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Inside this issue:

Integrated Management of Childhood Illnesses (IMCI) A joint WHO / UNICEF initiative

Background

Globally about 12 million children die before reaching their fifth birthday every year. Over 70% of these deaths, occurring in the developing world are due to acute respiratory infections, diarrhoeal diseases, malaria, measles, and malnutrition, often in combination. In the past decade, major progress has been made to reduce and contain childhood mortality and morbidity through universal childhood immunization, control of diarrhoeal diseases and acute respiratory infections, nutrition programmes (including breast-feeding promotion) and through implementation of other primary health care activities. In spite of this progress, major challenges remain, as mortality rates are still unacceptably high in many parts of the world.

In Oman, substantial progress has been made in child health through the implementation of various primary health care programs. The infant mortality has been steadily declining (from 64 in 1980 to 16.7 in 2000) indicating improvement in child health status. Under the Expanded Program of Immunization (EPI), the immunization coverage increased from 10% in 1981 to 98% by 1995 that resulted in a remarkable decline in the incidence of target diseases. Neonatal tetanus and Poliomyelitis have been virtually eradicated (pending certification) and Measles and Rubella are under elimination.

Diarrhoeal disease and ARI control programmes were implemented in Oman in 1984 and 1988 respectively and these programs have reduced mortality due to diarrhoea and acute respiratory infections. Diarrhoeal deaths have been brought down to almost 'Zero' and ARI deaths have been reduced from 49 to six over the past 10 years. However, morbidity from these diseases still remains a problem. Growth monitoring was initiated in 1988 & developmental screening program was started in 1992. The Baby Friendly Hospital Initiative (BFHI) has increased the exclusive breast-feeding rate from 4 percent to 30 percent during the nineties. As per a recent survey, nearly 70 percent of mothers are practicing predominant breastfeeding in Oman. Although there was a decline in the prevalence of PEM (from 23 to 18%) during 1995 to 1998, the problem still remains unacceptably high and needs to be addressed vigorously (National PEM survey 1999).

What is IMCI?

Integrated Management of Childhood Illness (IMCI) is a strategy for reducing the mortality and morbidity associated with the major causes of childhood illness. Its development by WHO and UNICEF started in 1992. Initially it was decided to focus on improving care at the first-level health facilities where millions of children arrive sick each day, most of them with one or more of the major causes of illness and death. A set of generic guidelines for management of childhood illness at this level was completed

in 1996 and is now starting to be used as the basis for introducing this component of IMCI in countries.

IMCI incorporates simple life-saving technologies promoted by WHO and UNICEF, such as ORT, into a more comprehensive approach, which addresses not only individual diseases but also the sick child as a whole. IMCI also has health promoting and preventive elements including reducing missed opportunities for immunisation, breast-feeding and other nutritional counselling, vitamin 'A' and iron supplementation. It should be noted that all children, not only sick children, should be targeted with these preventive and promotive interventions. IMCI pays particular attention to improving the communication and counselling skills of health care providers.

"IMCI, requires adaptation to the local and country situation, taking into account epidemiology, policies, infrastructure & capacity (including human resources)"

The IMCI strategy, therefore, seeks to reduce childhood mortality and morbidity by adopting a broad approach with the following components:

- Improving case management skills of health workers through the provision of guidelines on integrated management of childhood illness and to promote their use.
- Improving the health system by:
  - Ensuring the availability of essential drugs and other supplies
  - Improving organisation of work at the health facility level
  - Improving monitoring and supervision; and
- Improving family and community practices through education of mothers, fathers, other child care-takers and members of the community with focus on: health seeking behaviour, compliance, care at home and on overall health promotion.

Sultanate of Oman has adopted IMCI and duly modified the strategy to suite the country-specific situation. The current focus in Oman is on improving the quality of child health care at the first-level health facilities (outpatient services in health centres) in both rural and urban areas with standardised procedures and an integrated approach. The curative component of IMCI is adapted to address the most common conditions in children focusing on diarrhoea, pneumonia, and malnutrition. Accidents & Injuries and other four chronic disorders viz. recurrent wheezing, recurrent seizures, pallor and neuromotor delay are also included considering their emerging importance. These syndromes may not be curable, the health care providers can improve the quality of life of the child by correct assessment, treatment, follow-up, and counselling of the parents.

Implementation principles

IMCI is not a vertical programme but an integrated strategy that incorporates many of the elements of diarrhoeal disease and ARI control programmes and some of the child-oriented aspects of nutrition and other related programmes. It also depends on the effective functioning of the EPI and essential drugs programmes. It demands and facilitates an active collaboration between all of these existing activities. It is an important step toward improving the quality of care of sick children within the primary health care context.

IMCI implementation involves a combination of focused appropriate technical guidance and problem solving at Wilayat (district) and health facility levels around issues affecting the service delivery. The latter must involve the Wilayat level health staff, first-level health workers, and members of the communities they serve. In this way, IMCI can contribute to capacity building at Wilayat and local levels while revitalising the health services to improve primary health care services for children.

A number of principles underlie and should guide the implementation of the IMCI strategy:

- Is based on a rights approach to access to good quality childcare
- Adopts an integrated and holistic approach to childcare
- Addresses the leading causes of childhood morbidity and mortality
- Builds upon existing child health services/ programmes

(Continued on page 10)

Development of Quality Assurance in PHC

Background

Since the declaration of Alma Ata (1978) Primary Health Care (PHC) has been on the stage for definition, development, and refinement. The 1978 definition of PHC was broad and global, and it has allowed countries to implement PHC according to their own needs and opportunities. And so, it happened in Oman and with great success. In many instances PHC has drifted away from its original conception and reformed itself, taking up en route many elements of health care that are foreign to PHC, and even adding secondary care functions to its already crowded agenda. But, as is the case in similar healthcare systems all over the world, MOH (Oman) have realised that the PHC system should learn from its achievements, good and bad, and institute a rejuvenation of its structure and functioning to combat stagnation and complacency.

