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Community Health & Disease Surveillance Newsletter

Sultanate of Oman ***Ministry of Health***

Inside this issue:

World Health Report 2000

Endorsement of Oman's Achievement in Health Care

Introduction

The World Health Report 2000 for the new millennium titled ***"Health Systems: Improving Performance"*** was published on 21st June. The World Health Organization for the first time developed a new concept of ranking its member states in terms of performance in health care delivery. Various indicators were utilized for this purpose.

In this world ranking Oman was placed ***FIRST*** on the basis of performance of health system on health level while ***EIGHTH*** in overall performance amongst the 191 member states of World Health Organization.

This endorsement of the performance by an international organization is a tribute to the Ministry of Health as well as to all those who have contributed directly or indirectly to achieve a high level of health care within a short span of the last 30 years.

For a country to achieve a high level of health care performance following three factors would be considered favourable:

1. High health expenditure (% of GDP)
2. Access to advanced technology
3. A smaller population to serve

Many of the 191 member states had these advantages. Oman's higher ranking over & above these countries should therefore be considered as ***outstanding*** .

This remarkable achievement would not have been possible without the vision of **His Majesty Sultan Qaboos Bin Said**, who set the priorities for his people, 30 years ago & fulfilled the promise & a dream during the three decades of renaissance.

The credit also belongs to the policy makers in the Ministry of Health for their foresight & to all the employees for their hard work and dedication.

EXCERPTS FROM THE WORLD HEALTH REPORT

Health Systems

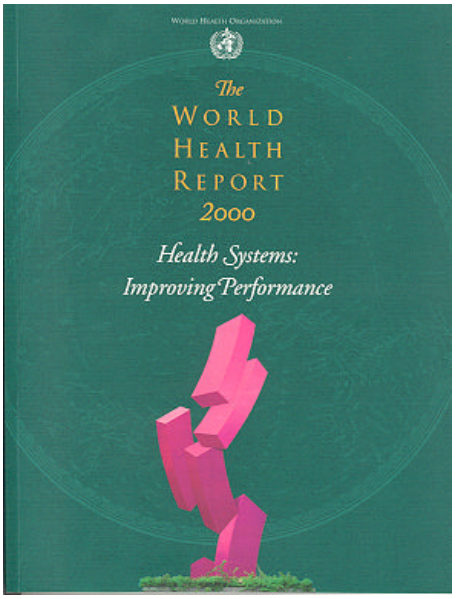
Health systems are defined as comprising all the organizations, institutions and resources that are devoted to producing health actions. A health action is defined as any effort, whether in personal health care, public health services or through intersectoral initiatives, whose primary purpose is to improve health. Improving health is certainly the main objective of a health system.

Health systems provide the critical interface between life-saving, life-enhancing interventions and the people

who need them. If health systems are weak, the power of these interventions is likewise weakened, or even lost. Health systems thus deserve the highest priority in any efforts to improve health or ensure that the resources are wisely used.

The objective of good health itself is two folds: the best attainable average level - ***Goodness*** - and the smallest feasible differences among individuals and groups **- *Fairness.*** Goodness means a health system responding well to what people expect of it; fairness means it responds equally well to everyone, without discrimination.

In recent decades, health systems have contributed enormously to better health for most of the global population. As the new century begins, they have the potential to achieve further improvements in human well-being, especially for the poor.



But very little has yet been done to unravel the complex factors, which explain good or bad performance, by individual health systems. Given equal resources, why do some succeed where others fail? Is the performance simply driven by the laws of supply and demand, or does another logic apply? Why is dissatisfaction with services so widespread, even in wealthy countries offering the latest interventions? If systems need improvement, what tools exist to measure performance and outcomes?

To address these issues the World Health Organization for the **FIRST TIME** broke new ground in presenting an index of health system performance on **THREE** overall goals:

1. Improving the level and distribution of health
2. Enhancing the responsiveness of the system to the legitimate expectations of the population, &
3. Assuring fairness of financial contributions.

The World Health Report 2000 is an expert analysis of the increasingly important influence of health systems in the daily lives of people worldwide. To an unprecedented degree it takes account of the role of people as providers and consumers of health services, as financial contributors to health systems, as workers within them, and as citizens engaged in their responsible management, or ***stewardship***.

The report shows how the achievement of the goals depends on the ability of each system to carry out four major functions: service provision, resource generation, financing, and ***stewardship***.

WHO has used certain indicators to measure the health system performance as shown in the table 1 & 2 at the end of this article. Following paragraphs explain the fundamental basis & the conceptual background based on which the ranking has been done.

*"**Stewardship** is defined as the careful & responsible management of something entrusted to one's care. People entrust both their bodies & money to the health system, which has a responsibility to protect the former & use the later wisely & well"*

World Health Report 2000

HEALTH SYSTEM PERFORMANCE

Preamble

Assessing how well a health system is functioning is to find answers to two fundamental questions.

- The first is how to measure achievement with respect to the three objectives of good health, responsiveness and fair financial contribution (attainment).

- And the second is to the best that could be achieved with the same resources (performance).

Better health is of course the primary goal.

In any system people have expectations hence responsiveness is a social goal.

Fairness is difficult to assess in a health system than in a trading market.

Health care can be extremely costly. Hence people have to choose between financial ruin & loss of health. It's the health expenditure that matters not the total country's income. It is true that the more the finances that are provided the better is the health care. But how much is fair? There is no right answer. It is also true that two countries spending equally on health care may have completely different performance.

Measuring Goal Achievement

To assess a health system, one must measure five things:

- Overall level of Health
- Distribution of Health in the Population
- Overall level of Responsiveness
- Distribution of Responsiveness
- Distribution of Financial Contribution

The achievements with respect to each objective are used to rank countries, as are the overall measures of achievement and performance. These ranking are based on estimates and have a level of uncertainty.

To assess overall population health and thus to judge how well the objective of good health is being achieved, WHO has chosen to use ***Disability-adjusted Life Expectancy (DALE).***

Traditionally life expectancy has been utilized for measuring health system performance in the past, however how much of that life is without disability due to various diseases is an equally important issue. Hence the adjustment for disability.

DALE is estimated to equal and exceed 70 years in 24 countries, and 60 years in over half the member states of WHO. DALE for 32 countries is estimated to be less than 40 years.

Performance & its Indicators

Performance is the achievement relative to resources spent. Measuring performance requires a scale. The upper limit represents the level of attainment which a health system might achieve, but which no country surpasses. The lower boundary is defined as the least that could be demanded of a health system.

