Volume 19, Issue 1

Sultanate of Oman Ministry of Health

Jan-Feb 2010

Community Health & Disease Surveillance Newsletter

Special Issue on:

"Communicable Disease Surveillance & Control"

Inside this issue:

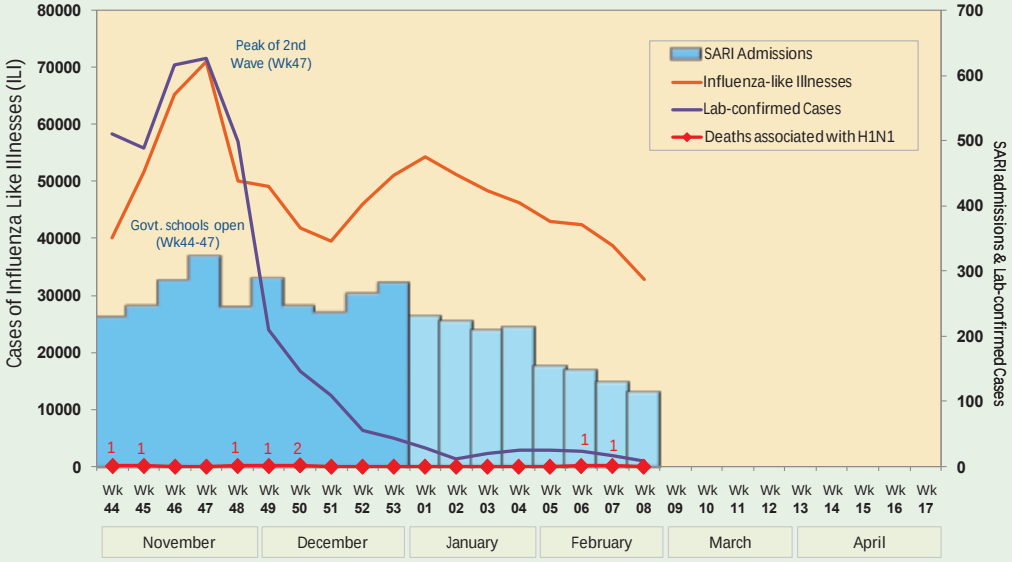
After the Pandemic H1N1 2009 in Oman...

Pandemic influenza H1N1 started its decline in Oman at the end of year 2009 as was happening in rest of the world. Although WHO warns that some countries in West Africa are still experiencing new influenza activity. In most countries the pandemic has peaked and the sporadic cases continue to occur.

Many questions remain unanswered for the health administrators all over the world how and what actions should be planned within the health system now to deal with the possible re-emergence of the second wave of the pandemic.

Globally the health systems of the countries affected were stretched to limits in terms of resources. That included surveillance systems, diagnostic laboratories, clinical management teams, school health authorities to name a few. The resources consumed were at the cost of other programmes and routine health care activities. It should be noted that world over the pandemic H1N1 was by and large a mild dis-

Fig.1: Weekly Reported Cases of ILI, SARI Inpatients, Laboratory Confirmed H1N1 Cases and H1N1 Associated Deaths in Oman: Week # 44-53, 2009 & 1-8 (2010)



Data source: For surveillance purpose Severe Acute Respiratory Illnesses (SARI) have been defined as admitted cases of acute febrile respiratory illness and the data are compiled manually from daily reports from 14 sentinel hospitals in the country. Similarly data on ILI are compiled by certain grouping of 'J' codes (ICD 10) amongst outpatient cases with respiratory illness. ILI data are retrieved nationally from patients' records available in computerized health care institutions. For non-computerized institutions data are collected manually and merged with the dataset. Deaths associated with H1N1 are recorded according to date of death and after verification by the National Committee.

"The MoH has taken decision to establish a comprehensive integrated surveillance of 'Acute Respiratory Infections' & integrate into the national surveillance . system."

ease with a very low mortality. Although many more mild cases were either missed or many deaths were not attributed to pandemic H1N1 due to the paucity of diagnostic facilities especially in developing countries.