Quality Assurance

In October, 1995, during the 40th meeting of the WHO Eastern Mediterranean Region's Regional Committee, it was laid down that quality assurance of health care should be promoted, within the context of Health for All, and with emphasis on primary health care, the member states were urged to take specific steps towards the introduction and implementation of quality assurance in health care. Later on, an Inter-Country Consultation on Accreditation of District Health Facilities was held in Limasol, Cyprus, on 19-23 September, 1999, during which Oman reported on its plans to introduce quality assurance in PHC, and on the further initiatives taken to improve the organization and functioning of its health care system (the programmatic approach, the decentralization process, and the monitoring of the quality situation). In February, 2000 a team of investigators from WHO Headquarters and the Regional and Local Offices of WHO was invited to evaluate the strengths and weaknesses of the health sector and the health policies governing it, and to make recommendations for improving cost-effectiveness of its various services and programmes. The Team's specific recommendations on quality improvement in health services focused on the development of benchmarks for quality, and on the assessment of rational drug use, including assessment of prescribing behaviour. In general, however, all other recommendations had a clear link with quality improvements, of both programmes (e.g. cost recovery; human resource development) and the functioning of the healthcare system itself.

Thinking about possibilities to rejuvenate PHC in Oman a number of strategies were proposed. Whatever the strategy was, the goal ought to act in both novel and realistic ways, and, wherever possible, to link up with the introduction of quality assurance mechanisms. Also, it should be found out what constitutes primary health care in Oman, how the various components function, and what their present strengths and weaknesses are so as to holding the gains from the past whilst at the same time finding the opportunities for needed improvement. These evaluation processes could yield a tremendous amount of useful information that could fed into the health policy level, and back to the health system itself in order to be instrumental in its primary design and its further improvement.

Primary health care in Oman

Primary health care in Oman, has grown into a mixture of curative and preventive programs, of public health and individual health, and of office-based and institution-based services. The focal point for all these activities is the (community) health centre. Positive aspects of this development are the centralization of all these activities in one location with increased geographical efficiency and clarity for patients and clients. Negative aspects of this development are a clear lack of flexibility in management and a veritable data glut. The PHC system must be in tune with the prevailing culture, and so must be its rejuvenation process. The same holds true for the numerous organisational changes, both internally and externally driven. Having a watchful eye of these two developments is part of the system's programme evaluation and qual-

"In October, 1995, during the 40th meeting of the WHO Eastern Mediterranean Region's Regional Committee, it was laid down that quality assurance of health care should be promoted, within the context of Health for All, & with emphasis on PHC."

ity assurance processes.

This calls for an organizational redesign of all primary health care activities with reformulation of goals and objectives and concomitant planning and identification strategies, and ensuring resource allocation (PHC packages strategy / cost-recovery strategy / client involvement).

PHC is described in terms of segments or programmes, and for each segment targets and standards are produced. In addition, the level of staff competence required, and the need for resources should be defined. Finally there should be suggestions for data production, monitoring and evaluation. As much as possible the standards should be evidence-based which may require additional work.

"The activities concerning consensus-based guidelines development will continue under the supervision of PHC Directorate, with the assistance of a newly appointed MoH QA advisor as well as WHO advisors."

The high-prevalence segments or programmes in PHC in Oman are: 1. Community health; 2. Communicable diseases; 3. Chronic diseases; 4. Maternal health; and 5. Child health. These five domains are preceded by a general domain called **"Core Services."** There will be always a possibility of adding other domains to the existing list, e.g. Primary Eye Problems, Primary Ear Problems, Birth Spacing, and others.

In the creation of the standards in these domains, there must be a large input from baseline workers. The aim being to increase the feeling of ownership, thus acceptance, and the intention to work according to these standards.

National Conference on Quality Assurance in Primary Health Care

Recently, the Directorate of Primary Health Care Affairs, jointly with WHO Office (Oman), has organized the ***"National Conference on Quality Assurance in Primary Health Care"*** with the aim of approving a policy document for PHC quality improvement programme, adopting benchmarks standards and indicators for PHC services, and establishing a plan for the implementation of this initiative including important activities such as training, management support, monitoring, reporting and evaluation activities. The workshop took place from May 5 to 7, 2001 for three days; 125 health officials were invited to participate in the workshop. The first day was spent on introducing quality assurance and the production of guidelines, along with other topics of interest. Formal presentations were given by national health authorities, representatives of the World Health Organisation, and guest lecturers from Saudi Arabia and Bahrain.

The formal procedure of reaching consensus on guidelines and the typical amendments for the Omani situation were further explained to the participants on the second day. It was important not to stage guidelines development as a single, merely technical activity; the frameworks of rejuvenating primary health care and quality assurance were chosen to increase the relevance of the activity for the participants. In order to internalise the guidelines ten work groups were formed, each consisting of participants from one region (for the sake of convenience two sparsely inhabited rural regions, viz. *"Musandam & Al Wustah"* were combined). This regional division benefited the speed of achieving the scheduled tasks; staff who know each other and the local situation can reach a consensus much quicker. Moreover, the activities conducted during the workshop could easily be continued at the regional level.

During the workshop, the groups were directed at understanding the system as described above, and mastering the technique of optimising drafts. More specifically, the work groups were requested to look at the draft texts for each of the domains, analyse the standards one-by-one, adding to them, or improving the present text. For each of the standards the group was asked to make a statement of acceptance, or, if group acceptance could not be reached, add a minority view. The comments and suggestions from the work groups were collected and will be analysed at a later stage. The activities concerning consensus-based guidelines development will continue under the supervision of PHC Directorate, with the assistance of a newly appointed MoH QA advisor as well as WHO advisors.

No doubt, this innovative development in primary health care quality assurance introduces flexibility, and leads to more and better accountability, better-educated personnel, the use of relevant and improved indicators, and a better grip on the evaluation of services provided, all contributing - ultimately - to improvement of the quality in primary health care.

Neisseria Meningitides W-135 Carriage Study

(Multi-Country Study: Oct. 2000)

Background

Estimates indicate that atleast 1.2 million cases of bacterial meningitis occur worldwide every year and 135,000 of these are fatal. Approximately 500,000 of these cases and 50,000 of these deaths are due to meningococcus. Most severe epidemics have been associated with serotype A but B and C serogroups can also cause outbreaks. Less than 8% of all cases of sporadic meningococcal disease are due to *Neisseria meningitides, serogroup W135 (Nm–W135)*. This serogroup has been considered as having a low capacity to cause epidemics.

Overcrowding in the houses and poor living conditions are linked with a higher incidence of meningococcal disease. Further, large population movements such as pilgrimage play a major role in the spread of infection and disease.

Vaccination with Meningococcal vaccine is a mandatory requirement for all *Hajj* pilgrims. However the formulation of the vaccine differs from country to country. Some countries use a quadrivalent (A,C, Y & W-135) vaccine while most of the other countries including Oman use a bivalent (A & C) vaccine.

Vaccination against the disease does not prevent the carrier state. Nasopharyngeal carriage permits the infection to persist in the community for long periods. Higher carriage rate could increase the risk of infection among the non-immune population.