To perform well means to move away from the minimum attainment and come close to maximum. In economic terms, performance is a **measure of efficiency**. An efficient health system achieves much, relative to the resources at its disposal.

Indicators

WHO has estimated two relations between outcome and resources. One relates to average health status i.e. DALE and the other relates to overall attainment measure based on all 5 objectives. The ranking of the 2 performance indicators are closely associated.

The index of Health System Performance describes how efficiently health systems translate expenditure into health as measured by disability-adjusted life expectancy (DALE).

Performance on the level of health is defined as the ratio between achieved levels of health and the levels of health that could be achieved by the most efficient health system.

The numerator of the ratio is the difference between observed DALE in a country and a DALE that would be observed in the absence of a functioning modern health system.

The denominator of the ratio is the difference between the maximum possible DALE that could have been achieved for the observed level of health expenditure per capita in each country and the DALE in absence of a functioning health system.

Overall performance of health systems was measured using a similar process relating

"What makes for a good health system? What makes health system fair? And how do we know whether a health system is performing as well as it should? These questions are the subject of public debate in most countries around the world"

Message from DG, WHO, Geneva

overall health system achievement to health system expenditure.

Through this report WHO aims to stimulate a vigorous debate about better ways of measuring health system performance & thus finding a successful new direction for health system to follow. By shedding new light on what makes health systems behave in certain ways, WHO also hopes to help policy makers weigh the many complex issues involved, examine their options, and make wise choices.

Following tables display the ranking of selected countries on the basis of the indicators explained earlier.

The maximum index of ranking is 1, which is theoretically an ideal health system. But in reality the index will always be a fraction.

"This currently used index of measurement of health care will be a regular feature of forthcoming World Health Reports and will be improved and updated every year"

World Health Report 2000

Table-1
Performance on Health Level (DALE)
(Estimates for 1997)

RANK	COUNTRY	INDEX
1	**OMAN**	**0.992**
2	MALTA	0.989
3	ITALY	0.976
4	FRANCE	0.974
5	SAN MARINO	0.971
10	SAUDI ARABIA	0.936
16	UAE	0.907
24	UK	0.883
30	BAHRAIN	0.867
43	EGYPT	0.829
53	QATAR	0.813
68	KUWAIT	0.782
72	USA	0.774
82	YEMEN	0.761
85	PAKISTAN	0.757
103	BANGLADESH	0.709
118	INDIA	0.670
191	ZIMBABWE	0.080

Table-2
Overall Health System Performance

RANK	COUNTRY	INDEX
1	FRANCE	0.994
2	ITALY	0.991
3	SAN MARINO	0.988
4	ANDORRA	0.982
5	MALTA	0.978
6	SINGAPORE	0.973
7	SPAIN	0.972
8	**OMAN**	**0.961**
10	JAPAN	0.957
18	UK	0.925
20	SWITZERLAND	0.916
26	SAUDI ARABIA	0.894
27	UAE	0.886
37	USA	0.838
42	BAHRAIN	0.824
44	QATAR	0.812
45	KUWAIT	0.810
60	PHILIPPINES	0.755
63	EGYPT	0.752
76	SRI LANKA	0.716
88	BANGLADESH	0.675
112	INDIA	0.617
120	YEMEN	0.587
122	PAKISTAN	0.583
156	TANZANIA	0.422
191	SIERRA LEONE	0.000

In Conclusion...

This high ranking amongst the 191 countries is a significant achievement for the Ministry of Health of Oman. It is now an added responsibility for maintaining & further strengthening the performance of its health system. And surely the organization is confident to face the challenges of the next millennium.

Diarrhoeal Disease Surveillance

Background

Diarrhoea in <5 Children

The Control of Diarrhoeal Diseases (CDD) programme for ‹5 children was launched in Oman in 1985. The programme was specifically aimed at reducing the morbidity and mortality due to diarrhoea in children less than five year old. Since the introduction there has been a dramatic decline in diarrhoea related mortality as well as morbidity.

However, none of the interventions were aimed specifically towards the ***prevention of diarrhoea***.

Hospital records show a dramatic decline in diarrhoea related mortality. However the morbidity continues to remain an important public health concern (refer Table-3).

Table-1

Diarrhoea Morbidity & Mortality in <5 1991 – 1999

Year	Episodes	Rate / 1000	Primary Death	Related Death
1991	190376	745	12	-
1992	179598	651	3	-
1993	168350	582	7	-
1994	155833	543	6	-
1995	138178	497	2	2
1996	132413	481	0	2
1997	109656	399	0	1
1998	82009	301	4	1
1999	85363	314	0	0

In fact the above table shows that there is no further reduction in the reported total episodes (an episode is defined as loose motions/›3 times a day/15 days).

It can be safely stated that the reduction in diarrhoeal episodes witnessed over the few years could be primarily attributed to general socio-economic development, literacy, overall improvement in environmental sanitation and health education.

To further reduce the incidence of diarrhoea the program needs to generate epidemiological information on cause-specific morbidity & mortality. ***A surveillance system*** complimented with a research into the profile of causative organisms and specific environmental measures would certainly produce a desired impact.

Diarrhoea in Children >5 years & Adults

None of the health programs in Oman address the issue of diarrhoea in children above the age of 5 years and in adults.

Ministry of Health collects routine surveillance data on Gastroenteritis and data on some of the specific causes of diarrhoea as a part of national disease surveillance system.

The sources of data are:

1. *Group A diseases: Cholera*
2. *Group B diseases: Typhoid*
3. *Group C diseases: Gastroenteritis (syndrome), Amoebiasis & Shigellosis*

However the case definitions of the above diseases are non-specific hence this information is of little use.

