven days of therapy is sufficient in most cases. Finally only 59% of the participants knew that the annual influenza vaccine plays a major role in decreasing the risk of CAP.

**Conclusion**

Although this study was limited by the relatively small sample size and the fact that most of the participants were residents in training, we still believe that the study did identify several gaps in knowledge and practices among the participating physicians in the management of Pediatric CAP. Those gaps were brought to the attention of the health authorities and the administration of the participating facilities hoping that they would be targeted by future CMEs and quality improvement projects.

**References**