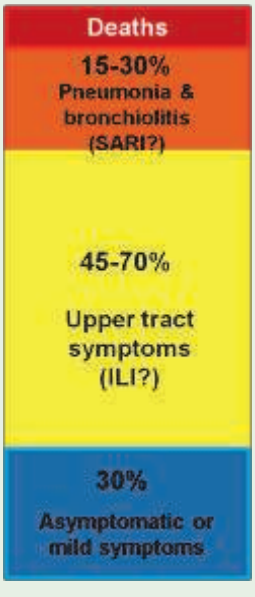
What next?

Now that the pandemic has abated questions that should be contemplated and answers sought are: Will the second wave begin again in the summer of 2010 in the Northern hemisphere as it happened in 2009? Will the pandemic be more extensive and severe in the winter of 2010 as many experts are predicting? Should we continue to vaccinate against pandemic H1N1 with current available vaccines? What policy on antiviral drugs like oseltamivir should we adopt now? Should we continue to follow same sample testing policy as in the pandemic? Will the pH1N1 virus replace the seasonal flu virus in future?

National Strategy on Acute Respiratory Infections Surveillance

The Ministry of Health has taken a decision to establish a comprehensive integrated surveillance of acute respiratory infections and include the activities into the national surveillance system. A large majority of respiratory infections caused by influenza viruses are mild in nature and small proportion only may be serious requiring admission in hospitals. Of these again a small proportion succumb to infections (Fig.2).

Fig.2: Natural History of Influenza



There are three essential components of the surveillance. To capture

- The first is monitoring ILI activities through a system of reporting, data collection, compilation and analysis on a real time basis.
- Second is to identify circulating viruses amongst mild cases of influenza-like-illnesses (ILI) in outpatients (ambulatory) and
- Thirdly to identify emerging respiratory pathogens including novel viruses responsible for acute respiratory illnesses leading to hospital admissions and deaths.

Objectives

1. Monitor ILI activity in the community after establishing baseline.
2. Describe epidemiology of respiratory infections.
3. Serve effectively as an early warning system for the new emerging pathogens including novel viruses that may have a pandemic potential

The achievements and experience in the past prompted the Ministry of Health to revise the system to include all components of surveillance under one comprehensive umbrella of 'National Acute Respiratory Infections Surveillance' and to sustain this initiative on a long term basis. Similarly for sustenance of all components of surveillance including laboratory resources it was decided to conduct these activities at select sentinel sites in Oman geographically representing the country. Besides saving on resources having few sentinel sites would enhance the quality of data and prove easier to monitor and supervise the surveillance program.

Monitoring ILI Activity

The ILI was included in Group C of communicable diseases since 2005 and the monthly data was collected through the surveillance system. However it was observed that the data captured did not represent the true incidence due to discrepancies in the case definition and perception of the clinicians at the provincial level. Despite efforts to rectify the situation the reporting of ILI did not improve. The data on ILI from 2005 to 2008 in the national surveillance system are considered unreliable. The ILI data were reported on monthly basis (Group C) and the information was available to surveillance department after two months. Hence such system cannot be used for real-time monitoring of ILI activity.

The ILI data are required to be captured on a weekly basis if it has to serve as an early warning system. The Directorate General of Information Technology (DGIT) has developed a computerized system linked to a central data processing unit in the headquarters. This system termed as *"Nabdh Al Shifa"* is an online system and the reports are compiled through software (COGNOS) in response to queries of ICD-10 code. This system has a direct access to patient records and was used for the first time during the influenza pandemic for capturing real time data on ILI. It is proposed that the same system will be utilized for the national reporting. Representative health care institutions will be selected for the weekly monitoring of ILI activity in the community.

Case definition of ILI: The adopted case definition (WHO) for ILI is any person attending a health facility with fever >38^0 C and either cough or sore throat.

The method of compilation, analysis and interpretation is being planned. It is envisaged that these data will serve to establish baseline incidence of ILI and will indicate surge in the ILI activity.