The inpatient statistics provides information under the category of:

- *Admissions due to diarrhoea of presumed infectious origin*

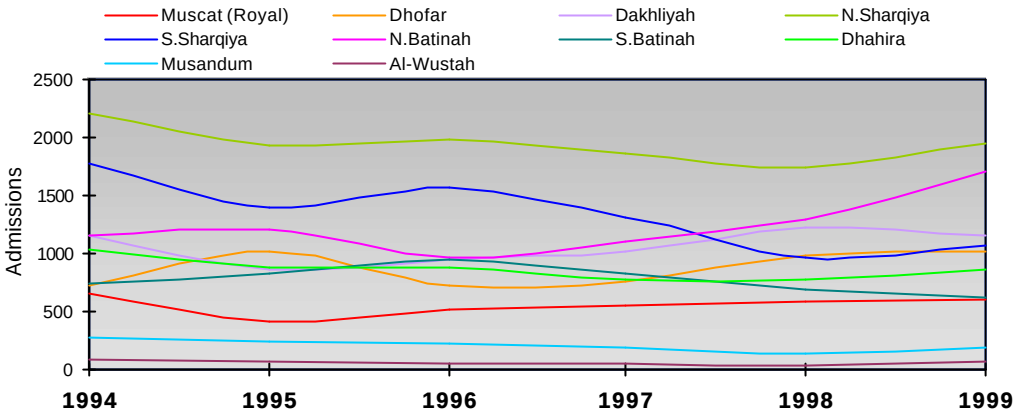
Burden of Diarrhoeal Diseases

Estimation of Diarrhoeal disease was essentially dependent on the data available on the above sources.

“ None of the Health programmes in Oman directly address the issue of diarrhoea prevention. Definite attempts have not yet been made to identify the pathogens & the environmental control measures need a proper direction & strengthening”

Fig-1

Inpatient Morbidity due to Diarrhoea & Gastroenteritis of Presumed infectious Origin by Regions of Oman: 1994-99



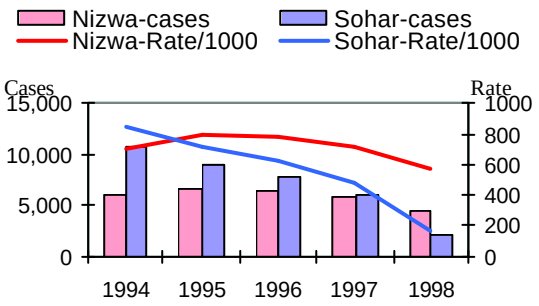
"The contributory factors of the sustained diarrhoeal morbidity in the community lie in the environment viz. unsafe water & poor personal & environmental hygiene".

The diarrhoeal morbidity as seen from the data available on inpatient admissions has remained more or less stationary in the last six years as shown in Fig-1.

Following graph (Fig-2) illustrates the changing morbidity pattern in <5 in the country's two major regional headquarter Wilayat viz. Nizwa & Sohar (pilot study sites). Over the last five years there has been a sustained drop observed in the morbidity. However the pattern is dissimilar. In Nizwa Wilayat the drop has not been as dramatic as seen in Sohar Wilayat.

Fig-2

Inpatient Morbidity
Nizwa & Sohar Wilayat 1994-98

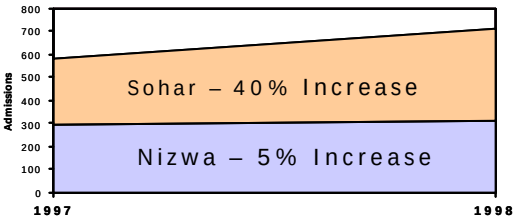


In contrast the following graph (Fig-3) shows that there has been a 40% increase in <5 yr admissions due to diarrhoea in Sohar hospital in 1998 compared to 1997, while during the same period only 5% increase was observed in Nizwa hospital.

It appears that there is a considerable variation in the pattern of morbidity within regions for which no causal factor can be identified.

Fig-3

Inpatient Morbidity due to Gastroenteritis of Presumed infectious origin in <5 years Nizwa & Sohar Hospital - 1997 & 1998



Why this sustained morbidity?

It is hypothesized that the contributory factors to this sustained diarrhoeal morbidity in the community lie in the environment viz. unsafe water, poor personal and environmental hygiene. In such situation, there is a constant threat of exposure to various diarrhoeal disease pathogens leading to focal outbreaks of diarrhoea in the community that largely remain unnoticed.

Hence a pilot study was conducted in Nizwa & Sohar hospital to identify additional interventions through a diarrhoeal

disease surveillance system.

The brief summary & findings are:

Study Period

August 1998 to May 1999

Methodology

All admitted cases of diarrhoea were included. All were subjected to stool culture. The information was compiled and analysed on a weekly basis at the regional headquarters. Community actions were initiated for a case in whom a bacterial pathogen was isolated.

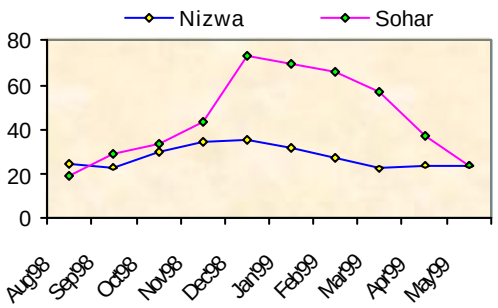
Results

279 cases were admitted in Nizwa hospital during the study period, while during the same period 446 cases of diarrhoea were admitted in Sohar hospital.

Majority of the admissions were in the age group of less than 5 years (79.1%). Another 4.7% belonged to age group 5 to 12 (Paediatric). Only 16.2% were above the age of 12 years (Adults).

The monthly distribution of admitted cases in both hospitals are shown in the Fig-4. The figure clearly illustrates that in Sohar hospital a large number of cases were admitted during Dec 98 to Apr 99 indicating an outbreak lasting for 4 months.

Fig-4
Monthly distribution of admitted cases Nizwa & Sohar Hospital Aug'98 - May'99



So such sudden increase was observed in Nizwa hospital during the same period. Since the numbers were small the routine communicable disease surveillance system was unable to identify this outbreak.

The laboratory results further substantiated the Shigellosis outbreak in Sohar.

Community action

The community action component of the study could not be conducted as desired in the protocol due to logistic issues. Hence in response to the Shigellosis outbreak in Sohar the preventive environmental measures were not undertaken as envisaged in the study.

Conclusions

Outbreaks due to specific organisms are easily missed in the present system of reporting due to its limitations.

Timely detection of such outbreaks is the essence of surveillance. Moreover the data should be analysed online at the ***regional*** level and the prompt response action in the community should be initiated in the event of such outbreaks.

In view of the above study, surveillance on diarrhoeal diseases was extended to other regions of Oman. It was decided that at the outset it would be prudent to initiate the system in the regional referral hospitals (sentinel sites).

The experiences of all the regions in the implementation of surveillance will be evaluated and the components of the program will be reviewed during the National Workshop to be held in October 2000. The integrated diarrhoeal disease surveillance within the existing national system with a strong environmental component will then be launched in Oman.

