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Community Health & Disease Surveillance Newsletter

Sultanate of Oman Ministry of Health

Inside this issue:

Oman Viral Hepatitis Survey: 2005

Introduction

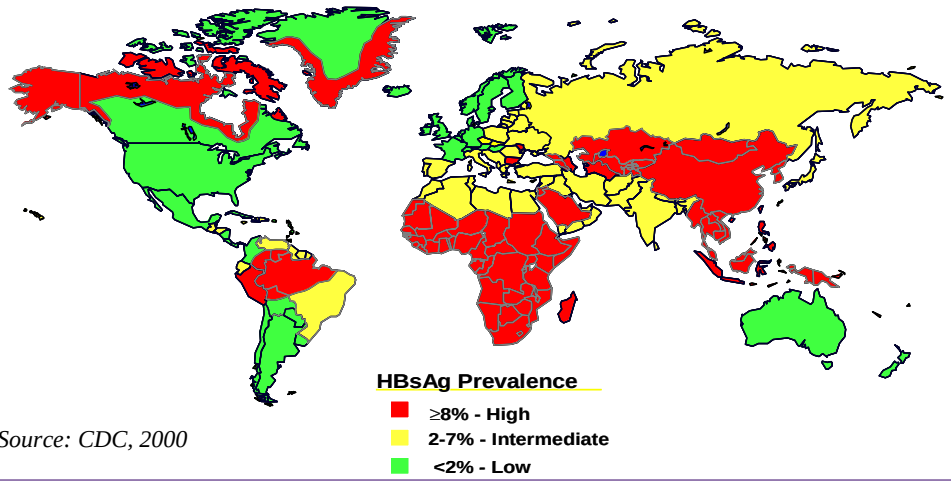
Viral hepatitis is considered as one of the priority communicable disease in Oman. A serosurvey on viral hepatitis was recently concluded in joint collaboration of Ministry of Health with the World Health Organization. Although the main purpose was to assess the impact of the immunization programme on the prevalence of Hepatitis B, other serotypes were also studied. This is the first community based sero-prevalence study done in Oman.

Background

Viral hepatitis is a major global public health problem. Of the various types, hepatitis B constitutes a major public health problem worldwide. WHO estimates that approximately 30% of the world's population, or about 2 billion persons, have serologic evidence of current or past hepatitis B virus (HBV) infection. Viral hepatitis type B and C are the predominant risk factors associated with hepatocellular carcinoma and are mainly transmitted by parenteral route.

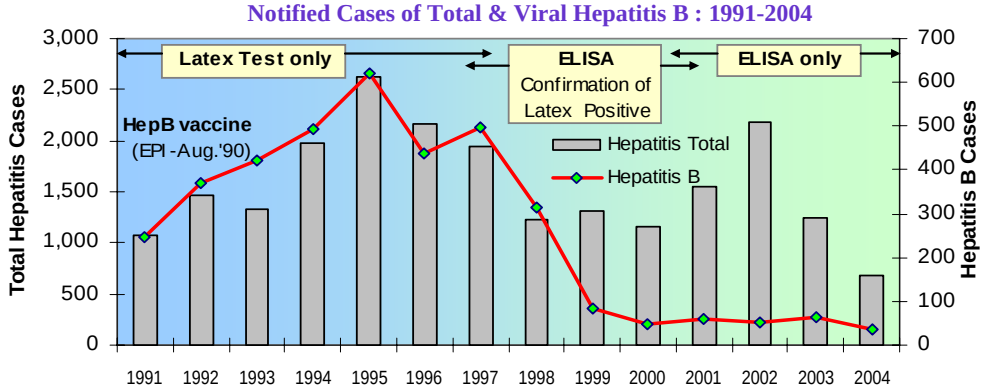
Nearly all HBV-related disease burden in countries with high and intermediate HBV-endemicity (fig.1) results from the chronic and fatal sequelae of infections acquired at birth or in early childhood. Effective vaccination against Hepatitis B has produced a tangible impact on its incidence especially preventing the perinatal and early childhood infections that result in lifelong chronic infection. Because the sequelae of chronic infection, liver cancer and cirrhosis, do not

Fig.1
Global Prevalence of Viral Hepatitis B



Source: CDC, 2000

Fig.2
Notified Cases of Total & Viral Hepatitis B : 1991-2004



typically manifest before the fourth and fifth decades of life and the sequelae of acute infection are not prevalent among infants and young children, the most useful strategies for assessing the impact of Hep-B immunization in the short term are the process measures of immunization coverage and the outcome measures of chronic infection and immunity.

HCV is a major cause of acute hepatitis and chronic liver disease, including cirrhosis and liver cancer. HCV is spread primarily by direct contact with human blood. No vaccine is currently available to prevent hepatitis C. Its prevalence is presumed to be low in the GCC states including Oman and estimated to be around 1 to 2.5% (WHO, 2002).

Viral hepatitis A and E are also the most common viral hepatitis encountered all over the world. These are mainly transmitted by foeco-oral route related to contamination of water and/or food. Approximately one third of all reported cases occur among children <15 years of age. Seroprevalence of HAV antibody increases with age, and is inversely related to income.

"In the global context, the Eastern Mediterranean Region has been identified by WHO as having an intermediate prevalence for Hepatitis B with HBsAg carrier rate in general population ranging from 2 to 7% ."

Pilot study in S. Batinah
Discussion in Progress

Viral Hepatitis in Oman

Viral hepatitis is a major public health problem in Oman. Since the establishment of the surveillance system in 1991, viral hepatitis has been included in the list of Group 'B' notifiable diseases. The surveillance data from 1991 to2004 are shown in Fig.2. Before 2002, hepatitis cases were tested only for HBsAg. A latex rapid agglutination test was used and cases were classified either as surface antigen (HBsAg) positive or negative. If no test was performed then the case was labelled as *"unspecified"*. The unspecified cases assume a sizable proportion of the total hepatitis cases. The substantial decline since 1997 in the incidence of acute viral hepatitis attributed to HBV is likely to be mostly a result of changes in confirmatory laboratory testing.

