

Setting the scene for an ARI control programme: is it worthwhile in Saudi Arabia?

T.A. Khoja,¹ K.K. Al-Mohammad² and K.M.S. Aziz²

الإعداد لإقامة برنامج مكافحة الأمراض التنفسية الحادة: أهو جدير بالاهتمام في المملكة العربية السعودية؟

توفيق أحمد خوجة وقحطان خلف والمحمد وخواجة محمد سلطان العزيز

مختصرة: تم جمع بيانات أولية عن الأمراض التنفسية الحادة في استقصاء وُزِع فيه استبيان على الأطباء العاملين في 10% من المراكز الصحية المختارة بطريقة عشوائية في كل من المناطق الخمس بالمملكة العربية السعودية. ولقد قدّر الأطباء أن الأمراض التنفسية الحادة كانت السبب في مرضة 50% من الأطفال دون الخامسة من العمر في سنة 1995. ولم يسبق لأي طبيب أن حصل على تدريب في مجال الأمراض التنفسية الحادة كما لم يكونوا يعرفون أي بروتوكول أو برنامج وطني في هذا المجال. وتبيّن من إجابات الأطباء أن هناك إفراطاً في وصف المضادات الحيوية والإجراءات التشخيصية. ولقد تم إعداد بروتوكول وطني لتشخيص هذه الأمراض ومعالجتها، وتم توزيعه. كما جرى تدريب قادة الرعاية الصحية الأولية وخمسة وخمسين من المدربين الوطنيين.

ABSTRACT Baseline data on acute respiratory infections (ARI) were collected by a survey questionnaire distributed to physicians of 10% of the health centres randomly selected from each of the five provinces of Saudi Arabia. The physicians estimated that ARI was the cause of sickness in 50% of ill children < 5 years in 1995. None of the physicians had had any training in ARI and they were not aware of any national protocol or programme. Physicians' responses indicated an over-use of antibiotics and diagnostic procedures. A national protocol for diagnosis and treatment of ARI has been prepared and distributed and leaders of primary health care and 55 national trainers have been trained.

Préparer le terrain pour la mise en place d'un programme de lutte contre les infections respiratoires aiguës (IRA): est-ce utile en Arabie saoudite?

RESUME Des données de base ont été recueillies sur les infections respiratoires aiguës (IRA) à l'aide d'un questionnaire d'enquête qui a été distribué aux médecins de 10% des centres de santé choisis au hasard dans chacune des cinq provinces de l'Arabie saoudite. Les médecins ont estimé que les IRA étaient la cause de maladie chez 50% des enfants malades âgés de moins de 5 ans en 1995. Aucun des médecins n'avait bénéficié d'une formation aux IRA et ils n'avaient pas connaissance de l'existence d'un protocole ou programme national. Les réponses des médecins ont révélé une utilisation abusive des antibiotiques et des procédures de diagnostic. Un protocole national pour le diagnostic et le traitement des IRA a été préparé et distribué; par ailleurs, les responsables des soins de santé primaires et 55 formateurs nationaux ont reçu une formation.

¹Director-General, Health Centres, Ministry of Health, Riyadh, Saudi Arabia.

²General Directorate of Health Centres, Ministry of Health, Riyadh, Saudi Arabia.

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Introduction

More than four million childhood deaths are caused each year by acute respiratory infections (ARI), especially in developing countries [1-3]. More than 70% of deaths and health facility visits are due to diarrhoea, pneumonia, measles, malaria and malnutrition in children under 5 years of age in developing countries [4]. ARI mortality has been reported to be highest in the neonatal and postneonatal period and ARI, mainly pneumonia, accounts for about 18% of underlying causes of death in developing countries [6]. Berman stated that sufficient knowledge on ARI was available to support World Health Organization (WHO) case-management strategies [6]. Baseline studies are important for the development of treatment guidelines and for training of primary health care workers [7].

The objectives of this study were to:

- establish baseline data before the implementation of a national ARI control programme;
- explore the views of doctors working in health centres on ARI;
- recommend appropriate national strategies for the development of a national protocol on ARI regarding diagnosis and management;
- develop national continuing medical education for ARI managers.

Methods

A questionnaire was developed in 1995 to assess the knowledge, attitudes and practice of physicians working in the health centres in Saudi Arabia with regard to ARI. Initially, one region in each of the five provinces was selected randomly, namely Asir, Hafr Al-Batin, Makkah, Al-Hasa and

Qassim regions from South, North, West, East and Central provinces respectively. From each of these five regions, 10% of the health centres were selected at random having stratified for rural and urban areas. A pre-tested questionnaire was administered to at least one of the physicians working in the health centres. In all, 122 physicians were selected, 100 of whom responded (a response rate of 81.9%). To avoid bias and to get the frank opinion of the physicians, the respondents were asked to complete the questionnaire anonymously; it was then returned confidentially to the investigators at the headquarters of the Ministry of Health.