" The data on diarrhoeal diseases should be compiled & analysed at the regional level ***ONLINE****. A prompt response should then be generated in the community in the event of Outbreaks due to specific bacterial pathogens"*

Follow-up of Trichiasis Surgery Cases

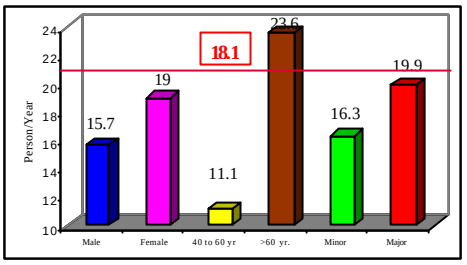
" The quality assurance procedures in this study indicated an overall uniformly excellent quality of the study. The recurrence rate of trichiasis was 56%. The average duration between intervention and follow up was 3.1 years".

An epidemiological study was carried out in the Sultanate of Oman to review the long-term results of surgical procedures to treat trachomatous trichiasis cases as per the World Health Organization's recommendations. Edna McConnell Clark Foundation and World Health Organization supported this project. Technical support was provided by '***BC Center for Epidemiologic and International Ophthalmology, Canada***'. As the information on long-term results of trichiasis surgery (lid surgery and electro-epilation) is few in the literature, this study was useful to Eye Health Care Programme, Sultanate of Oman and other organization working in high endemic areas of trachoma.

The project was initiated in January 1999. The field part of the study was carried out in February 1999 to April 1999. The project report was finalized in June 2000. The study was concluded within stipulated time frame. Periodic reports were provided to the collaborators. The final report is printed & distributed to the regions.

The study covered Omani population of above 40 years of age with trachomatous trichiasis in eight regions of Oman. (High endemic areas of trachoma.) 675 cases of trachomatous trichiasis (603 who had been operated and 72 not operated) were randomly selected for the study. The quality assurance procedures in this study indicated an overall uniformly excellent quality of the study. The recurrence rate of trichiasis was 56%. The average duration between intervention and follow up was 3.1 years. The ***'Incidence Density'*** for recurrence was 18.1 person-years and 95% confidence interval of 51% 61%. (refer Fig-1) Female, Age more than 60 years, Major trichiasis, duration between intervention and follow up of more than 2.5 years and cases in Dakhliyah, Sharqiyah, Batinah and Musandum regions were groups with high risk for developing recurrence.

Fig-1
Incidence Density of Trichiasis Recurrence in Oman



The study enabled Sultanate of Oman to estimate the magnitude and analyze epidemiological profile of recurrence of trachomatous trichiasis. High risk groups for the recurrence were identified. Electro-epilation procedure due to its lower recurrence rates, repeatability and acceptance by patients was found to be useful to manage early trichiasis cases. The high recurrence of trichiasis, 2.5 years after successful lid surgery cautioned the health planners not to aim for optimistic goal of eradication of Blinding trachoma in the Sultanate by the year 2010. The study recommended future strategies and conduct further research in the field of trachoma management in Oman.

This was the first opportunity for the Eye Health Care Programme to collaborate with Non-Governmental Organizations and jointly undertake project related to blinding eye diseases. It built the capacity of health staff in the Sultanate. A research paper has been submitted to the ***'Ophthalmic Epidemiology Journal'*** for its special issue on Trachoma. The results were also discussed in the meetings WHO Alliance for the Global Elimination of Trachoma held in at *Geneva* and *Bomako*. The study would help in formulating global strategies for addressing trachomatous trichiasis.

Global Outbreak of Meningococcal Meningitis (W-135)

Background

Meningococcal disease is one of the most important diseases associated with a very high mortality and persistent neurological defects, particularly among infants and young children.

Sporadic meningococcal meningitis occurs throughout the world, with seasonal variations, and accounts for 10-40% of endemic bacterial meningitis. Epidemic meningitis also occurs all over the world, but the largest and most frequently recurring outbreaks have been in the semiarid area of sub-Saharan Africa, designated as the ***"meningitis belt"***.

Meningococcal disease is a contagious disease caused by the meningococcus *(N. meningitidis)*, a Gram-negative bacterium. Thirteen serogroups based on the specificity of the capsular polysaccharides are currently recognized (A, B, C, D, H, I, K, L, W135, X, Y, Z and Z'). Meningitis is the most common clinical expression of the infection, particularly during epidemics, while meningococcal septicaemia (meningococcaemia) is less common but highly fatal.

Disease Burden

In its endemic form, meningococcal disease causes sporadic cases or small clusters. In many countries, endemic meningococcal disease cannot be distinguished from other causes of purulent meningitis because laboratory facilities are lacking, and meningococcal meningitis is thus reported as part of bacterial meningitis. Apart from epidemics, at least 1.2 million cases of bacterial meningitis are estimated to occur every year; 135,000 of them are fatal. Approximately 500,000 of these cases and 50,000 of deaths are due to meningococcus.

During non-epidemic conditions in developed countries, 50-60% of the cases occur in children 3 months to 5 years of age, but cases are also seen in teenagers and young adults less than 25-30 years of age. In countries within the meningitis belt the maximum incidence is usually found among children aged 5-10 years. Household contacts of patients with meningococcal disease have a risk of acquiring infection equal to approximately 600-1000 times the age-specific incidence in the general population. Meningococcal infection affects both sexes but males have a higher incidence. Young people living in closed communities, such as boarding schools are affected more than other individuals. Meningococcal disease is also considered a military disease, as its incidence among non-vaccinated recruits is at least 410 times higher than in the general population. In the northern hemisphere, including subtropical countries, a seasonal upsurge in meningococcal disease occurs in winter and spring, beginning in December-January and culminating in March-April.

Of the 13 serogroups of *N. meningitidis*, serogroup A is historically the main cause of epidemic meningococcal disease all over the world. Although reporting is incomplete, available information clearly indicates a global increase of meningococcal disease.

Conditions Favoring Epidemics

Epidemics are favored by multiple factors related to the microorganism, the host and the environment. Interactions between these factors may explain the periodicity and seasonal patterns of epidemics, as well as the unusual age distribution among individuals who contract meningitis during an epidemic.