Severe Acute Respiratory Infections Surveillance Project

A sentinel surveillance program was established in Oman from 2007 in tri-party collaboration with WHO-EMRO and US Naval Medical Research Unit, Egypt. The program was launched in Sohar Hospital in January 2008. The Ibra hospital joined the program in September 2009 while Sultan Qaboos Hospital, Salalah participated since December 2009.

From November 2007 to November 2009, 648 patients were enrolled in the SARI surveillance program and 635 were tested using RT-PCR. Of the 635 patients tested, the number who were RT-PCR positive was 415 (65%) for viral agents, 8 (1.3%) for atypical bacterial agents and 1 (0.2%) bacterial/viral co-infections. The most common aetiologies were respiratory syncytial virus (RSV) with 190 patients (30%), Adenovirus with 98 patients (15%) and Influenza A with 90 patients (14%).

During implementation of the SARI surveillance program, several trainings were conducted for epidemiological surveillance, international case definitions of acute respiratory infections, sample collection, processing, storage and transport. The CPHL is processing all samples for Influenza viruses and NAMRU-3 laboratories are testing samples for additional respiratory viruses.

Action Plan for ARI Surveillance

The currently active three hospital sites for SARI project will now be participating in the national surveillance viz. Sohar hospital, Ibra hospital and Sultan Qaboos hospital, Salalah and a plan to add Al Nahda hospital.

Starting from 1st May 2010, one more hospital will be added to the sites. All 4 sentinel hospitals will establish an ongoing surveillance activity. In future other regional referral hospitals will be included in this network as required.

Screening: Screening should be done daily for all new cases of acute respiratory infections admitted in the Paediatric and Internal Medicine wards of the sentinel hospital. Note that all cases of infections of the respiratory system should be screened based on provisional diagnosis at the time of admission. Algorithm (Fig.3) should be followed to recruit cases of ARI surveillance.

Samples: Nasopharyngeal/Oral swabs will be obtained from all eligible patients. Blood sample will be collected for culture. Swabs will be processed according to set algorithm. RT-PCR diagnostic test will be performed.

External Quality Control: In the initial phase samples are tested simultaneously by CPHL and reference laboratory (NAMRU-3) hence comparison between results will represent external quality control. However in future CPHL will only process samples therefore at that time the external quality control plan should be operational.

Data Management

The Surveillance Coordinator at the sentinel site and the National Surveillance Coordinator will analyse weekly data on admissions and deaths to monitor the trend.

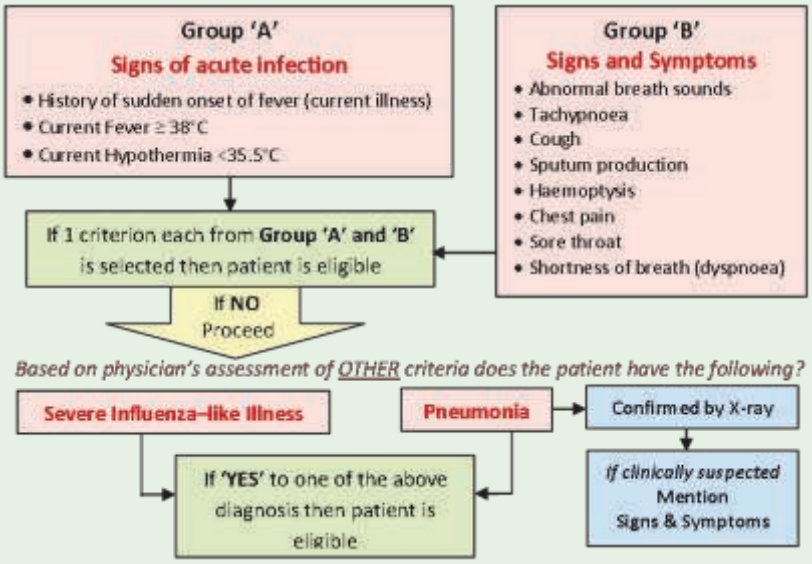
Analysis plan:

- Weekly analysis of admissions and deaths due to acute respiratory illnesses at the sentinel sites. Calculation of rates.

"The adopted case definition (WHO) for ILI is any person attending a health facility with fever >38^0 C and either cough or sore throat."