Results

The results presented here are from the responses provided by the physicians; their responses were based on health centre records. ARI was estimated to be the cause of sickness in 50% of children under 5 years reporting to the health care centres in 1995. The physicians estimated that 75% of the children up to 2 months of age had ARI. ARI occurred predominantly in winter (estimated to be about 70% of the cases) followed by spring (15%) and summer (12%). The lowest percentage of cases (3%) was reported in autumn.

With regard to the type of ARI, 80%–90% were estimated to be upper respiratory tract infections and 10%–20% to be lower respiratory tract infections. Upper respiratory tract infections were estimated to be due to the common cold (45%), tonsillitis (22%), pharyngitis (18%), otitis media (7%), laryngitis and tracheolaryngitis (7%) and acute epiglottitis (< 0.7%) (Table 1). Lower respiratory tract infections were estimated to be due to bronchitis (72%), bronchiolitis (21%) and pneumonia (7%) (Table 1).

Table 1 Estimated causes of upper and lower respiratory tract infections

Cause	Percentage of cases
<i>Upper respiratory tract infections</i>	
Common cold	45.0
Tonsillitis	22.0
Pharyngitis	18.0
Otitis media	7.0
Laryngitis and tracheolaryngitis	7.0
Acute epiglottitis	0.7
Other	0.3
<i>Lower respiratory tract infections</i>	
Bronchitis	72.0
Bronchiolitis	21.0
Pneumonia	7.0

With regard to the clinical diagnosis of ARI, 85% of the physicians thought that it was not possible to diagnose ARI on a clinical basis, whereas 15% thought that it was. More than 90% (of the 85% physicians mentioned above) felt that X-ray was needed to diagnose ARI. For laboratory investigations, 50% of the physicians (of the 85%) thought a complete blood account was necessary and 60% of them thought it was necessary to culture samples obtained from the chest or sputum. The responses for other tests needed varied from 2% to 7% (Table 2).

The majority of the physicians (70%) said that there was no protocol, manual or circular giving diagnosis and treatment procedures, although 30% said that there were some protocols or guidelines available. When asked what the protocol or guidelines were, each physician had a different answer. For those who said there were no protocols or guidelines, they reported that their diagnosis of ARI was principally made on a clinical basis, but they felt that

Table 2 Physicians' views of measures needed to diagnose acute respiratory infections

Diagnostic procedure	Percentage of physicians expressing the need
X-ray	90
Culture: sputum or chest sample	60
CBC	50
Allergy and immunity tests	7
Pulmonary function	6
Blood gases	2

CBC = complete blood count

the best way to diagnose ARI was by diagnostic methods.

Exploration of referral criteria was an important issue in this study. In general, the physicians felt that there were no clear criteria for referral and there was no standardized treatment of ARI. In fact, 95% of the physicians had no idea of or background on the ARI programme. None of the respondent physicians had attended courses on ARI whether in Saudi Arabia or elsewhere.

With regard to treatment of ARI, antibiotics were given in 93% of cases. For the first choice of treatment, the physicians prescribed from a group of five antibiotics, sometimes more than five choices of antibiotics. Some physicians prescribed other drugs along with antibiotic treatment, such as antipyretics (50%), cough suppressants/mucolytics (67%), antihistamines (44%), bronchodilators (30%), nasal drops (5%), vitamins (6%), humidifier/water vapour inhalation (6%) and cortisone (3%) (Table 3).

As to duration of treatment, the physicians did not differentiate between upper respiratory tract infections and lower respiratory tract infections but 41% said that the

Table 3 Drugs used by physicians with antibiotics for acute respiratory infection

Type of drug	Percentage use along with antibiotics
Cough suppressant/mucolytic	67
Antipyretic	50
Antihistamine	44
Bronchodilator	30
Humidifier (inhaling vapour)	6
Vitamins	6
Nasal drops	5
Cortisone	3

duration should be 5–7 days and 59% said that it should be 7–9 days.

As regards complications of ARI in patients treated at the health centres, 32% of physicians did not respond or said that there were no data. Of the 68% who responded, the complications were thought to be any of the following:

- transfer or spread of infection from upper respiratory tract to lower respiratory tract
- change from viral to bacterial causes
- change from acute to chronic (e.g. rheumatic fever) status
- pulmonary complications (e.g. empyema, abscess, meningitis and encephalitis).

Discussion

Baseline data

The General Directorate of Health Centres in the Ministry of Health in Saudi Arabia is taking preparatory steps in the formulation and implementation of an ARI control pro-

gramme. Selected baseline data on ARI, before the implementation of the National ARI Programme will help in the selection of indicators to monitor the implementation of the programme. These and other indicators selected during the first phase of the programme (training phase) will help in the monitoring and quality assurance and total quality management of the programme. This survey gives the status of ARI in the health centres and will be important in measuring the progress of the programme through its various phases of implementation.