Agent Factors

The risk of epidemic meningococcal disease differs between serogroups. The most explosive epidemics have been almost exclusively associated with serogroup A, but B and C serogroups can also cause outbreaks. Certain strains of meningococci are

" Over 80% of cases of bacterial meningitis are caused by three bacteria: Neisseria meningitidis, Streptococcus pneumoniae and Haemophilus influenzae type b & Meningococcal meningitis is the only one which occurs in epidemic form. "

more virulent and more likely to cause outbreaks. The spread of a single clone of serogroup A *N. meningitidis* designated as an epidemic clone III.1 has been associated with the current pandemic. This particular strain may be linked to the epidemic, which started in China and, after passing through Nepal and Northern India, caused a large outbreak in ***Mecca in 1987***. It subsequently caused a pandemic in Africa.

Host Factors

Nasopharyngeal carriage permits the infection to persist in the community. Although an increasing carrier rate could raise the risk of infection among non-immune individuals. There is no constant and close relationship between the carrier rate and the incidence of disease. Humoral immunity is an essential factor in the prevention of meningococcal disease. Waning herd immunity to a particular strain in a population may be necessary for an outbreak to occur and could contribute to the regularity of epidemic cycles in sub-Saharan Africa.

"Travel and migration facilitate the circulation of virulent strains within a country or between countries. Large population movements such as a ***pilgrimage*** *play a major role in the spread of infection & disease."*

Environmental Factors

Climate factors play an important role in the seasonal upsurge of meningococcal disease. Peak activity is in general in periods of low absolute humidity, such as the winter in temperate climate zones and the dry season in Africa. Poor living conditions and overcrowded housing are linked with a higher incidence of meningococcal disease.

The outbreak, which occurred in Mecca in 1987, at the end of the pilgrimage period, caused more cases among pilgrims than among the Saudi population. The incidence rates of meningococcal disease among pilgrims originating from Asia, North America, Europe, and the Eastern Mediterranean far exceeded the endemic rates in these areas. The tremendous increase in international travel resulting in people moving further and quicker across the globe has accelerated the speed with which bacteria move from population to population. The potential for epidemic meningitis in industrialized countries is thus becoming alarmingly real.

W135 Outbreak

In April 2000 the health agencies from all over the world were notified of cases of serogroup W-135 meningococcal disease among pilgrims returning from Hajj in Mecca and their close contacts. Year 2000 Hajj concluded on 17th March. Following table shows notified cases of W-135 meningococcal meningitis and deaths reported from April to June 2000.

Table-1
Meningococcal Meningitis
Cases & Deaths
January to June 2000

Country	Cases	Deaths
USA	3	0
UK	31	5
Nederland	6	0
France	18	4
Saudi Arabia	241	59
Oman	19	3
Finland	1	0
Singapore	4	0
Morocco	3	1
Iran	56	0
Germany	2	0
Kuwait	1	0
Sudan	4031	328
Afghanistan	111	2
African Continent	35,463	3,709

Vaccination Requirement

Saudi Arabia requires meningococcal vaccine for all entering pilgrims; however the vaccine formulation varies by country. Most US pilgrims received the quadrivalent polysaccharide vaccine

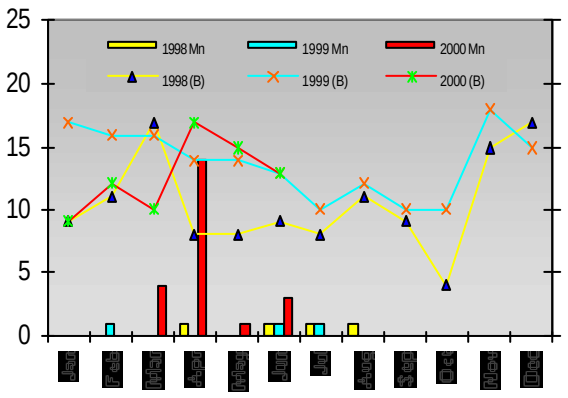
covering serogroups A, C, Y, and W-135. Other countries like Oman use a bivalent A&C vaccine. This vaccine has a clinical efficacy of 85% - 100%. Vaccination with W-135 polysaccharide induces bactericidal antibody, although clinical protection has not been documented. The polysaccharide vaccine does not prevent or eliminate carriage. Thus close contacts of returning pilgrims may be at risk of the disease.

Meningitis Disease Burden in Oman

Meningitis is one of the common childhood infection and is included in the list of communicable diseases under surveillance (Group-B). Currently cases are classified as bacterial, viral and others. There is a high refusal rate for diagnostic lumbar puncture. Thus conclusive evidence by examination of CSF is not available. In some cases blood culture is utilised for the purpose of diagnosis.

Following graph shows the combined incidence of bacterial meningitis cases reported during the period 1998 to June 2000. These cases include Meningitis due to *N. meningitidis, H. influenzae, S. pneumoniae* and other bacterial based on clinical criteria.

Fig-1
Total Bacterial & Meningococcal Meningitis Reported in Oman

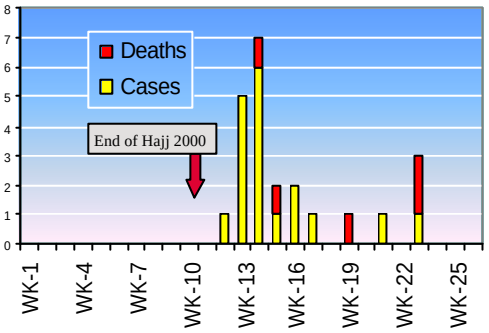


1998-2000
Current Outbreak in Oman

In the year 2000 Hajj approximately 17,000 pilgrims from Oman visited the holy city of Mecca. Vaccination with Meningococcal A&C vaccine is a mandatory requirement for the pilgrimage.

Following graph illustrates an outbreak of Meningococcal meningitis after the Hajj 2000 (after 17th March). Total 23 cases were reported till June (W135=12, A=3, B=1 & not typed=7). Of these 5 died (W135=2, A=1, not typed=2).

Fig-2
Weekly Incidence of Cases & Deaths Meningococcal Meningitis January – June 2000



Three of the total returned from Hajj while 12 were close contacts of the Hajjis. In 3 cases the information was not known. Two of the fulminant & fatal cases of W135 Meningococcal meningitis were initially diagnosed & reported as suspect cases of Crimean Congo Haemorrhagic Fever.

An inter-country study is being conducted in collaboration with WHO to assess the W135 carriage amongst the families of the returning Hajjis. The study sites are Morocco, Sudan & Oman.