"In addition the surveillance of pH1N1 in other hospitals also must be continued. However these activities will not be as intensive and will be conducted under specific circumstances."

Fig.3: ARI Screening Algorithm for inclusion of cases in ARI Surveillance



Establishing baseline incidence.

- Comparison of weekly incidence to note any unusual surge above the estimated baseline.
- Analysis of quarterly data to quantify bacterial and viral pathogens by types responsible for the cases of acute respiratory illnesses.
- At the end of the year analysis of annual data for trends and rates of acute respiratory illnesses with detailed information on the bacterial and viral pathogens.
- Describe epidemiology of ARI at the sentinel site with responsible causative organism with reference to specific high-risk age groups.
- Analysis on utility of acute respiratory illnesses surveillance as early warning for increased influenza activity.

Surveillance of pH1N1 in other Hospitals in the Country

The ARI surveillance sites will continue to monitor inpatients admitted with respiratory illnesses while ILI surveillance will monitor outpatients. In addition the surveillance of pH1N1 in other hospitals also must be continued. However these activities will not be as intensive and will be conducted under specific circumstances as described below:

- Besides pH1N1 testing will also be done on selective samples collected from other hospitals or community under specific circumstances mentioned below:
- Unusual clustering of ILI reported in a clinical setting (Government or Private sector), which is in excess of the established baseline.
- Unusual school absenteeism due to respiratory illness.
- Unusual rise in hospital admissions due to respiratory illness.
- Unusual rise in hospital admissions due to severe respiratory illness i.e. large number of patients requiring mechanical ventilation.
- Clinicians suspecting an increase in cases of ILI or ARI.

Information Sources

- Weekly ILI data from health facilities (Government and Private) through computer system or manually collected.
- Hospital inpatients weekly report from Health Information or Medical Records Coordinators.
- Feedback of laboratory results from CPHL.
- School absenteeism reports.

Responsibilities and Actions

- The primary responsibility will be with the Director/Superintendent of Health

(Continued on page 10)

Deaths associated with Pandemic Influenza H1N1

Review of Mortality Data

During the pandemic influenza 2009, total 6347 cases were laboratory confirmed and 33 deaths associated with A (H1N1).

A death verification sub-committee was established within the National committee to assess medical records of all the reported deaths. After verification of available evidence the committee would offer the final classification.

Place Distribution

Regional distribution of death is given in Table-1 based on location of hospital where the case died and not on the place he/she acquired infection.

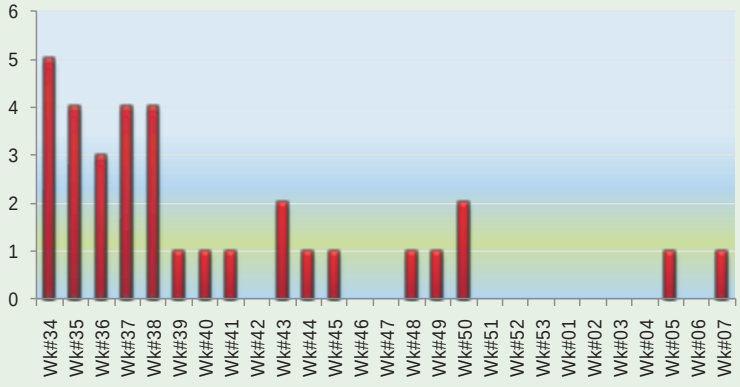
Table-1: Regional Distribution of Deaths associated with pH1N1

Region/Governorate	Deaths
Muscat Governorate	5
Dhofar Governorate	10
North Batinah Region	6
South Batinah Region	4
Dakhliyah Region	2
North Sharqiyah Region	1
South Sharqiyah Region	3
Dhahira Region	2
Buraimi Governorate	0
Musandam Governorate	0
Al Wustah Region	0
Total	33

Time Distribution

The pandemic started in week #25 (mid-June). The first cluster of 5 deaths were reported from SQ hospital Salalah, Dhofar in week #34. Thereafter the numbers gradually decreased after the pandemic peaked in week #47. Last 2 deaths were in the months of Jan/Feb 2010 from Dhofar