In the global context, the Eastern Mediterranean Region has been identified by WHO as having an intermediate prevalence for Hepatitis B with HBsAg carrier rate in general population ranging from 2 to 7% (Fig.1) with a prevalence of past infection (anti-HBcAg) ranging from 20 to 55%. Till date community based surveys have not been conducted in Oman.

Immunization

High coverage with Hep-B vaccine in EPI was attained since its introduction in August 1990 (above 97%) using a three dose schedule that included a birth dose. The

specific aim of preventing infections among newborns and young children was intended to prevent the chronic infections that start early in life and result in chronic disease

It is planned that by the end of 2004 all birth cohorts under 13 years of age have been vaccinated through routine EPI representing about a quarter of the total population. Catch-up school campaigns in adolescents will be completed in 2004-05 and thus all persons under the age of 21 years will have been vaccinated in Oman.

Study Rationale

Recognizing the burden of viral hepatitis, the Ministry of Health has implemented several prevention and control programmes.

The aim of this assessment is to determine the impact of using HepB vaccine in the routine infant immunization.

Objectives

Primary objective: *Assessment of chronic & past HBV infection*

The following markers are to be assessed at the national and provincial level among children 6-7 years of age attending grade 1 and 12-13 years of age attending grade 7 of public schools to directly assess the impact of HepB vaccination on HBV-related chronic disease and HBV infection:

- the prevalence of chronic HBV infection (HBsAg(+));
- the prevalence of past HBV infection (Anti-HBcAg (+)).

Secondary objectives: *Assessment of HepB coverage and effectiveness*

To be conducted as above in order to directly assess HepB programme performance:

- the prevalence of HepB-birth and HepBtotal coverage;
- the effectiveness of HepB vaccination in preventing chronic HBV infection and any HBV infection.

Tertiary objectives: Assessment of other viral hepatitis sero-markers:

The prevalence of lifetime infection with

- HCV (anti-HCV total)
- HAV (IgG anti-HAV)
- HDV (IgG anti-HDV)
- HEV (IgG anti-HEV)

Sampling frame and sample size

The sample size is based on average provincial school class sizes (cluster), an expectation that HBsAg seroprevalence will be 1% +/- 2% and a 95% confidence limits. Using average class sizes in each province, and assuming 20% absenteeism or refusal, the number of classes needed in each province were estimated.

Methods

Chronic HBV infection will be assessed by measuring HBsAg (+) seroprevalence and

Orientation during Pilot Survey in S. Batinah

Briefing of Mazyoona survey team in Salalah

(Continued on page 9)

"Catch-up school campaigns in adolescents will be completed in 2004-2005 & thus all persons under the age of 21 years will have been vaccinated in Oman"

GCC Tuberculosis Elimination Initiative: Recommendations

6th Meeting on Tuberculosis Elimination Initiative in the Member States of the GCC, Muscat, Oman

15-16 June 2005

The participants to the meeting expressed the concern that the recommendations and work plans agreed in the previous meeting of the Initiative in 2002 have not been fully implemented by the Member States of the GCC those include:

- Development of a progress report on the TB Elimination Initiative
- Anti-TB drug resistance surveillance
- Development of an integrated GCC TB surveillance system and annual report
- Development of plan for molecular epidemiology surveillance

The participants discussed at length the reasons for the lack of progress in these areas. The participants realized that the targets adopted in the Initiative are not realistic and overambitious as they are based on approximately 12% decline per year till 2010 to reach the Initiative target of 1 per 100,000 populations.

To achieve this decline, it is necessary to scale up interventions and to invest substantial human and financial resources. This extent of investment will be required to achieve the targets set for the area and it will not be possible to do *'business as usual'*. WHO as a partner is closely monitoring the development of this unique Initiative, as it is the first of its kind in the world. With this in mind, the participants have identified the way forward and made the following recommendations that:

"The participants realized that the targets adopted in THE INITIATIVE are not realistic & overambitious as they are based on approximately 12% decline per year till 2010."

Executive Board of the Health Ministers' Council for the Gulf Cooperation States

- Discuss the Tuberculosis Elimination Initiative in its next meeting, and underscore the importance of the Initiative as the first of its kind in the world.
- Establish, in coordination with the Member States, an institutional mechanism to monitor the progress of the Initiative, and designate one person from the Member States as a focal point of the Initiative.
- Request the Member States, through the focal person, to regularly report the progress of the initiative at the Board meetings.

Organize, in coordination with the Member States and the WHO, an annual monitoring meeting of the Initiative

The meeting further recommends that:

The Ministries of Health in the GCC States

- Re-emphasize the importance of the initiative as the first of its kind in the world, and reaffirm their commitment for the Initiative.
- Ensure the timely completion of the following recommendations of the previous meeting in 2002:
  - Preparation of the progress report of the Initiative
  - Initiative and completion of anti-TB drug resistance survey
  - Establishment of the integrated GCC TB surveillance system for regular reporting to the GCC

Health Ministers' council.

- Written plan for molecular epidemiology activities

- Ensure that all TB suspects and patients among nationals and non-national residents be provided care for their disease free-of-charge. The on-going changes in health financing policies of Member States should not affect this free-of-charge care for TB patients.

Give priority to the implementation of the following important areas:

Population data: As the target is focused on 'national' populations, a consistent population estimate for this segment of society is indispensable. While this is available in some countries, it is lacking in others. This must be resolved and utilized consistently before any progress can be achieved.

Surveillance: The current recording and reporting formats (the quarterly reports) need revision based on the classical quarterly reports. The example provided by the recent consensus on reporting achieved in Europe is a good starting point.

High risk groups: As tuberculosis declines in a community, it becomes 'sequestered' in high risk groups. Information from the GCC indicates that this is also the case in the countries of the GCC. Identification of such groups is vital in directing investment and efforts to achieve elimination.

Molecular epidemiology: The priority in tuberculosis control and elimination starts with arresting transmission. New tools (molecular genetic techniques) are now available to precisely monitor these events. As recommended in the meeting three years ago, these tools need to be urgently introduced for purposes of monitoring and refining priorities. A plan should be developed to address the needs and steps of each country with reflection on regional collaboration.