" Owing to poorer immunogenicity & short duration of protection in children aged <2 years, group A &C vaccines are not used in routine infant immunization programs. High priority should be given to development of a new generation of meningococcal vaccines".

WHO position paper

Report 1

Communicable Diseases Quarterly Report

Second Quarter (April to June 2000)

ICD Code	Diseases	2000 Second Quarter Apr	May	Jun	Total	1999 Q2 Apr—Jun	Q3 Jul-Sep	Q4 Oct-Dec	2000 Q1 Jan—Mar
GROUP 'A' DISEASES									
A00	Cholera	-	-	2	**2**	-	5(i)	2(i)	-
A20	Plague	*Never reported*							
A36	Diphtheria	*Last case 1994*							
A39	Meningococcal infection	14	1	3	**18**	-	1	-	4
A80	Poliomyelitis	*Last case 1993*							
	Acute Flaccid Paralysis	-	1	-	**1**	3	6	7	4
B05	Measles	2	6	2	**10**	1	4	3	1
B06	Rubella & CRS	3	-	-	**3**	2	1	-	-
A95	Yellow fever	*Never reported*							
A82	Rabies	-	-	-	**0**	1	-	-	-
A75.0	Louse-borne typhus	*Never reported*							
A68	Relapsing fever	*Last case 1997*							
A33	Tetanus Neonatorum (NNT)	*Last case 1995*							
A99	Viral Hemorrhagic fever	-	-	-	**0**	2	2	-	-
GROUP 'B' DISEASES									
A03.0	Typhoid fever	9	12	3	**24**	25	37	23	22
A01.4	Paratyphoid fever	5	3	3	**11**	2	1	5	2
A02	Food poisoning	49	103	161	**313**	336	308	91	95
A22	Anthrax	*Never reported*							
A23	Brucellosis	21	23	32	**76**	92	91	63	70
A37	Pertussis	24	22	12	**58**	79	41	22	42
A35	Tetanus (Excluding NNT)	1	2	-	**3**	-	1	-	1
A90	Dengue	*Never reported*							
	Viral Hepatitis - Total	**113**	**108**	**75**	**296**	**457**	**283**	**232**	**273**
B15.9	Viral Hepatitis - HBsAg '+' (ELISA)	8	4	2	**14**	11	17	16	11
B15.0	Viral Hepatitis - HBsAg '-'	77	84	56	**217**	374	224	198	196
B17	Viral Hepatitis - Unspecified	28	20	17	**65**	72	42	18	66
B55	Leishmaniasis	1	-	-	**1**	3	3	5	4
B65	Schistosomiasis	1	-	-	**1**	1(i)	1(i)	2(i)	-
B74	Filariasis	-	1	-	**1**	1(i)	-	-	-
B72	Dracunculiasis	*Certified by WHO as Eradicated from Oman*							
G00.0	Haemophilus Meningitis	1	2	1	**4**	2	4	13	4
G00-G03	Meningitis - (All others)	19	14	12	**45**	50	31	43	35
A30	Leprosy	-	-	1	**1**	5	13	8	3
A15-A19	Pulm. Tuberculosis Sputum Positive	11	8	10	**29**	25	26	22	32
	Pulm. Tuberculosis Sputum Negative	5	5	3	**13**	8	10	14	9
	Extra Pulmonary Tuberculosis	10	10	9	**29**	8	22	12	21
B50-B54	Malaria (All sources)	42	43	62	**147**	157	138	165	117
A50-A53	Syphilis	20	24	14	**58**	46	58	47	49
A54	Gonococcal Infections	37	26	31	**94**	91	96	96	71
GROUP 'C' DISEASES									
A03	Shigellosis	113	110	125	**348**	239	367	330	349
A06	Amoebiasis	392	410	267	**1069**	1021	1099	1136	914
A09	Acute Gastro-Enteritis & Diarrhoea	9643	7865	5953	**23461**	21610	22413	27239	29301
B01	Chicken Pox	2764	1866	1364	**5996**	3855	2147	2320	4763
B26	Mumps	1661	1745	1436	**4842**	4955	2039	2986	3556
A71	Trachoma	88	105	104	**297**	641	302	252	296
J10-J11	Influenza	584	294	199	**1077**	1250	983	1135	1279

Report 2

Communicable Diseases Quarterly Report by Regions

Second Quarter (April to June 2000)

ICD Code	Diseases	Total	Muscat	Dhofar	Dakhliyah	North Sharqiya	South Sharqiya	North Batinah	South Batinah	Dhahira	Musan-dum	Al–Wustah
GROUP 'A' DISEASES												
A00	Cholera	**2**	-	-	-	-	-	-	-	2	-	-
A20	Plague	*Never Reported*										
A36	Diphtheria	*Last case 1994*										
A39	Meningococcal infection	**18**	-	2	1	2	1	3	4	5	-	-
A80	Poliomyelitis	*Last case 1993*										
	Acute Flaccid Paralysis	**1**	1	-	-	-	-	-	-	-	-	-
B05	Measles	**10**	-	1	-	8	-	-	-	-	-	1
B06	Rubella & CRS	**3**	3	-	-	-	-	-	-	-	-	-
A95	Yellow fever	*Never Reported*										
A82	Rabies	**0**	-	-	-	-	-	-	-	-	-	-
A75.0	Louse borne typhus	*Never Reported*										
A68	Relapsing fever	*Never Reported*										
A33	Tetanus Neonatorum (NNT)	*Last case 1995*										
A99	Viral Haemorrhagic fever	**0**	-	-	-	-	-	-	-	-	-	-
GROUP 'B' DISEASES												
A03.0	Typhoid fever	**24**	5	2	3	1	1	9	1	1	-	1
A01.4	Paratyphoid fever	**11**	1	-	1	1	-	8	-	-	-	-
A02	Food poisoning	**313**	32	21	60	19	6	83	28	64	-	-
A22	Anthrax	*Never Reported*										
A23	Brucellosis	**76**	1	75	-	-	-	-	-	2	-	1
A37	Pertussis	**58**	10	4	4	8	-	23	1	8	-	-
A35	Tetanus (Non NNT)	**1**	-	-	1	-	-	1	-	-	-	-
A90	Dengue	*Never Reported*										
	Viral Hepatitis - Total	**296**	**37**	**37**	**18**	**23**	**20**	**85**	**65**	**1**	**1**	**9**
B15.9	V. Hepatitis - HBsAg +ve (ELISA)	**14**	1	-	3	3	-	6	1	-	-	-
B15.0	V. Hepatitis - HBsAg Negative	**217**	20	34	13	19	18	40	64	-	-	9
B17	V. Hepatitis - Unspecified	**65**	16	3	2	1	2	39	-	1	1	-
B55	Leishmaniasis	**1**	-	1	-	-	-	-	-	-	-	-
B65	Schistosomiasis	**1**	-	1	-	-	-	-	-	-	-	-
B74	Filariasis	**1**	1	-	-	-	-	-	-	-	-	-
B72	Dracunculiasis	*Certified by WHO as Eradicated from Oman*										
G00.0	Haemophilus Meningitis	**4**	2	-	1	-	1	-	-	-	-	-
G00-G03	Meningitis (Others)	**45**	8	6	6	2	3	14	4	2	-	-
A30	Leprosy	**1**	1	-	-	-	-	-	-	-	-	-
A15-A19	Pulm. Tuberculosis Sputum Positive	**29**	8	1	3	-	5	5	6	1	-	-
	Pulm. Tuberculosis Sputum Negative	**13**	4	1	1	-	2	2	3	-	-	-
	Extra Pulmonary Tuberculosis	**29**	7	5	-	1	2	5	5	4	-	-
B50-B54	Malaria (All sources)											
A50-A53	Syphilis	**58**	6	3	8	1	4	32	-	3	-	1
A54	Gonococcal Infections	**94**	24	18	12	1	21	14	1	-	1	2
GROUP 'C' DISEASES												
A03	Shigellosis	**348**	40	37	55	37	84	11	20	18	8	38
A06	Amoebiasis	**1069**	122	9	155	129	196	132	70	141	8	107
A09	Acute Gastro-Enteritis & Diarrhoea	**23461**	3577	2103	2694	1701	2524	4624	3828	2039	213	158
B01	Chicken Pox	**5994**	515	248	1078	1046	385	592	972	892	39	227
B26	Mumps	**4842**	435	238	435	191	1622	317	235	1364	3	2
A71	Trachoma	**297**	15	-	105	31	2	43	100	1	-	-
J10-J11	Influenza	**1077**	377	16	28	2	2	483	27	142	-	-