Fig.1: Time Distribution of Deaths Associated with pH1N1



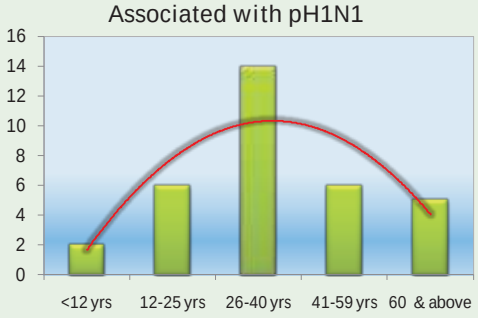
Gender distribution

Amongst deaths associated with pH1N1, 16 were males and 17 females The distribution was almost equal.

Age Distribution

In Oman the majority of deaths were reported in the age group of 26-40 years while in children and elderly only few deaths were reported (Fig.2). This is contrary to seasonal influenza where the excess mortality is observed in children and elderly (a 'U' shaped curve).

Fig.2: Age Distribution of Deaths Associated with pH1N1



Nationality

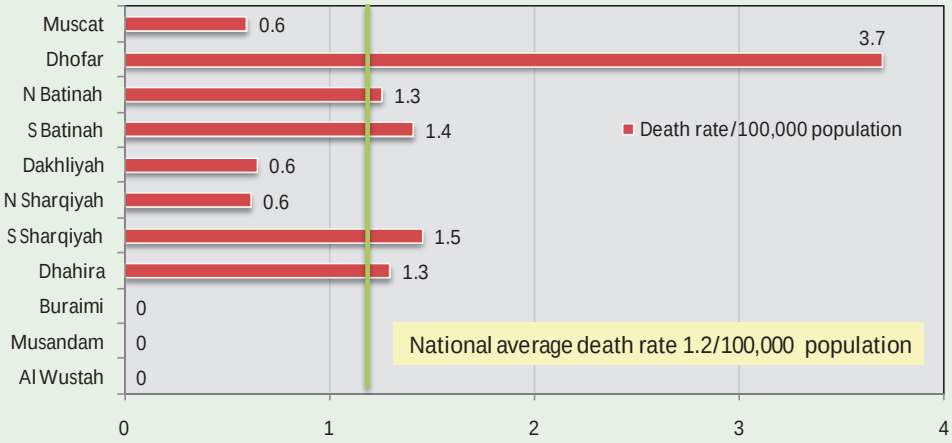
Amongst 33 deaths, 29 were Omani and 4 Indian patients.

Clinical Presentation

Almost all cases had similar presentation i.e. pneumonia and acute respiratory distress at the time of admission. The duration of time from onset of illness to admission was estimated. The range was 0 to 10 days. Three patients were admitted on the same day of onset. The average for other patients was 3.7 (n=30, SD 2.5). The average interval between admission to ICU admission was 1.1 day (n=29, SD 1.5) with a range of 0 to 5 days. Over 55% of admitted cases were transferred to ICU on the day of admission. Aver-

"In Oman the majority of deaths were reported in the age group of 26-40 years while in children and elderly only few deaths were reported."

Fig.3: Regional Comparison of Deaths due to pH1N1:



"The SQ hospital, Salalah recorded the highest death rate at 3.7 per 100,000 population that was over 3 times that of national average of 1.2."

age length of ICU management was 7.2 days (n=29, SD=5.6) with a range of 0 to 20 days.

Mortality Rates by Provinces

The national average death rate for pH1N1 per 100,000 population, by Regions and Governorates are shown in Fig.3. The SQ hospital, Salalah recorded the highest death rate at 3.7 per 100,000 population that was over 3 times that of national average of 1.2. Possible reasons for such differences in mortality by administrative region could be:

a. More virulent virus. However WHO clearly states that available global evidence does not support this theory.

b. Population of Dhofar inherently likely to get severe disease than other areas. This theory is difficult to prove.

c. The past experiences in other parts of the world suggest that after the 1st pandemic wave a proportion of population is infected and immune to new circulating virus, typically 30%. Probably in Dhofar a higher proportion of population was affected compared to North Oman. The reasons being the conducive cooler climate during *Khareef* (Jun-Aug) for respiratory virus transmission. A large number of tourists from neighbouring countries visit Salalah during *Khareef* hence creating several transmission opportunities due to public gatherings.