Operational research: Every elimination strategy requires, as a matter of high priority, a program of operations research to identify target groups, to refine strategies and to evaluate their impact. The GCC is recommended, as a matter of high priority, to introduce a comprehensive program of operations research. Examples of subjects to be addressed by such a program include: operations and outcomes of preventive chemotherapy; yield of active case finding; systematic investigation of delay in diagnosis and treatment, focusing on factors predicting delay that might be amenable to intervention.

High quality DOTS: Improvement of current DOTS activities to ensure that TB care is provided throughout the countries with the high level of quality.

Organize, in coordination with the Executive Board of the GCC Health Ministers' Council and the WHO, an annual meeting to monitor the progress of the Initiative.

World Health Organization: Continue to provide necessary technical and other required assistance to the GCC member States for the implementation of the above recommendations, upon request. Assist member states in epidemiological analysis of data.

"The WHO should continue to provide necessary technical & other required assistance to the GCC member States for the implementation of these recommendations".

Trachomatous Follicular (TF) in Primary Students

Wilayat (District) of Izki, Mudhaiby & Rustaq

Oman aims to eliminate Blinding Trachoma by 2010. The criteria laid down by the World Health Organization for accreditation of a trachoma endemic country to attain this status in 2005. According to these criteria the children of less than 10 years of age in the smallest administrative units i.e. a district should have less than 5% Trachoma Follicular (TF) stage of trachoma.

To review the situation of different Wilayat (smallest administrative unit) of Oman, we identified three Wilayat that had more than 5% active trachoma during the national prevalence survey conducted in 1996-97 viz. Izki of Dakhliyah region, Mudhaiby of North Sharqiyah region and Rustaq of South Batinah region. During the school academic year 2003-04, the school health staff and regional eye health care supervisors screened all students of 1st to 6th Primary classes in these Wilayat. They used ophthalmic loupe and well focusing torchlight for the eye examination. The upper lids were everted and tarsal area was examined to find trachoma follicles. If more than four follicles of more than 0.5 mm size were detected in either eye, the student was defined as having TF stage. He/she was then given oral *Azithromycin* suspension (20 mg/kg body weight) under the supervision of the nurse and school authorities.

The data on trachoma prevalence study are summarized in the Table below:

"The decline of trachoma is mainly due to the change in the socioeconomic situation of rural Oman in the last couple of decades, provision of excellent primary health care & improved environmental sanitation. "

Table 1
Trachoma Prevalence (TF) in Primary Students of Izki, Rustaq & Mudhaiby Wilayat: 2003-04

Wilayat	Izki			Rustaq			Mudhaiby		
	M	F	Total	M	F	Total	M	F	Total
Target students	3,173	2,935	6,108	6,239	6,558	12,797	4570	4490	9060
Screened	3,168	2,932	6,100	6,239	6,557	12,796	4447	4348	8795
TF present	35	27	62	258	379	637	73	69	142
Percentage	**1.10**	**0.92**	**1.02**	**4.1**	**5.8**	**4.97**	**1.64**	**1.59**	**1.61**

The prevalence of TF in Izki Wilayat was 1.02% (95% CI 0.77 to 1.27). It was 1.61% (95% CI 1.35 to 1.87) in Mudhaiby Wilayat while in Rustaq Wilayat it was 4.97% (95% CI 4.6 to 5.3). Thus none of the Wilayat had TF rate of more than 5% in 6 to 12 years old children.

A survey of under-five children is proposed in the year 2005. This will help us to determine TF rates in the <10 children (Intervention Goals for active trachoma have been achieved for the year 2005).

The decline of trachoma is mainly due to the change in the socioeconomic situation of rural Oman in the last couple of decades, provision of excellent primary health care and improved environmental sanitation. Sincere efforts of all health staff involved in the trachoma control were also responsible for these remarkable achievements. As always, the community's positive attitude to adopt healthy behavior was also instrumental for this success.

Rubella Susceptibility Amongst Health Care Staff

Background & Rationale

National CRS Registry in Oman was established in 2000 and subsequently after strengthening of CRS surveillance a national goal of elimination of CRS by 2005 was adapted by the Ministry of Health.

It is well known that CRS elimination cannot be achieved with only the inclusion of Rubella vaccine in the infant immunization programme and subsequent high coverage. This strategy alone will not lead to the elimination of CRS since it does not prevent transmission of infection in the susceptible adult population.

Past study conducted in 1998-89 amongst pregnant women in different regions of Oman has shown 8% women susceptible to rubella within a sample of 207. While another similar study in 2000 showed 2% susceptibles amongst 604 women attending ANC clinics.

The policy of rubella vaccination of the postpartum women was therefore introduced in Oman from 1st February 2001.

Similarly concerns were raised by the international experts about the rubella susceptibility amongst the health care staffs. The staff may be at risk for acquiring rubella from infected (CRS) infants and they may also pose a potential risk of transmission to others. The vaccination of all susceptible personnel provides the opportunity for preventing hospital-based rubella outbreaks. A policy decision in this regard therefore requires the susceptibility profile of rubella antibody amongst Hospital staff.

Objective

- To assess rubella susceptibility amongst the health staff in a secondary care health institution in Oman.

Study Design

A Hospital based serosurvey (Rubella IgG).

Study setting

A secondary care Regional Referral hospital under the Ministry of Health in South Batinah region of Oman (Rustaq Hospital).

Study period

From 11th to 22nd December 2004

Study subjects

All health care staff working in the hospital including doctors, staff nurses, paramedical and administrative staff. Staff available on duty during the survey period will be recruited.

Methodology

The hospital staff will be subjected for a sero survey for prevalence of rubella IgG antibodies after obtaining a written informed consent. Two ml venous blood will be drawn, serum separated and sent to Central Public Health Laboratory for testing of Rubella IgG by ELISA. All seronegative staff will be vaccinated against rubella.

Analysis & Results

Rustaq hospital has 493 staff on roll. Of these blood samples were collected from 373 (75%) recruited subjects. The distribution of Omani and non-Omani staff was 251 (67.3%) and 122 (32.7%) respectively.

Table 1
Staff in Rustaq Hospital as of 1st Dec. 2004

Staff category	#
Doctors	107
Nurses	303
Medical orderlies	63
Paramedicals/Administration	20
Total	**493**

Amongst Omani staff the male to female ratio was 1:3 (60 & 191) while in non-Omani staff it was 1:1 (63 & 59).