Report 3 Selected Communicable Diseases by Wilayat, Second Quarter 2000

Region	Wilayat	Acute Flaccid Paralysis	Measles	Rubella	Pertussis	TB (Total)	TB Sputum Positive	Tetanus (Ex. NNT)	Malaria (All)	V.Hepa. (Total)	Leprosy	Menin. Inf.	Leishma-niasis
MUSCAT	Muscat	-	-	1	3	-	-	-	-	6	-	-	-
	Seeb	1	-	-	2	4	2	-	25	12	-	-	-
	Muttrah	-	-	1	-	7	2	-	23	-	-	-	-
	Bowsher	-	-	1	3	4	2	-	23	18	-	-	-
	Al-Amerat	-	-	-	-	2	-	-	-	-	-	-	-
	Quriyat	-	-	-	2	2	2	-	6	1	-	-	-
DHOFAR	Salalah	-	1	-	3	5	1	-	7	30	1	2	-
	Thumrait	-	-	-	-	-	-	-	-	7	-	-	-
	Taqah	-	-	-	-	1	-	-	-	-	-	-	-
	Mirbat	-	-	-	-	-	-	-	-	-	-	-	-
	Sudah	-	-	-	-	-	-	-	-	-	-	-	-
	Rakhyut	-	-	-	-	1	-	-	-	-	-	-	1
	Dhalqut	-	-	-	1	-	-	-	-	-	-	-	-
	Muqshan	-	-	-	-	-	-	-	-	-	-	-	-
	Shaleem	-	-	-	-	-	-	-	-	-	-	-	-
N. BATINAH	Sohar	-	-	-	12	1	-	-	6	11	-	1	-
	Shinas	-	-	-	1	1	1	-	4	5	-	-	-
	Liwa	-	-	-	1	2	-	-	3	-	-	-	-
	Saham	-	-	-	6	1	-	-	5	52	-	1	-
	Khabura	-	-	-	1	1	1	-	1	6	-	-	-
	Suwaiq	-	-	-	2	6	3	-	3	11	-	1	-
S. BATINAH	Rustaq	-	-	-	-	4	1	1	1	17	-	2	-
	Nakhl	-	-	-	-	-	-	-	-	4	-	1	-
	W.Maawil	-	-	-	-	-	-	-	1	-	-	-	-
	Al-Awabi	-	-	-	1	-	-	-	-	2	-	1	-
	Musanah	-	-	-	-	5	3	1	-	21	-	-	-
	Barka	-	-	-	-	5	2	-	3	21	-	-	-
DAKHLIYAH	Nizwa	-	-	-	-	2	1	-	2	5	-	-	-
	Bahla	-	-	-	1	1	1	-	1	3	-	-	-
	Adam	-	-	-	3	-	-	-	1	-	-	-	-
	Hamra	-	-	-	-	-	-	-	-	2	-	-	-
	Manah	-	-	-	-	-	-	-	-	-	-	-	-
	Sumail	-	-	-	-	-	-	-	1	6	-	1	-
	Izki	-	-	-	-	1	1	1	2	-	-	-	-
	Bid Bid	-	-	-	-	-	-	-	-	2	-	-	-
DHAHIRA	Ibri	-	-	-	5	4	1	-	1	-	-	4	-
	Yanqul	-	-	-	-	-	-	-	-	-	-	-	-
	Dhank	-	-	-	-	1	-	-	2	-	-	-	-
	Buraimi	-	-	-	3	-	-	-	9	1	-	1	-
	Mahda	-	-	-	-	-	-	-	2	-	-	-	-
N. SHARQIYAH	Ibra	-	-	-	1	-	-	-	3	3	-	-	-
	Mudhaibi	-	6	-	5	1	-	-	3	8	-	-	-
	Bidiyah	-	1	-	-	-	-	-	3	3	-	-	-
	Al-Qabel	-	-	-	1	-	-	-	-	4	-	-	-
	Dima Al-Tayeen	-	1	-	1	-	-	-	1	5	-	2	-
	W. B. Khalid	-	-	-	-	-	-	-	-	-	-	-	-
S. SHARQIYAH	Sur	-	-	-	-	3	1	-	4	7	-	-	-
	Masirah	-	-	-	-	3	2	-	-	4	-	-	-
	Kamil & Wafi	-	-	-	-	-	-	-	1	-	-	-	-
	BBB Ali	-	-	-	-	1	1	-	-	8	-	-	-
	BBB Hassan	-	-	-	-	2	1	-	-	1	-	1	-
MUSANDUM	Khasab	-	-	-	-	1	1	-	-	-	-	-	-
	Dibba	-	-	-	-	-	-	-	-	-	-	-	-
	Bukha	-	-	-	-	-	-	-	-	1	-	-	-
	Madha	-	-	-	-	-	-	-	-	-	-	-	-
AL-WUSTAH	Haima	-	-	-	-	-	-	-	-	3	-	-	-
	Duqum	-	-	-	-	-	-	-	-	5	-	-	-
	Mahoot	-	1	-	-	-	-	-	-	1	-	-	-
	Al-Jazer	-	-	-	-	-	-	-	-	-	-	-	-
NATIONAL TOTAL		**1**	**10**	**3**	**58**	**71**	**29**	**3**	**147**	**296**	**1**	**18**	**1**