Meningitis disease burden in Oman

All types of Meningitis are under surveillance in Oman since 1991. Following policies concerning Meningococcal disease were introduced:

- **Notification:** Meningococcal infections are included in Group 'A' of communicable diseases (to be notified & investigated within 24 hrs). Other meningitis cases are included in Group 'B' and classified into Hib meningitis, other bacterial and viral meningitis.
- **Vaccination:** Since December 1988 as a policy all *Hajj* and *Umra* pilgrims are given a single dose of Meningococcal Type A&C vaccine at least 10 days prior to entering Saudi Arabia.
- **Contact Management:** All close family contacts of a suspected case of meningococcal meningitis are provided chemoprophylaxis with Rifampicin. In case of isolation of sero type 'A' or 'C' all contacts < 7 years are immunised.

The reported cases were few as shown in fig. 1. Serotyping for the isolates was started as a standard policy since mid nineties. The W-135 serotype was never isolated in Oman until the year 2000.

On 26th March (week #12), the first case of Meningococcal meningitis was reported in Oman followed by 4 cases in the following week #13. The incidence was clearly in excess of the usual occurrence. Moreover all these 5 cases gave a history of either themselves returning from *Hajj* or coming in contact with a relative returning from *Hajj.*

Fig: 1
Incidence of Meningococcal Infection in Oman 1991 to 2000

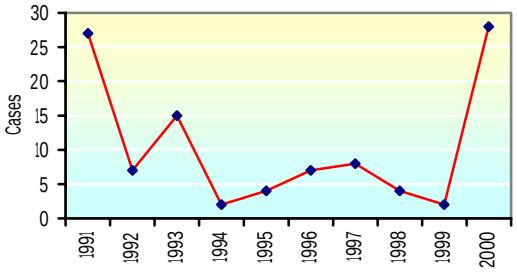
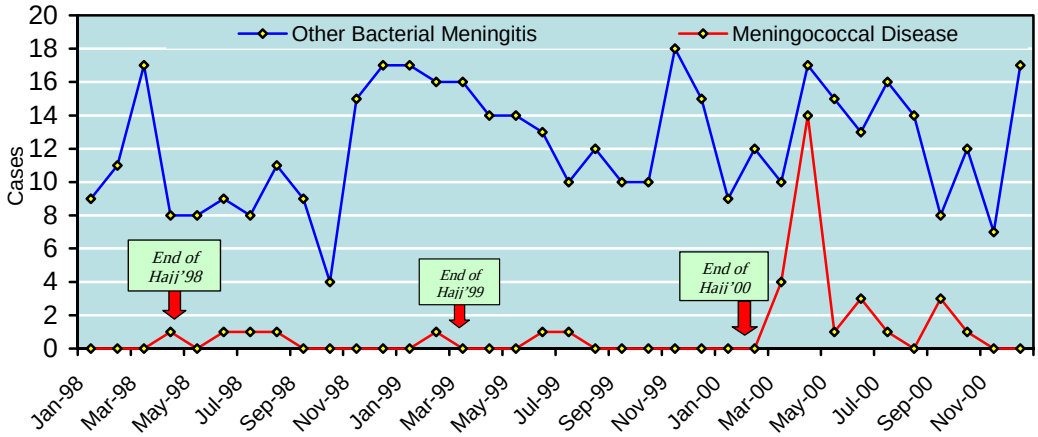


Fig.2 illustrates the monthwise incidence of Meningococcal infection and other bacterial meningitis in Oman from January 1998 to December 2000. The graph depicts an outbreak of Meningococcal meningitis after the *Hajj* 2000. Total 28 cases were reported till December. Of these 7 died giving a case fatality rate of 25%.

"Overcrowding in the houses & poor living conditions are linked with a higher incidence of meningococcal disease. Further, large population movements such as ***pilgrimage*** *play a major role in the spread of infection & disease. "*

Fig: 2

Monthly Incidence of Meningococcal & Other Bacterial Meningitis in Oman: 1998 to 2000



" The fact of having been a pilgrim in the ***Hajj of 2000*** *or having had contact with these Pilgrims was identified as a risk factor associated with becoming either a case or a carrier of meningococcal disease due to* ***Nm–W135***"

Study Rationale

During March 2000, coinciding with the *Hajj* pilgrimage; Saudi Arabian health officials recorded an increase in the number of cases of meningococcal disease. Considerable proportions of these cases were due to *Nm–W135*. Subsequently a number of the countries worldwide notified cases of *Nm–W135*. Cases of Meningococcal disease associated with *Hajj* pilgrims continued to occur all over the world. 331 cases of Neisseria meningitidis, serogroup W135 were notified in 14 different countries in a period of two months (March & April) associated with international travel to Saudi Arabia during Hajj of year 2000.

This increased incidence of the cases and a high case fatality may either be due to change in the virulence or change in the dynamics of the carriage of the *Nm-W135*.

The vaccine does not prevent or eliminate carriage. Thus close family contacts of the returning pilgrims would also be at risk of the disease.

Therfore, the spread of *Nm–W135* needs to be monitored and put into perspective. Hence a community based study with laboratory support was proposed to provide evidence for future recommendations for the control and prevention of epidemics related to *Nm–W135*. The multi-country study was planned during the year 2000 in Oman, Sudan and Morocco with support of WHO to study the dynamics of *Nm–W135* carriage.

Objectives

1. To estimate the proportion of carriage of *Nm-W135* among the people having performed *Hajj* in the year 2000 and among their close family contacts
2. To assess the rate of acquisition of carriage of *Nm-W135* by the family contacts

Material & Methods

The cross-sectional study was undertaken in the four Wilayat of the South Batinah Region of Oman viz. Awabi, Barka, Mussanah and Rustaq during the period October to November 2000.

Sampling & Inclusion Criteria

Sample households were selected from the list of people who performed *Hajj* in the year 2000 and have not taken antibiotics (Rifampicin) since then. Taking into account the logistics and feasibility of the study those families living in accessible areas were included. The study group comprised of 46 families (n=399) covering the sample population.

The study group is more than the estimated sample for the confidence interval of 95% for an expected period prevalence of 10 – 20%.

Face to face interviews using standardized, pretested questionnaires were used to collect the information regarding the demographic

characteristics, history of attendance to *Hajj* in the current year (2000), relation with the traveler, overcrowding, smoking and history of antibiotic treatment.

Sterile throat swab tubes with charcoal transport medium were used for collection of the specimens for laboratory examination

The field staffs were trained for the appropriate method of collection of throat swabs and use of transport media.