Total 358 samples were positive for rubella IgG showing an overall 95.9% protected.

"Concerns were raised by the international experts about the rubella susceptibility amongst the health care staffs. The staff may be at risk for acquiring rubella from infected (CRS) infants & they may also pose a potential risk of transmission to others"

The prevalence of IgG antibodies when stratified for Omani (252) and Non-Omani (106) was 98.8% and 87.6% respectively.

The IgG negative staff (18) indicates a susceptibility to rubella infection were further analyzed. Following diagrams show the distribution of susceptibles by category/ profession and by nationality.

Fig.1
Distribution of Susceptibles by Category/ Profession

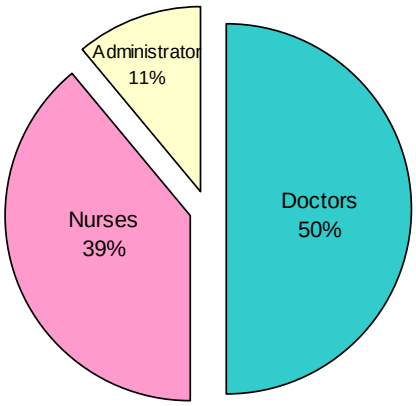
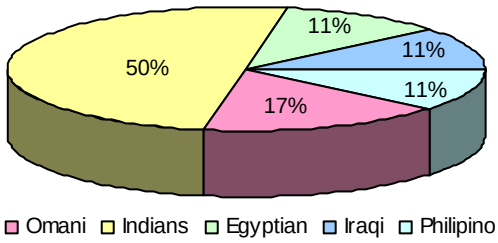


Fig.2
Distribution of Susceptibles by Nationality



Immunization history amongst the sero-negatives was as follows:

Table 2
Vaccination Status of Sero-neagative

Vaccination Status	#
Vaccinated	2
Not vaccinated	7
Unknown	9
Total	**18**

Almost 90% of the susceptibles were doctors and nurses who are more likely to come in close contact with patients. The susceptibles are from various departments viz. A&E, Obstetrics & Gynaecology, Anasthesia, Surgery, Paeditric ward, ICU etc. The lowest age was 24 while the highest was 61 years. Males were 7 while the female were 11 amongst the group.

Discussion

Out of the 393 blood samples tested 95.2% were found to be positive for Rubella antibody. The absence of IgG antibody amongst Non-Omani staff was higher compared to Omani staff. The susceptibles in these groups were 1.2% and 12.4% respectively. The higher immunity in the Omani staff is expected since a mass campaign with MR vaccine was conducted in Oman in March 2004 with 94% coverage amongst the age group 9 months to 18 years. In other countries from where the Non-Omani staff are recruited the rubella vaccination was either not introduced in EPI or introduced recently.

For the prevention of rubella transmission in the hospital, it is important that the immunity of the health care staff against the virus be high and it can only be achieved by vaccination. Rubella immunisation of all hospital staff without appropriate immunisation record could be adopted as a strategy to achieve the high immunity level.

Conclusion

This is the first rubella serosurveys amongst adult health care workers to be reported from Oman. The relatively high rate of susceptibility among the Non-Omani staff indicates a future possibility of rubella transmission/outbreak. Hence immunization of health care staff with rubella vaccine as a policy will benefit the goal of CRS eradication in Oman.

"For the prevention of rubella transmission in the hospital, it is important that the immunity of the health care staff against the virus be high & it can only be achieved by vaccination."

(Continued from page 3)

past HBV infection will be assessed by measuring anti-HBcAg (+) seroprevalence. sera will first be tested for past infection (anti-HBcAg) and those that are positive will be tested for chronic infection (HBsAg +). All sera that test negative for anti-HBcAg will be considered negative for HBsAg.

Informed consent

The principles of informed consent presented in the current edition of the Declaration of Helsinki will be observed before any protocol, specified procedures or interventions are carried out.

Pilot Study

A field pilot study was conducted in the South Batinah Region in February 2005.

Follow-up of chronic HBV carriers

All students identified with chronic HBV infection will be contacted and, if necessary, further clinical investigation of liver disease and periodic monitoring will be done to ensure proper care/treatment. Routine surveillance procedures also dictate that all family members and close contacts of students with confirmed chronic HBV infection be counselled and vaccinated.

Students awaiting turn for the survey in Khumzar

Analysis plan

Provincial and national coverage estimates will be calculated with 95% confidence limits. For the national estimate, unbiased estimates of seroprevalence will be calculated using weighted data.

Standard equipment was used for taking samples

Preliminary Results

The national survey was completed in March/April 2005.

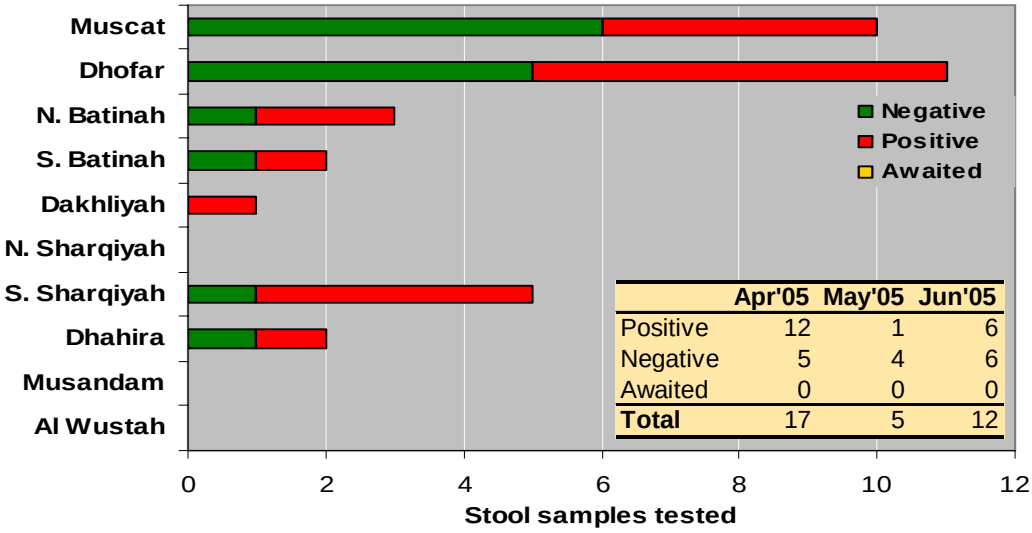
Preliminary analysis was done on the basis of the results obtained on the Hepatitis B