Report 4

Age Distribution of Communicable Diseases
Second Quarter (April to June 2000)

ICD Code	Diseases	Total	Age Groups in Years								
			< 1	1-4	5-9	10-14	15-19	20-24	25-34	35-44	> 45
GROUP 'A' DISEASES											
A00	Cholera	**2**	-	-	-	-	1	1	-	-	-
A20	Plague	*Never Reported*									
A36	Diphtheria	*Last Case 1994*									
A39	Meningococcal infection	**18**	1	5	-	2	2	1	-	1	6
A80	Poliomyelitis	*Last Case 1993*									
	Acute Flaccid Paralysis	**1**	-	-	1	-	-	-	-	-	-
B05	Measles	**10**	4	1	1	-	-	1	2	1	-
B06	Rubella & CRS	**3**	3	-	-	1	-	-	-	1	-
A95	Yellow fever	*Never Reported*									
A82	Rabies	**0**	-	-	-	-	-	-	-	-	-
A75.0	Louse borne typhus	*Never Reported*									
A68	Relapsing fever	*Last Case 1997*									
A33	Tetanus Neonatorum	*Last Case 1995*									
A99	Viral Haemorrhagic fever	**0**	-	-	-	-	-	-	-	-	-
GROUP 'B' DISEASES											
A03.0	Typhoid fever	**24**	-	3	3	5	1	2	6	2	2
A01.4	Paratyphoid fever	**11**	-	1	1	1	2	3	-	1	2
A02	Food poisoning	**313**	2	23	85	66	41	20	38	20	18
A22	Anthrax	*Never Reported*									
A23	Brucellosis	**76**	1	3	16	20	7	5	11	5	8
A37	Pertussis	**58**	35	1	13	8	-	-	1	-	-
A35	Tetanus (Non NNT)	**3**	-	-	-	-	-	-	-	1	2
A90	Dengue	*Never Reported*									
	Viral Hepatitis - Total	**296**	**-**	**77**	**145**	**28**	**14**	**5**	**9**	**7**	**11**
B15.9	V. Hepatitis - HBsAg +ve (ELISA)	**14**	-	-	4	1	4	-	3	1	1
B15.0	V. Hepatitis - HBsAg Negative	**217**	-	64	109	21	4	3	2	5	9
B17	V. Hepatitis - Unspecified	**65**	-	13	32	6	6	2	4	1	1
B55	Leishmaniasis	**1**	-	1	-	-	-	-	-	-	-
B65	Schistosomiasis	**1**	-	-	-	-	-	1	-	-	-
B74	Filariasis	**1**	-	-	-	-	-	1	-	-	-
B72	Dracunculiasis	*Certified by WHO as Eradicated from Oman*									
G00.0	Haemophilus Meningitis	**4**	3	1	-	-	-	-	-	-	-
G00-G03	Meningitis (Others)	**45**	17	6	10	10	1	-	-	1	-
A30	Leprosy	**1**	-	-	-	-	-	-	-	-	1
A15-A19	Tuberculosis: Sputum Positive	**29**	-	-	-	2	3	5	2	0	17
	Tuberculosis: Sputum Negative	**13**	-	-	3	1	2	-	-	-	7
	TB Extra-Pulmonary	**29**	-	2	-	2	2	7	6	1	9

Note:

1. *The quarterly data are provisional & should be scrutinized & verified at the source.*
2. *Previous quarter data will be finalized in the subsequent quarter after receiving feedback from the regions.*
3. *Tuberculosis data are for Nationals only*
4. *(i) = imported case*

Report 4

Animal Bite Surveillance by Regions of Oman
Second Quarter (April to June 2000)

Region	Population at Risk	Type of Animal					Total Animal Bites reported	Rate/ 10,000 Population
		Fox or Wild	*Dog*	*Cat*	*Other Domestic Animals*	Others (unknown)		
Muscat	*636,560*	*0*	*41*	*20*	*1*	*1*	*63*	*0.99*
Dhofar	*217,630*	*0*	*7*	*7*	*1*	*1*	*16*	*0.74*
North Batinah	*411,290*	*0*	*24*	*9*	*3*	*0*	*36*	*0.86*
South Batinah	*236,650*	*6*	*18*	*16*	*5*	*0*	*45*	***1.9***
Dakhliyah	*264,630*	*1*	*0*	*27*	*4*	*0*	*32*	***1.21***
Dhahira	*208,550*	*0*	*1*	*8*	*0*	*0*	*9*	*0.43*
North Shargiyah	*136,240*	*4*	*6*	*17*	*4*	*0*	*31*	***2.28***
South Shargiyah	*161,000*	*0*	*7*	*6*	*1*	*0*	*14*	*0.87*
Musandum	*33,010*	*1*	*1*	*3*	*0*	*0*	*5*	***1.51***
Al-Wustah	*19,570*	*2*	*0*	*2*	*2*	*0*	*6*	***3.07***
National Total	*2,325,460*	*14*	*105*	*115*	*21*	*2*	*257*	*1.1*

Note: Rodent Bites excluded

Sultanate of Oman
Ministry of Health

Directorate General of Health Affairs
Phone: + (968) 600808
Fax: + (968) 696099
E-mail: alijamoh@omantel.net.om

MoH-HQ, PO Box 393, PC 113,
MUSCAT

Direct all your queries to...

Department of Surveillance & Disease Control
Phone: + (968) 601921, 607524
Fax: + (968) 601832
Email: awadymoh@omantel.net.om

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