Field Work

Four teams, each with five members visited the selected families on planned dates. After explaining the purpose of the study a formal consent was taken. Details were recorded through interviews. This was followed by collection of the throat swabs by the trained heath staff from all the members of the family above one year of age, present at the time of visit. Total three visits were made to the same household at weekly intervals and three throat swabs from each individual were collected.

Throat swabs were labeled and dispatched on the same day to the Central Public Health Laboratory, Darseit.

Laboratory Methods

Central Public Health Laboratory processed the swabs and cultured the strains as shown in following steps:

- Swabs were inoculated on Chocolate agar supplemented with VNCT (Vancomycin, Colistin methane sulphonate, Trimethoprin, and Nystatin).
- Plates were incubated at 36^0 C $\pm$ 1^0 in CO_2 enriched atmosphere (3 to 5%) for 48 hours and examined for Neisseria colonies. Typical colonies were picked and Gram stained.
- Gram negative cocci (Oxidase positive) were subcultured for carbohydrare utilization tests. Isolates positive for hydrolization of Glucose & Maltose and negative for Lactose & Sucrose were labeled as Neisseria meningitides.

Slide agglutination test was carried out using initially two polyvalent antisera (Wellcome). Polyvalent I: A, B, C, & D and Polyvalent II: X, Y, Z, & W-135. Then further tested with *Monovalent* antisera.

- The positive isolates of *Nm-W135* were sent to WHO reference laboratory in Oslo, Norway for further characterization.

Results

In total 1157 Throat swabs were collected from a total of 399 persons (from 46 families). 117 (10%) specimen were positive for *Neisseria meningitides*. Among the culture positive specimen 23 were positive for *Nm-W135* and 94 isolates were non- typable (Table – 1).

Table – 1
Results of Laboratory Examination

Particulars	n	Isolates		
		Nm-W135	Nm Others	Total
Total Samples	1157	23	94	117
Persons Examined	399	15	47	62

Out of 411 persons a total 399 persons (those from whom atleast two specimen were collected) were included in the study group from four Wilayats (Awabi, Barka, Mussanah and Rustaq). Study group comprised of 50 pilgrims and 349 of their family contacts. Average family size was 9.1. Out of total 46 families 11 (23.9%) family groups were found to have atleast one carrier of *Nm-W135*. There was no relation to the family size. Over all prevalence of *Nm-W135* was found to be 3.76% amongst the total study population. Maximum 40 of the houses with 6.8% of the carriers were found in Barka Wilayat. (Table-2)

Table – 2
Wilayat Distribution of *Nm–W135* Carriers

Wilayat	n	Nm-W135
Barka	59	4
Rustaq	161	1
Awabi	115	7
Mussanah	64	3
Total	**399**	**15**

"Prevalence of Nm-W135 amongst the pilgrims was 10% and that among the family contacts was 2.9% & the difference was statistically significant "

"The study revealed 20% carriage of Nm-W135 among the throat swabs positive for Neisseria meningitides & 23.6% of the families were having at least one carrier of Nm-W135 amongst them".

Prevalence of *Nm-W135* amongst the pilgrims was 10% and that among the family contacts was 2.9% and the difference was statistically significant ($p < 0.05$). Among the pilgrims maximum prevalence was observed in 30 – 45 year age group. 7 (70%) carriers among the family contacts were below 15 years of age. However, difference among the prevalence of *Nm-W135* between various age groups was not significant ($p > 0.05$). (Table-3)

Table – 3
Distribution of prevalence of Nm-W135 amongst Pilgrims & Family contacts by Age Groups

Age Group	Pilgrims		Contacts		Total	
	n	+	n	+	n	+
1—15	0	0	198	7	198	7
15—30	4	1	103	1	107	2
30—45	20	3	27	2	47	5
45—60	17	1	9	0	26	1
60 +	9	0	12	0	21	0
Total	**50**	**5**	**349**	**10**	**399**	**15**

The male to female ratio amongst the study group was 45:55. There was no statistically significant difference in the prevalence of *Nm-W135* isolates among both sexes.

Laboratory Results

Four persons were positive for *Nm-W135* in only first specimen, One in only second specimen and 5 only in the third specimen. Further, in two persons *Nm-W135* was detected in two throat swab specimen (one in 1st & 2nd and one in 2nd & 3rd).

Discussion

No previous studies have been undertaken either in the study site or any other area in Oman to ascertain the endemicity of *Nm-W135.*

The average family size of the families included in the study was in accordance with national and regional average. The male to female ratio observed among the study group was 45:55.

The study revealed 20% carriage of *Nm-W135* among the throat swabs positive for *Neisseria meningitides* and 23.6% of the families were having atleast one carrier of *Nm-W135* amongst them. However, in 76.4% of these

Table - 4
Nm-W135 Isolation from Samples

Throat Swab Samples	Nm-W135	Nm Others
Only 1st sample	4	26
Only 2nd sample	1	33
Only 3rd sample	5	17
1st & 2nd samples	1	5
1st & 3rd samples	0	3
2nd & 3rd samples	1	8
Either 2nd or 3rd or both	7	0
All three samples	3	0
Positive in any sample	15	11

families carriage of *Nm-W135* amongst the Pilgrims was not observed. This might have been either due to their acquiring *Nm-W135* from their close relatives who have been to *Hajj* or due to disappearance of their carriage status during the 10 months post pilgrimage period or the status was acquired through endemic level transmission in the study site. 80% of these carriers (from the houses where only contacts revealed carriage of *Nm-W135*) were frequently visiting the houses where their relatives had been to *Hajj* during the same period and in the process might have acquired the carrier status.

In the different Wilayat the carriage of *Nm-W135* varied from 0.6% in Rustaq to 6.8% in Barka. A significantly high prevalence was observed among the pilgrims than in the family contacts. Among the carriers, children below 15 years were found to have higher carriage rate of *Nm-W135.* However, the differnce was not statistically significant.

The variation in the positivity of the three throat swabs from one person for *Nm-W135* (or false negativity) could be due to other predominant flora camouflaging the growth of *Nm-W135* or due to temporary carriage state in these persons.

Seven persons revealed *Nm-W135* in either

2nd or 3rd or both throat swab specimen. This could be due to the continued transmission throughout the study period or due to false negativity or poor sampling for the 1st throat swab specimen. All the three throat swabs specimen were positive for *Nm-W135* in three persons, indicating continuation of the carriage state in these persons. This might have been due to high colonization or endemic transmission potential in the community.