Table 1
Summary of Results: Hep-B markers

Province	n	Anti-HBc+	HBsAg+
Muscat	228	1	1
Dhofar	231	11	4
N. Batinah	247	8	0
S. Batinah	313	8	4
Dakhliyah	235	12	3
N. Sharqiyah + Al Wustah	261	12	1
S. Sharqiyah	208	3	0
Dhahira	241	3	0
Musandam	103	1	1
Total	2067	59	14

"All students identified with chronic HBV infection will be contacted &, if necessary, further clinical investigation of liver disease & periodic monitoring will be done to ensure proper care/ treatment"

Monitoring Rotavirus Surveillance: 2nd Quarter



	Apr'05	May'05	Jun'05
Positive	12	1	6
Negative	5	4	6
Awaited	0	0	0
Total	17	5	12

Note: No samples were submitted by N. Sharqiyah, Musandam & Al Wustah regions in 2nd quarter.

"The results show that 59 were exposed to HBV infection & out of them 14 developed chronic infection An overall 0.7% Hepatitis B chronic carrier rate was observed in the sampled population."

markers.

- The total student population of class-1 + class-7 for the year 2004-05 was 93,630 (37,735 + 55,895)

Technician separating serum

- Out of these a total of 2,285 were enrolled for the survey comprising 2.4% of the total population.
- Serum samples were collected from 2,067 (90.4%) students (class-1 + class-7 = 995 + 1,072). The non-consenters and in whom sample could not be collected comprised of 9.6%.
- Results show that 59 (2.9%) were exposed to HBV infection (Anti-HBc +) and out of them 14 (23.7%) developed chronic infection (HBsAg +) and 45 others (76.3%) were immune as a result of natural infection.
- An overall 0.7% Hepatitis B chronic carrier rate was observed in the sampled population (14 out of 2067).
- Out of 1,072 class-7 samples tested 913 (85.2%) were born after 1st Aug.'90 while remaining 159 (14.8%) were born before the date and hence were not vaccinated.
- Out of these 159, 15 (9.4%) were naturally infected with HBV and 4 (2.5%) developed chronic carrier status.

Results for other markers (HCV, HAV, HEV) are awaited.

Further findings, analysis, discussion and interpretation of the study would be published at a later date.

Acknowledgements: The Ministry of Health takes this opportunity to sincerely thank all those who participated in the study and made it a great success.

Frequently Asked Questions (FAQ): Dengue & DHF

Q1: What is Dengue Fever (DF)?

Ans.: Dengue fever, commonly known as breakbone fever owing to the characteristic severe pain it can cause in bones and joints, is a viral disease caused by one of the arboviruses (flavivirus), and is transmitted by mosquitoes (*Aedes aegypti*) and sometimes progressing to dengue haemorrhagic fever (DHF) or dengue shock syndrome. Two billion people are estimated to be at risk of dengue fever and dengue haemorrhagic fever worldwide.

Q2: Does DF/DHF exists in the Eastern Mediterranean Region (EMR)?

Ans.: Dengue fever was widespread in many countries in the EMR during the 19th and the first half of the 20th century. A decline in dengue transmission was recorded in Egypt after 1940 which was attributed to rapid decrease of *Aedes aegypti* populations with the introduction and widespread use of DDT during and after the Second World War.

Q3: Why is the increased concern now?

Ans.: Persistent and active dengue transmission in the EMR has not been observed, but sporadic outbreaks are occurring recently in some countries, and it appears that dengue in this Region appears to be re-emerging after an absence of about half a century with a clear evidence that fresh transmission of dengue through its vector mosquito, *Aedes aegypti*, is taking place.

The vector: *Aedes aegypti*

Q4: Which neighbouring countries reported Dengue recently?

Ans.: Dengue activity was reported in Somalia in 1982 and later in Sudan. Pakistan first reported an epidemic of dengue fever in 1994, and dengue fever cases were reported from Saudi Arabia in 1994 and Yemen in early 2005.

Q5: Has Dengue been reported in Oman?

Ans.: Yes. Few sporadic cases have been reported without any clustering in time or place. Almost all cases were imported from the Asia.

Q6: Do the vectors of Dengue exists in Oman?

Ans.: *Aedes aegypti*, the main vector mosquito, has been recorded in 13 of the 22 countries of the EMR including Oman (WHO Dengue Bulletin Vol. 24, Dec-2000). It is urban and domestic mosquito, found inside and near human habitations but it also breeds in rural settings.

Q7: Is there a treatment or vaccination against Dengue?

Ans: There is no treatment. Progress is being made in developing a pan flavivirus vaccine. Difficulties persist because of lack of appropriate animal models to test the attenuated vaccines and also because of antibody-dependent enhancement of viral growth. In view of the above, elimination or drastic reduction of the population of mosquito vectors *Aedes aegypti* and *Aedes albopictus* remains the only preventive measure.

Q 8: How to prevent and control Dengue outbreak?

Ans.: In Oman the vector bionomics of Dengue vector mosquito is not known completely. The population is presumed susceptible. In view of the sporadic nature of dengue cases, vector control programme that are specifically devoted to eliminating or controlling *Aedes aegypti* or *other species* do not currently exist in Oman. Vector suppression activities would be indicated only in case of outbreaks. It is also very important to have an efficient and sustainable disease surveillance system and a National Epidemic Preparedness Plan.