ARI is a major public health problem worldwide. In Riyadh health centres, upper respiratory tract infections were diagnosed in 31% of the illnesses seen. This was the most frequent diagnosis, followed by gastrointestinal tract disorders (10%); all other diagnoses were less than 10% [8]. In a study of the pattern of paediatric emergency room visits in a university hospital in Riyadh, respiratory diseases accounted for 66.6% of 30 067 cases [9]. Upper respiratory tract infection was responsible for 32.5% of cases, bronchial asthma for 16.5%, acute tonsillitis for 8.2% and pneumonia for 2.4% of the cases. The respiratory illness incidence was similar in Kuwait [10], and in a hospital in Zimbabwe, 45.5% of all the emergency cases admitted in the 0–3-year-old age group were due to ARI [11]. In a study in Malaysia, 30% of all ill children under seven years of age were reported to have ARI in the two-week period prior to the interview [12]. A study in the Syrian Arab Republic reported the prevalence of ARI to be 3.4 episodes/100 child days [13].

An ARI control programme launched in 1989 in Pakistan reduced both antibiotic use and expenditure on drugs as a result of standard ARI case-management [14]. The case fatality rates dropped from 9.9% to 4.9% in children admitted with ARI as a re-

sult of the implementation of the programme. In the paediatric age group, ARI in the United States of America are the most common illnesses, of which pneumonia causes significant morbidity and mortality [15]. However, hospital admissions have been reduced with the availability of parenteral outpatient therapy for pneumonia in infants and children.

It is expected that with the implementation of the National ARI Programme in Saudi Arabia, hospital admissions due to ARI will be significantly reduced, thereby reducing the cost of management of this group of diseases.

Views of physicians

The views of the physicians interviewed on the diagnostic procedures and treatment of ARI in Saudi Arabia indicate their current knowledge of the management of ARI. There would appear to be an overuse or inappropriate use of X-ray, complete blood count and culture as well as other tests. The use of X-ray for 77% of the ARI cases, all under the age of 5 years, is a case in point. In addition, the use of antibiotics and other drugs appears to be high. It is envisaged that a national ARI programme will reduce the inappropriate use of drugs significantly and hence reduce the cost of ARI management. Furthermore, decreasing the number of antibiotics used and preventing inappropriate use will also lead to less community resistance to the antibiotics, which is an important issue. It has been found that at least one-third of patients attending primary health care centres in Riyadh fail to comply with short-term antibiotic therapy [16], which can be dangerous. Many studies have been conducted in Saudi Arabia on prescribing patterns [17-19] and it is important that the principles of proper antibiotic therapy be followed and be part of continuing medical education [20].

It is obvious from the responses of the physicians that they were not aware of any protocol for the treatment of ARI. The physicians had different educational backgrounds, having come from different countries. This might have led to diverse modes of treatment. It was also clear from the responses of the physicians that none of them had had any training in the management of ARI, whether in Saudi Arabia or in their country or in previous jobs.

Strategies and plan of action

In order to achieve correct diagnosis and management of ARI, the following actions should be undertaken:

- training of primary health care and hospital doctors in the early diagnosis and management of ARI, especially pneumonia, based on clinical background principles;
- establishment of standard protocols for diagnosis and drug use;
- ensuring the availability of the treatment requirements/requisites;
- provision of health education for the community regarding ARI, methods of providing domiciliary health care, risk factors and the proper time to seek medical assistance for treatment;
- conducting of continuous studies with the help of specialized laboratory facilities for culture and sensitivity for causative organisms in order to ascertain changes in microbial resistance;
- development of an information system in health centres, regional directorates and the Ministry of Health.

Continuing medical education for ARI managers

It is clear from our survey that the physicians in the health centres had not been trained in the management of ARI other

than what they had learnt at medical school. Therefore, the highest priorities for the National ARI Programme are to: a) make the managers of primary health care in the regions aware of the programme, and b) train trainers in ARI management as a first step in continuing medical education. The following step would be the training of all physicians who are likely to deal with ARI. Accordingly, at least one physician from the health centres and small hospitals needs to be trained. Trained physicians can then train their colleagues, both physicians and nurses, as part of on-the-job training. It will be necessary, in the long run, for all physicians and nurses dealing with ARI to be involved in continuing medical education to empower them to deal with ARI cases confidently and apply uniform national protocols for management.

Achievements up to the end of 1997

- A national committee on ARI has been formed.
- A national manual for all health centres and hospitals in all regions of Saudi Arabia has been prepared, published and distributed.

- A training course on ARI awareness for the leaders of primary health care in the regions was held in 1996 in collaboration with WHO.
- During 1997, 55 national trainers were trained and training courses for 100 physicians of health centres were conducted in eight regions.

With this backdrop, the Ministry of Health is currently planning its national ARI control programme. It is perceived that a well planned programme, based on WHO guidelines, will be of benefit in Saudi Arabia. With indicators selected ahead of time, the impact of the programme can be measured from time to time. Further studies planned will assess the impact of training on trainees and the impact of training on the services provided.

It is hoped that the National ARI Control Programme will be in place in Saudi Arabia by the year 2001.

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