Conclusions

- Prevalence of *Nm-W135* is high (10%) among the pilgrims.
- The prevalence of *Nm-W135* among the family contacts of pilgrims was 2.9%.
- No significant difference was observed in prevalence of the carriage between sexes & various age groups
- This study allows a ***"snapshot"*** *view* of the circulating *Nm-W135* strain in a selected group and does not necessarily signify its level of endemicity.
- The present study results do not suggest the need for change in the current vaccination policy.

Recommendations

- To ascertain the Nm-W135 endemicity level and the risk of acquiring carriage due to *Hajj* pilgrimage, a case control study including the Non-*Hajj* family groups could be undertaken.
- The pilgrims returning from *Hajj* need to be kept under surveillance and proper elimination of the *Nm-W135* carriage should be carried out by giving Rifampicin.
- The practical feasibility should be explored to administer Rifampicin to the returning *Hajj* pilgrims to prevent *Nm-W135* carriage.

Limitations of the Study

- The results of the study are relevant to the study area and cannot be generalized.
- The comparison between the non-Hajj families is required for ascertaining the risk of acquiring *Nm-W135* infection that could be attributed to Hajj pilgrimage.
- Disappearance of the carriage state of *Nm-W135* in the post Hajj period needs to be studied.

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Acknowledgements:

The dedication & commitment of the ***"South Batinah Field Survey Team"*** *participating in the W-135 carriage study is gratefully acknowledged.*

Further Characterization of *Nm-W135*

Characterization of the *Nm-W135* isolates was done at the National Institute of Public Health, Oslo, Norway. Out of the 117 isolates 105 strains of *Nm-W135* were further analysed with a panel of 16 monoclonal antibodies with the dot-blot method. The genotype of the strains was also screened using multilocus enzyme electrophoresis to identify whether the strains belonged to the ***Hajj2000*** clone.

Out of the 23, *Nm-W135* strains from Oman, 10 strains were serotype 2a:P1.5,2 & 1 was 2a:P1.2. All these atrains belonged to ***Hajj2000*** clone by multi locus genotype analysis. The remaining 12 strains identified as *W-135* in Oman (but not in Oslo), were of serotype 4:P1,5 (2), 4:NST/NT:NST (8) & 2 were Neisseria lactamica. None of these belonged to the ***Hajj2000*** clone.

Thus it was concluded that among the 1157 swabs tested, 11 (0.95%) were positive for the ***Hajj2000*** clone, 5 at 1st sampling, 2 at the 2nd & 4 at the 3rd sampling date.

"This study allows a ***"snapshot"*** *view of the circulating Nm-W135 strain in a selected group & does not necessarily signify its level of endemicity".*

(Continued from page 2)

- Strengthens elements of the health system needed to deliver IMCI
- Improves health worker communication with communities and support outreach services
- Aims to ensure active household/community participation in IMCI implementation, monitoring and evaluation.

Introduction of IMCI

The first step in the introduction of IMCI in Oman was thorough orientation of all relevant health staffs as to what this strategy entailed. This process was meant to seek consensus on the priority problems to be addressed, based on the country specific situation, and on how to proceed with implementation of the integrated approach.

" The process of adaptation requires active consensus building & takes time but yields guidelines appropriate to the context & ensures a sense of ownership of those involved, an essential factor in their subsequent use".

Following a decision to work towards integration of management of childhood illness, the first step was to define standard guidelines for care specifically tailored to the country. This adaptation process involved programme managers of all relevant sections of the ministry of health. It provided an opportunity to review policies and practices related to child health care and to revise them in a way that allows integration and avoids contradiction. The process of adaptation required active consensus building and took nearly one year, but, yielded guidelines appropriate to the context and ensured a sense of ownership of those involved. Once guidelines were adapted, the process of modifying the training course materials for first-level health workers was commenced.

In parallel with the process of adapting the case management guidelines, it was essential to start planning for the introduction of the IMCI approach. Hence, an IMCI implementation plan that addressed the various elements, including a training plan, was developed. Consideration was also given to factors enabling trained health workers to apply their skills, including the availability of the necessary essential drugs and supplies.

IMCI & Quality assurance

The overall potential impact of IMCI is the reduction in morbidity and suffering, through assuring child's access to quality health care, and improved and correct case management at home.

IMCI has potential to contribute to quality assurance through:

- The setting of standards and procedures
- The improvement of health providers skills and knowledge and promotion of technical quality of care through use of better procedures and improved communication with mothers and other caretakers
- The improvement of the organisation of work at the health facility level through participatory problem-solving techniques
- The improvement of supervision and monitoring in order to improve standards of care through quality control techniques; and monitoring user satisfaction

A quality assurance system for IMCI in Oman has been developed and is currently under trial in Muscat Governorate. Each health centre will have a *'Quality Assurance Circle'* (QAC) consisting of the Medical office I/C, Administrative officer, Nurse I/C and a Health educator. The QAC will conduct supervision once every month using standard procedures. In turn, a Supervising Team consisting of a Paediatrician and Nurse/Health educator will supervise three QAC. These supervisory visits will be conducted once every 3 months using standard procedures.

Services provided under IMCI

In addition to routine care of child, IMCI envisages an integrated management of the target problems through five sequential steps.

Step 1: Triage & routine care

The routine care of a child, which involves the preventive, promotive, curative, and educative aspects of childcare, is closely integrated to management of acute and chronic illness. The care-giver is asked a set of screening questions at the triage stage to find out the main reason or reasons for visit and to identify other problems which the caregiver may not complain about

Step 2: Feeding & psychosocial development

In children < 2 years, feeding assessment is done initially. The health care provider would then offer counselling on feeding and psychosocial stimulation based on the recommendations appropriate to the child's age and situations.

Step 3: Assess, Classify, Treat, & counsel on follow-up

After noting the problems identified through the screening questions at triage the doctor further assesses the child for findings relevant to the suspected problem. Treatment is given according to the problem/s detected using the standardised case management approach. The health care provider would also counsel on home care and regular follow-up visits.

Step 4: Offer follow-up care

In case the child is revisiting the clinic for the same problem/s then the child is reassessed and given follow-up treatment as in step 3

Step 5: Treat at clinic & teach mother treatment for local conditions at home

After assessment the doctor decides what treatment the child needs using treatment algorithm If any emergency medications are needed they are given at the clinic otherwise the caregiver is advised about treatment at home. If the child needs urgent referral to another hospital pre-referral, treatment if any is given in the clinic and refereed for hospital care.