For more information visit : *http://www.who.int/topics/dengue/en/*
http://www.cdc.gov/ncidod/dvbid/dengue/
http://www.nlm.nih.gov/medlineplus/dengue.html

Communicable Diseases Quarterly Report

Second Quarter (April to June 2005)

ICD Code	Priority Communicable Diseases	2005 Second Quarter Apr	May	Jun	Total	2004 Q2 Apr-Jun	Q3 Jul-Sep	Q4 Oct-Dec	2005 Q1 Jan-Mar
Group 'A' Diseases									
A00	Cholera	-	-	-	**0**	-	-	-	-
A20	Plague	*Never reported*							
A95.9	Yellow Fever	*Never reported*							
A39, 39.0, 39.2-39.4	Meningococcal Infection	-	-	-	**0**	2	-	2	-
G00.0	H. influenzae type b, meningitis *(Hib)*	-	-	-	**0**	-	-	-	-
A82	Rabies	-	-	-	**0**	-	-	-	-
B50-54	Malaria	43	69	60	**172**	175	249	249	77
A-15	Pulmonary Tuberculosis (sputum positive)	10	11	10	**31**	27	34	28	19
	Gr. 'A' Syndromes								
-	Acute Flaccid Paralysis (*AFP*)	2	4	1	**7**	8	7	7	4
-	Fever & Rash-Illness	49	38	62	**149**	293	214	204	140
B05	Confirmed* Measles	1	4	2	**7**	16	3	1	2
B06	Confirmed* Rubella	4	2	4	**10**	9	3	1	3
P35.0	Congenital Rubella Syndrome (*CRS*)	-	-	-	**0**	-	-	-	0
U04, 04.9	Severe Acute Respiratory Syndrome *(SARS)*	*Never reported*							
A99	Acute Haemorrhagic Fever Syndrome	-	-	-	**0**	-	-	-	-
A02	Food Poisoning (*Infectious origin*)	42	47	38	**127**	178	234	133	26
Group 'B' Diseases									
G00.1-9	Bacterial Meningitis *(other than Hib & Nm)*	2	3	-	**5**	9	5	10	2
A87	Viral Meningitis	1	-	-	**1**	3	2	4	0
G03	Other Meningitis (*unspecified*)	7	6	6	**19**	11	3	10	13
	Acute Viral Hepatitis (*Total*)	**101**	**89**	**59**	**249**	**185**	**147**	**109**	**207**
B15	Acute Viral Hepatitis A	1	17	6	**24**	83	43	25	48
B16	Acute Viral Hepatitis B	1	5	3	**9**	9	11	5	15
B17.1	Acute Viral Hepatitis C	-	2	2	**4**	3	3	3	4
B17.0	Acute Viral Hepatitis D (*amongst B positive*)	-	-	-	**0**	-	-	-	0
B17.2	Acute Viral Hepatitis E	-	1	-	**1**	3	3	-	0
B19/B17.8	Acute Viral Hepatitis (*unspecified*)	**99**	**64**	**48**	**211**	**87**	**87**	**76**	140
A03.0, 01.4	Typhoid & Paratyphoid Fever	10		2	**19**	10	21	12	10
A37	Pertussis (*clinical*)	9	4	5	**19**	22	13	12	2
A71	Trachoma (*active*)	-	-	-	**-**				
A23	Brucellosis *(human)*	7	4	11	**22**	30	28	17	22
B55.1	Leishmaniasis Cutaneous (CL)	-	1	1	**2**	-	-	-	1
B55	Leishmaniasis Visceral (VL)	-	1	-	**1**	-	-	2	0
B65	Schistosomiasis (*intestinal*)	1	1	-	**2**	13	2	-	0
A16	Pulmonary Tuberculosis (*sputum negative*)	4	1	2	**7**	9	11	10	6
A17-19	Extra-pulmonary Tuberculosis	6	9	6	**21**	16	18	22	20
A30	Leprosy	2	-	-	**2**	1	-	1	0
B20-24	HIV [AIDS]	9 [0]	5 [1]	4 [5]	**18 [6]**	12 [7]	13 [8]	2 [6]	17 [19]
Group C Diseases & Syndromes									
J10-11	Influenza Like Illnesses (*ILI*)	359	337	128	**824**				1058
-	aLRTI & Pneumonia *(childhood)*	3,151	1,589	2,063	**6,803**				3,361
-	Acute 'Watery' Diarrhoea *(childhood)*	4,606	2,610	2,399	**9,615**				13,162
B01	Chickenpox	1,958	1,579	1,320	**4,857**	18,608	6,291	5,947	5,465
B26	Mumps	89	86	51	**226**	253	174	167	197

Communicable Diseases Quarterly Report by Regions

Second Quarter (April to June 2005)