IMCI Training

IMCI training has been remodelled to suit the well developed health system of the Sultanate and is intended to provide the health care provider with all the skills necessary to implement the IMCI in health facilities. The IMCI training will be on an incremental basis in a step-wise fashion as shown diagrammatically below.

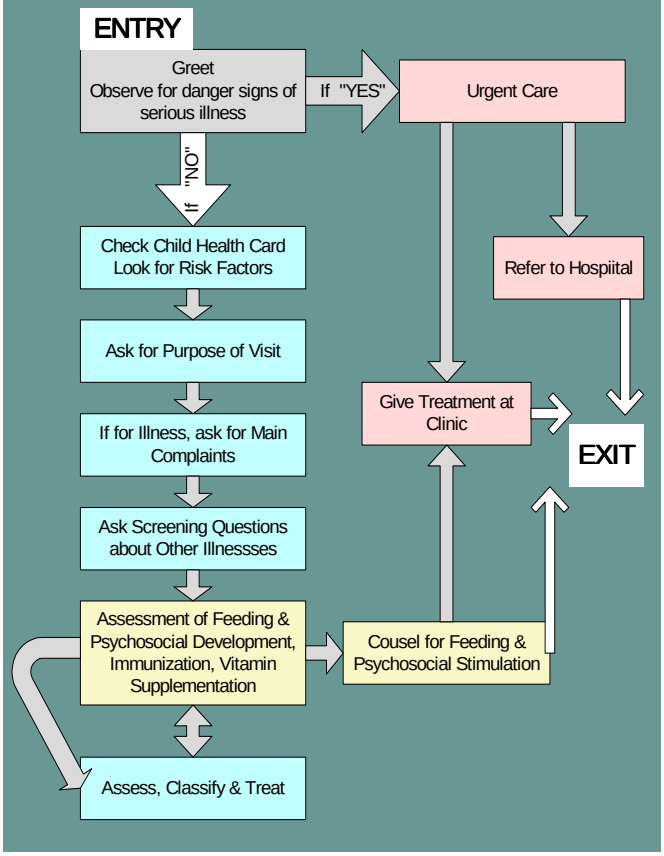
Future Plans

IMCI strategies are now currently being field tested in the Governorate of Muscat. The training and the training material and supervisory components would be refined and fine-tuned during this period. By early next year, IMCI would be further expanded to other regions in a phased manner.

The evolution of the country specific model in Oman for implementation of IMCI is being viewed as a model for other developed countries elsewhere with similar settings i.e. developed health system with an organised infrastructure.

Fig. 1

IMCI: Clinical Algorithm



"The evolution of the country specific model in Oman for implementation of IMCI is being viewed as a model for other developed countries elsewhere with similar settings i.e. developed health system with an organised infrastructure."

Communicable Diseases Quarterly Report

Second Quarter (April to June 2001)

ICD Code	Diseases	2001 Second Quarter Apr	May	Jun	Total	2000 Q2 Apr-Jun	Q3 Jul-Sep	Q4 Oct-Dec	2001 Q1 Jan-Mar
GROUP 'A' DISEASES									
A00	Cholera	-	-	-	**0**	2	5	2	-
A20	Plague	*Never Reported*							
A36	Diphtheria	*Last Case in 1992*							
A39	Meningococcal infection	4	-	1	**5**	18	4	1	8
A80	Poliomyelitis	*Last Case in 1993*							
	Acute Flaccid Paralysis	1	2	2	**5**	1	2	3	5
B05	Measles	-	1(i)	-	**1(i)**	10	3	-	1 (i)
B06	Rubella & [CRS]	-	-	-	**0**	3	-	-	-
A95	Yellow fever	*Never Reported*							
A82	Rabies	-	-	-	**0**	-	-	-	-
A75.0	Louse-borne typhus	*Never Reported*							
A68	Relapsing fever	*Last Case in 1997*							
A33	Tetanus Neonatorum (NNT)	*Last Case in 1995*							
A99	Viral Hemorrhagic fever	-	-	-	**0**	-	-	-	-
GROUP 'B' DISEASES									
A03.0	Typhoid fever	4	11	4	**19**	24	40	27	19
A01.4	Paratyphoid fever	2	-	-	**2**	11	5	2	4
A02	Food poisoning	78	120	101	**299**	313	361	176	160
A22	Anthrax	*Never Reported*							
A23	Brucellosis	18	10	9	**37**	76	104	52	25
A37	Pertussis	2	8	10	**20**	58	79	11	16
A35	Tetanus (Excluding NNT)	-	1	-	**1**	3	1	1	-
A90	Dengue	*Never Reported*							
	Viral Hepatitis - Total	**164**	**179**	**135**	**478**	**296**	**253**	**290**	**376**
B15.9	Viral Hepatitis - HBsAg '+' (ELISA)	6	4	4	**14**	14	11	12	9
B15.0	Viral Hepatitis - HBsAg Negative	128	144	113	**385**	217	180	220	299
B17	Viral Hepatitis - Unspecified	30	31	18	**79**	65	62	58	68
B55	Leishmaniasis	1	1	-	**2**	1	2	10	3
B65	Schistosomiasis	-	-	-	**0**	1	2	-	2
B74	Filariasis	-	-	-	**0**	1 (i)	1 (i)	-	-
B72	Dracunculiasis	*Certified by WHO as Eradicated from Oman*							
G00.0	Haemophilus Meningitis	1	1	3	**5**	4	5	7	2
G00-G03	Meningitis - (All others)	11	10	5	**26**	45	41	33	19
A30	Leprosy	-	-	-	**0**	1	4	4	1
A15-A19	Pulm. Tuberculosis Sputum Positive	10	7	8	**25**	29	33	22	38
	Pulm. Tuberculosis Sputum Negative	1	7	2	**10**	12	5	4	1
	Extra Pulmonary Tuberculosis	8	9	12	**29**	29	33	15	18
B50-B54	Malaria (All sources)	33	43	46	**122**	147	281	151	100
A50-A53	Syphilis	10	14	25	**49**	58	64	48	31
A54	Gonococcal Infections	22	28	20	**70**	94	91	74	81
GROUP 'C' DISEASES									
A03	Shigellosis	115	100	75	**290**	348	372	497	485
A06	Amoebiasis	522	362	268	**1152**	1,069	1,094	1,246	1,431
A09	Acute Gastro-Enteritis & Diarrhoea	9535	6827	5857	**22219**	23,461	25,855	33,591	32,521
B01	Chicken Pox	1717	1545	1295	**4557**	5,996	2,204	2,766	3,886
B26	Mumps	356	572	443	**1371**	4.842	1,463	1,175	809
A71	Trachoma	74	61	36	**171**	297	275	148	139
J10-J11	Influenza	302	286	201	**789**	1,077	850	1,209	901

Communicable Diseases Quarterly Report by Regions

Second Quarter (April to June 2001)

ICD Code	Diseases	Total	Muscat	Dhofar	Dakhliyah	North Sharqiyah	South Sharqiyah	North Batinah	South Batinah	Dhahira	Musandum	Al-Wusta
GROUP 'A' DISEASES												
A00	Cholera	**0**	-	-	-	-	-	-	-	-	-	-
A20	Plague	*Never Reported*										
A36	Diphtheria	*Last Case in 1992*										
A39	Meningococcal infection	**5**	3	-	-	1	1	-	-	-	-	-
A80	Poliomyelitis	*Last Case in 1993*										
	Acute Flaccid Paralysis	**5**	-	2	2	-	-	-	-	1	-	-
B05	Measles	**1(i)**	1	-	-	-	-	-	-	-	-	-
B06	Rubella & [CRS]	**0**	-	-	-	-	-	-	-	-	-	-
A95	Yellow fever	*Never Reported*										
A82	Rabies	**0**	-	-	-	-	-	-	-	-	-	-
A75.0	Louse borne typhus	*Never Reported*										
—A68	Relapsing fever	*Last Case in 1997*										
A33	Tetanus Neonatorum (NNT)	*Last Case in 1995*										
A99	Viral Haemorrhagic fever	**0**	-	-	-	-	-	-	-	-	-	-
GROUP 'B' DISEASES												
A03.0	Typhoid fever	**19**	6	1	4	1	-	5	-	2	-	-
A01.4	Paratyphoid fever	**2**	-	-	-	-	-	1	-	-	-	1
A02	Food poisoning	**299**	37	3	75	19	9	74	35	47	-	-
A22	Anthrax	*Never Reported*										
A23	Brucellosis	**37**	-	37	-	-	-	-	-	-	-	-
A37	Pertussis	**20**	2	1	-	-	4	-	-	13	-	-
A35	Tetanus (Non NNT)	**1**	-	-	-	-	1	-	-	-	-	-
A90	Dengue	*Never Reported*										
	Viral Hepatitis - Total	**478**	**30**	**33**	**78**	**63**	**39**	**70**	**81**	**28**	**4**	**52**
B15.9	V. Hepatitis - HBsAg Positive (ELISA)	**14**	-	1	1	4	1	3	2	-	1	1
B15.0	Viral Hepatitis - HBsAg Negative	**385**	13	30	75	49	28	56	78	13	1	42
B17	Viral Hepatitis - Not Tested	**79**	17	2	2	10	10	11	1	15	2	9
B55	Leishmaniasis	**2**	-	1	-	1	-	-	-	-	-	-
B65	Schistosomiasis	**0**	-	-	-	-	-	-	-	-	-	-
B74	Filariasis	**0**	-	-	-	-	-	-	-	-	-	-
B72	Dracunculiasis	*Certified by WHO as Eradicated from Oman*										
G00.0	Haemophilus Meningitis	**5**	-	2	1	-	-	1	-	1	-	-
G00-G03	Meningitis (Others)	**26**	2	2	-	2	1	10	3	5	-	1
A30	Leprosy	**0**	-	-	-	-	-	-	-	-	-	-
A15-A19	Pulm. Tuberculosis Sputum Positive	**25**	3	3	-	-	4	12	2	1	-	-
	Pulm. Tuberculosis Sputum Negative	**10**	-	1	1	-	1	4	3	-	-	-
	Extra Pulmonary Tuberculosis	**29**	7	3	3	-	2	7	7	-	-	-
B50-B54	Malaria (All sources)	**122**	59	6	6	1	4	17	7	19	2	1
A50-A53	Syphilis	**49**	11	7	1	1	7	15	1	6	-	-
A54	Gonococcal Infections	**70**	21	10	-	1	9	12	2	8	2	5
GROUP 'C' DISEASES 2												
A03	Shigellosis	**290**	62	18	42	65	25	6	20	31	13	8
A06	Amoebiasis	**1152**	91	1	242	210	195	177	43	57	31	105
A09	Acute Gastro-Enteritis & Diarrhoea	**22219**	3270	1358	2899	1497	2057	5621	3168	1736	319	294
B01	Chicken Pox	**4557**	1331	212	571	202	200	1086	650	270	27	8
B26	Mumps	**1371**	290	406	112	94	98	144	67	157	1	2
A71	Trachoma	**171**	2	-	98	12	4	14	40	1	-	-
J10-J11	Influenza	**789**	352	5	1	48	-	353	1	29	-	-

Selected Communicable Diseases by Wilayat, Second Quarter 2001

Region	Wilayat	Acute Flaccid Paralysis	Measles	Rubella	Pertussis	TB (Total)	TB Sputum Positive	Tetanus (Ex. NNT)	Malaria (All)	Viral Hepatitis (Total)	Leprosy	Meningo. Infection	Leishma-niasis
MUSCAT	Muscat		1		1	1			3	4		1	
	Seeb					5	2		21	8		1	
	Muttrah					1	1		19	4		1	
	Bowsher				1	2			8	12			
	Al Amerat								8	2			
	Quriyat					1							
DHOFAR	Salalah	2			1	5	3		6	26			1
	Thumrait												
	Taqah					1				5			
	Mirbat					1							
	Sudah									2			
	Rakhyut												
	Dhalqut												
	Muqshan												
	Shaleem												
NORTH BATINAH	Sohar					6	3		9	2			
	Shinas					2			2	6			
	Liwa					1	1			2			
	Saham					2	1		2	11			
	Khabura					3	2			15			
	Suwaiq					9	5		4	34			
SOUTH BATINAH	Rustaq					4			2	39			
	Nakhl									4			
	Wadi Maawil									4			
	Al Awabi					1				8			
	Musanah					1	1		1	6			
	Barka					6	1		4	20			
DAKHLIYAH	Nizwa					2			6	14			
	Bahla									4			
	Adam					2				1			
	Hamra									7			
	Manah	1								2			
	Sumail									10			
	Izki	1								34			
	Bid Bid									6			
DHAHIRA	Ibri				11				4	21			
	Yanqul				1								
	Dhank				1				1				
	Buraimi	1							10	7			
	Mahda					1	1		4				
NORTH SHARQIYAH	Ibra									18			
	Mudhaibi								1	9			1
	Bidiyah									3			
	Al-Qabel									4			
	Dima Al-Tayeen									28		1	
	Wadi Bani Khalid									1			
SOUTH SHARQIYAH	Sur				1	3	3			7			
	Masirah					2	1			16			
	Al Kamil & Al Wafi					1			2	1			
	BBB Ali									7		1	
	BBB Hassan				3	1		1	2	8			
MUSANDUM	Khasab								1	3			
	Dibba												
	Bukha									1			
	Madha								1				
AL-WUSTAH	Haima								1	31			
	Duqum									13			
	Mahoot									6			
	Al-Jazer									2			
NATIONAL TOTAL		**5**	**1**	**0**	**20**	**64**	**25**	**1**	**122**	**478**	**0**	**5**	**2**