ICD	Priority Communicable Diseases	Total	Muscat	Dhofar	Dakhliyah	North Sharqiyah	South Sharqiyah	North Batinah	South Batinah	Dhahira	Musan-dam	Al-Wustah
Group 'A' Diseases												
A00	Cholera	**0**	-	-	-	-	-	-	-	-	-	-
A20	Plague	*Never reported*										
A95.9	Yellow Fever	*Never reported*										
A39, 39.0, 39.2-39.4	Meningococcal Infection	**0**	-	-	-	-	-	-	-	-	-	-
G00.0	H. influenzae type b, meningitis *(Hib)*	**0**	-	-	-	-	-	-	-	-	-	-
A82	Rabies	**0**	-	-	-	-	-	-	-	-	-	-
B50-54	Malaria	**172**	56	9	11	10	7	49	16	7	4	3
A-15	Pulmonary Tuberculosis (sputum+)	**31**	9	1	2	-	2	8	1	8	-	-
	Gr. 'A' Syndromes											
	Acute Flaccid Paralysis (*AFP*)	**7**	2	-	2	1	-	-	1	1	-	-
	Fever & Rash-Illness	**149**	10	5	24	4	11	46	44	1	3	1
B05	Confirmed* Measles	**7**	-	-	1	1	-	2	3	-	-	-
B06	Confirmed* Rubella	**10**	-	1	-	-	2	3	4	-	-	-
P35.0	Congenital Rubella Syndrome (*CRS*)	**0**	-	-	-	-	-	-	-	-	-	-
U04,04.9	Severe Acute Respiratory Syndrome	*Never reported*										
A99	Acute Haemorrhagic Fever Syndrome	**0**	-	-	-	-	-	-	-	-	-	-
A02	Food Poisoning (*Infectious origin*)	**127**	7	10	39	10	4	-	39	7	-	11
Group 'B' Diseases												
G00.1-9	Bacterial Meningitis *(except Hib & Nm)*	**6**	5	-	-	-	-	1	-	-	-	-
A87	Viral Meningitis	**1**	-	-	-	-	-	-	-	1	-	-
G03	Other Meningitis (*unspecified*)	**19**	2	3	1	2	-	10	-	-	1	-
	Acute Viral Hepatitis (*total*)	**249**	**35**	**30**	**30**	**49**	**31**	**44**	**6**	**3**	**10**	**11**
B15	Acute Viral Hepatitis A	**24**	8	-	3	-	-	5	4	-	-	4
B16	Acute Viral Hepatitis B	**9**	-	-	5	-	-	3	1	-	-	-
B17.1	Acute Viral Hepatitis C	**4**	-	-	**2**	-	**-**	-	1	**-**	**1**	**-**
B17.0	Acute Viral Hepatitis D (*amongst B +*)	**0**	-	-	-	-	-	-	-	-	-	-
B17.2	Acute Viral Hepatitis E	**0**	-	-	-	-	-	-	-	-	-	-
B19/B17.8	Acute Viral Hepatitis (*unspecified*)	**211**	**26**	**30**	**20**	**49**	**31**	**36**	**-**	**3**	**9**	**7**
A03.0,	Typhoid & Paratyphoid Fever	**19**	3	-	-	-	5	8	-	1	-	2
A37	Pertussis (*clinical*)	**18**	15	-	1	1	-	1	1		-	-
A71	Trachoma (*active*)	**-**	-	-	-	-	-	-	-	-	-	-
A23	Brucellosis *(human)*	**22**	-	21	-	-	-	-	-	1	-	-
B55.1	Leishmaniasis Cutaneous (*CL*)	**2**	2	-	-	-	-	-	-	-	-	-
B55	Leishmaniasis Visceral (*VL*)	**1**	-	-	-	1	-	-	-	-	-	-
B65	Schistosomiasis (*intestinal*)	**2**	-	2	-	-	-	-	-	-	-	-
A16	Pulmonary Tuberculosis (*sputum neg.*)	**7**	2	1	1	-	-	2	1	-	-	-
A17-19	Extra-pulmonary Tuberculosis	**21**	8	4	2	1	-	6	-	-	-	-
A30	Leprosy	**0**	-	-	-	-	-	-	-	-	-	-
B20-24	HIV [AIDS]	**18 [6]**	4 [3]	-	4 [0]	-	1 [0]	8 [1]	1 [0]	0 [2]	-	-
Group C Diseases & Syndromes												
J10-11	Influenza Like Illnesses (*ILI*)	**824**	23	3	279	426	3	1	53	20	16	-
-	aLRTI & Pneumonia *(childhood)*	**6803**	567	329	215	1488	381	3288	396	22	49	68
-	Acute 'Watery' Diarrhoea *(childhood)*	**9615**	1187	817	1814	912	633	1761	895	1457	108	31
B01	Chickenpox	**4857**	772	371	1043	278	381	524	570	770	103	45
B26	Mumps	**226**	80	19	24	12	8	33	26	21	3	-

Selected Communicable Diseases by Wilayat

Second Quarter (April to June 2005)

Region	Wilayat	AFP	Measles	Rubella	Meningo-coccal Infection	Hib Meningitis	TB (Total)	TB Sputum Positive	Viral Hepatitis A	Viral Hepatitis B	Malaria (All)	Pertussis	Leprosy
MUSCAT	Muscat						3				1	1	
	Seeb	1					7	4			19	6	
	Muttrah						6	4			13	1	
	Bowsher						1	1			20	2	
	Al Amerat	1					1		1		3	1	
	Quriyat						1		7				
DHOFAR	Salalah						3				9		
	Thumrait			1									
	Taqah						1						
	Mirbat						1						
	Sadah												
	Rakhyut						1						
	Dhalqut												
	Muqshan												
	Shaleem												
NORTH BATINAH	Sohar			1			5	1			24	1	
	Shinas		1	2			2	2	1		7		
	Liwa								3				1
	Saham						3	1	1		1		
	Khabura						1	1		1	3		
	Suwaiq		1	1			5	3	2	3	14		
SOUTH BATINAH	Rustaq	1	2	2							3		1
	Nakhl										1		
	Wadi Maawil											1	
	Al Awabi												
	Musanah		1	1					1		4		
	Barka						2	1	1		8	3	
DAKHLIYAH	Nizwa						3	1	2		6	1	
	Bahla						2	1			1		
	Adam										1		
	Al Hamra												
	Manah		1								2		
	Samail	2								2	1		
	Izki									3			
	Bid Bid								1				
DHAHIRA	Ibri	1					5	5			1		
	Yanqul						1	1					
	Dhank												
	Al Buraimi						2	2			5		
	Mahda										1		
NORTH SHARQIYAH	Ibra	1					1				2		
	Al Mudhaibi		1								5	1	
	Bidiyah												
	Al Qabel										3		
	Dima Al Tayeen												
	Wadi Bani Khalid												
SOUTH SHARQIYAH	Sur			2			1	1			4		
	Masirah										1		
	Al Kamil Wa Al Wafi												
	Bilad Bani Bu Ali										2		
	Bilad Bani Bu Hassan						1	1					
MUSANDUM	Khasab										4		
	Dibba												
	Bukha												
	Madha												
AL-WUSTAH	Haima								4		2		
	Duqum										1		
	Mahoot												
	Al Jazer												
NATIONAL TOTAL		**7**	**7**	**10**	**0**	**0**	**59**	**31**	**24**	**9**	**172**	**18**	**2**

Age Distribution of Communicable Diseases

Second Quarter (April to June 2005)

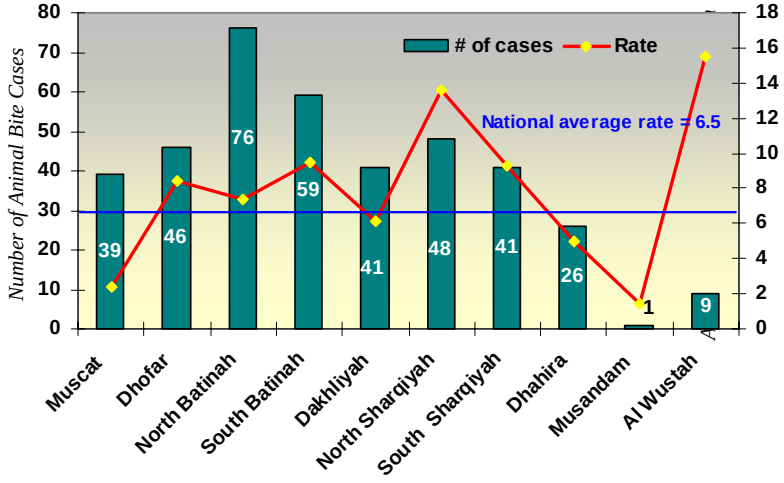
ICD Code	Priority Communicable Diseases	Total	Age Groups in Years								
			< 1	1-4	5-9	10-14	15-19	20-24	25-34	35-45	45+
Group 'A' Diseases											
A00	Cholera	**0**	-	-	-	-	-	-	-	-	-
A20	Plague	*Never reported*									
A95.9	Yellow Fever	*Never reported*									
A39, 39.0, 39.2-39.4	Meningococcal Infection	**0**	-	-	-	-	-	-	-	-	-
G00.0	H. influenzae type b, meningitis *(Hib)*	**0**	-	-	-	-	-	-	-	-	-
A82	Rabies	**0**	-	-	-	-	-	-	-	-	-
A-15	Pulmonary Tuberculosis (sputum+)	**31**	-	-	-	-	3	4	4	3	17
	Gr. 'A' Syndromes										
	Acute Flaccid Paralysis (*AFP*)	**7**	-	4	2	1					
	Fever & Rash-Illness	**148**	43	62	31	8	2	-	1	1	-
B05	Confirmed* Measles	**7**	3	2	1	-	-	-	-	-	-
B06	Confirmed* Rubella	**10**	-	6	2	-	-	-	-	-	-
P35.0	Congenital Rubella Syndrome (*CRS*)	**0**	-	-	-	-	-	-	-	-	-
U04, 04.9	Severe Acute Respiratory Syndrome	*Never reported*									
	Acute Haemorrhagic Fever Syndrome	**0**	-	-	-	-	-	-	-	-	-
A02	Food Poisoning (*Infectious origin*)	**127**	-	26	27	23	16	13	13	5	4
Group 'B' Diseases											
G00.1-9	Bacterial Meningitis *(except Hib & Nm)*	**6**	3	-	-	-	-	-	1	1	1
A87	Viral Meningitis	**1**	-	1	-	-	-	-	-	-	-
G03	Other Meningitis (*unspecified*)	**19**	5	4	3	3	1	-	3	-	-
	Acute Viral Hepatitis (*Total*)	**249**	**2**	**68**	**67**	**24**	**22**	**11**	**21**	**5**	**29**
B15	Acute Viral Hepatitis A	**24**	-	6	14	2	1	-	1	-	-
B16	Acute Viral Hepatitis B	**9**	-	-	-	-	1	3	2	-	3
B17.1	Acute Viral Hepatitis C	**4**	-	-	-	-	-	-	-	-	4
B17.0	Acute Viral Hepatitis D (*amongst B+*)	**0**	-	-	-	-	-	-	-	-	-
B17.2	Acute Viral Hepatitis E	**1**	-	-	-	-	1	-	-	-	-
B19/B17.8	Acute Viral Hepatitis (*unspecified*)	**211**	**2**	**62**	**53**	**22**	**19**	**8**	**18**	**5**	**22**
A03.0, A01.4	Typhoid & Paratyphoid Fever	**19**	-	2	1	1	5	1	3	3	3
A37	Pertussis (*clinical*)	**18**	15	2	1	-	-	-	-	-	-
A71	Trachoma (*active*)	**0**	-	-	-	-	-	-	-	-	-
A23	Brucellosis *(human)*	**22**	1	4	5	2	1	3	4	1	1
B55.1	Leishmaniasis Cutaneous (*CL*)	**2**	1	-	-	-	1	-	-	-	-
B55	Leishmaniasis Visceral (*VL*)	**1**	-	1	-	-	-	-	-	-	-
B65	Schistosomiasis (*intestinal*)	**2**	-	-	1	1	-	-	-	-	-
A16	Pulmonary Tuberculosis (*sputum Neg.*)	**7**	-	1	1	-	1	1	-	-	3
A17-19	Extra-pulmonary Tuberculosis	**21**	-	-	-	1	3	3	4	2	8
A30	Leprosy	**2**	-	-	-	-	-	-	-	-	-
B20-24	HIV [AIDS]	**18 [6]**	-	1 [0]	-	1 [0]	1 [0]	2 [0]	6 [1]	4 [2]	3 [3]

Note: *The quarterly data are 'provisional' & should be scrutinized/verified by the focal point of communicable diseases (Epidemiologist) at the provincial level. After receiving feedback the data would be finalized. The Group C data should be carefully checked for accuracy. Ensure that the case definitions are strictly followed.*

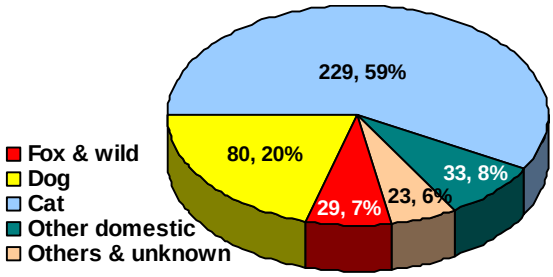
- *Tuberculosis, Leprosy & HIV [AIDS] data are for nationals only.*
- *Unspecified cases of acute viral hepatitis are due shortage of diagnostic kits and would be subsequently tested in the next quarter.*
- *Active Trachoma surveillance will commence from July 2005.*
- *(i) = imported case.*
- *Confirmed Measles/Rubella means either IgM ELISA positive or epidemiologically linked or a clinical case (blood sample not collected or inadequate).*

Animal Bite Surveillance *Second Quarter (April to June 2005)*

Notified Animal Bites by Regions (# & rate)



Notified Animal Bites by Type of Animal (#, %)



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