Age Distribution of Communicable Diseases

Second Quarter (April to June 2001)

ICD Code	Diseases	Total	Age Groups in Years								
			< 1	1-5	5-10	10-15	15-19	20-24	25-34	35-44	> 45
GROUP 'A' DISEASES											
A00	Cholera	**0**	-	-	-	-	-	-	-	-	-
A20	Plague	*Never Reported*									
A36	Diphtheria	*Last Case in 1992*									
A39	Meningococcal infection	**5**	1	1	-	1	-	1	-	-	1
A80	Poliomyelitis	*Last Case in 1993*									
	Acute Flaccid Paralysis	**5**	-	1	3	1	-	-	-	-	-
B05	Measles	**1**	-	1	-	-	-	-	-	-	-
B06	Rubella & [CRS]	**0**	-	-	-	-	-	-	-	-	-
A95	Yellow fever	*Never Reported*									
A82	Rabies	**0**	-	-	-	-	-	-	-	-	-
A75.0	Louse borne typhus	*Never Reported*									
A68	Relapsing fever	*Last Case in 1997*									
A33	Tetanus Neonatorum	*Last Case in 1995*									
A99	Viral Haemorrhagic fever	**0**	-	-	-	-	-	-	-	-	-
GROUP 'B' DISEASES											
A03.0	Typhoid fever	**19**	-	3	3	1	2	2	2	5	1
A01.4	Paratyphoid fever	**2**	-	-	-	-	-	1	-	-	1
A02	Food poisoning	**299**	4	50	80	52	31	28	21	21	12
A22	Anthrax	*Never Reported*									
A23	Brucellosis	**37**	-	7	5	12	7	1	3	1	1
A37	Pertussis	**20**	5	3	7	5	-	-	-	-	-
A35	Tetanus (Non NNT)	**1**	-	-	-	-	-	-	-	-	1
A90	Dengue	*Never Reported*									
	Viral Hepatitis - Total	**478**	**2**	**129**	**238**	**44**	**18**	**16**	**11**	**6**	**14**
B15.9	V. Hepatitis - HBsAg +ve (ELISA)	**14**	-	1	1	1	2	4	1	1	3
B15.0	V. Hepatitis - HBsAg Negative	**385**	1	112	210	33	9	9	6	1	4
B17	V. Hepatitis - Unspecified	**79**	1	16	27	10	7	3	4	4	7
B55	Leishmaniasis	**2**	-	-	-	-	1	-	-	-	1
B65	Schistosomiasis	**0**	-	-	-	-	-	-	-	-	-
B74	Filariasis	**0**	-	-	-	-	-	-	-	-	-
B72	Dracunculiasis	*Certified by WHO as Eradicated from Oman*									
G00.0	Haemophilus Meningitis	**5**	2	3	-	-	-	-	-	-	-
G00-G03	Meningitis (Others)	**26**	9	3	7	3	3	-	-	1	-
A30	Leprosy	**0**	-	-	-	-	-	-	-	-	-
A15-A19	Tuberculosis: Sputum Positive	**25**	-	-	-	1	3	1	7	5	8
	Tuberculosis: Sputum Negative	**10**	-	2	-	1	4	-	-	-	3
	TB Extra-Pulmonary	**29**	-	1	-	1	6	3	7	3	8

Note:

1. *The quarterly data are provisional & should be scrutinized & verified by the Epidemiologist / Focal Point of communicable diseases in the regions & a corrected feedback report should be sent to DSDC.*
2. *Previous quarter data would be finalized in the following quarter after receiving the feedback from the regions.*
3. *Tuberculosis & Leprosy data are for nationals only.*
4. *(i) = Imported case.*
5. *[CRS] cases are registered on the basis of the year of birth, & '**NOT**' according to the reporting year .*

Animal Bite Surveillance by Regions of Oman

Second Quarter (April to June 2001)

Region	Population at Risk	Type of Animal					Total Animal Bites reported	Annualised Rate/ 10,000 Population
		Fox or Wild	*Dog*	*Cat*	*Other Domestic*	*Others (unknown)*		
Muscat	*644,334*	*0*	*25*	*25*	*2*	*0*	*52*	*3.23*
Dhofar	*220,692*	*0*	*0*	*1*	*0*	*0*	*1*	*0.05*
North Batinah	*418,909*	*0*	*17*	*10*	*3*	*0*	*30*	*2.86*
South Batinah	*241,113*	*3*	*20*	*21*	*4*	*0*	*48*	***7.96***
Dakhliyah	*269,924*	*0*	*5*	*40*	*2*	*0*	*47*	***6.96***
Dhahira	*211,955*	*0*	*7*	*6*	*3*	*0*	*16*	*3.02*
North Sharqiyah	*138,995*	*2*	*6*	*30*	*4*	*0*	*42*	***12.09***
South Sharqiyah	*164,491*	*0*	*15*	*7*	*3*	*0*	*25*	***6.08***
Musandam	*33,590*	*0*	*0*	*0*	*0*	*0*	*0*	*0.0*
Al-Wustah	*19,926*	*3*	*0*	*2*	*0*	*0*	*5*	***10.04***
National Total	***2,363,929***	***8***	***95***	***142***	***11***	***0***	***266***	***1.13***

Note: Rodent Bites excluded

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Announcement

Oman Congress of
HOSPITAL INFECTION

Muscat, 6 - 7 November 2001

Congress Secretariat:
Royal Hospital, Ph. 593896

Your opinion matters to us:

Any suggestions to improve upon the contents & the design of this Newsletter will always be gratefully received.

Your contribution is valuable to us:

Please write to us concerning your ideas and experiences, both good and bad. sharing them with a wider audience could benefit others, leading to new ideas, techniques and policies and helping to avoid struggling with problems others have already solved.

Editorial Board