Co-morbidity & Risk Factors

Co-morbidity was observed in 43% of cases that included diabetes, hypertention, renal transplant, chronic liver disease, IHD, CVA, carcinoma etc. (Table-1).

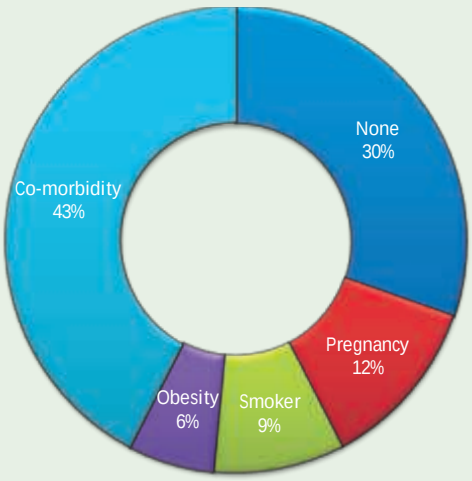
Similarly other risk factors observed were: pregnancy in 4 (12%), smoking in 3 (9%) and obesity in 2 (6%). (Fig.4)

Amongst 10 cases (30%) of pH1N1 deaths NO risk factors wee present.

Table-2: Associated Co-morbidity amongst deaths due to pH1N1

Co-morbidity	#
DM	6
Transplant	2
Malignancy	1
Congenital	3
Others	2

Fig-4: Co-morbidity & Other Risk Factors associated with pH1N1 deaths



Vaccine Vial Monitor (VVM) Availability and Use

An in-depth review in Oman

Excepts from the WHO-EMRO consultant's Report

Vaccine Vial Monitor (VVM) is a device attached to an individual vial of any vaccine to show the cumulative heat exposure i.e. the temperature and time history of the vial exposure. The device is a printed chemical square in a light purple circle that changes its colour based on the heat intensity and the duration of time the vial was exposed to heat. The change of colour is gradual and the colour of the inner square becomes identical to the colour of the outer circle when the vial is exposed to excessive heat for certain length of time. If the heat exposure continues further, the colour of the inner square will become darker than the colour of the outer circle. When the colour of the inner square reaches the colour of the outer circle, the condition indicates that the vaccine in this individual vial has gone through the limit of temperature violation indicating possible heat damage and loss of efficacy. The colour change of the inner square is directly dependent on the temperature and the duration of exposure to heat, the higher the temperature and the longer the time, the faster is the colour change.

There are different VVMs for vaccines with different thermo-stabilities (Fig.1). Presently there are four types of VVMs available in the market. The type of VVM is printed in small fonts on each VVM label. There is twenty years of history behind the development of VVM. VVM is the second generation of the temperature-time devices, the first was called as the Cold Chain Monitor (CCM) (Fig.2).

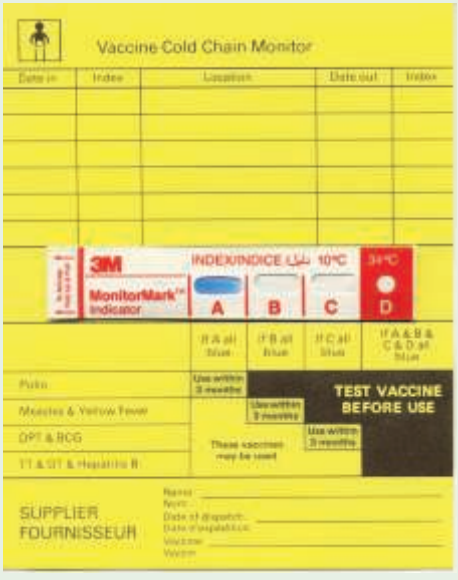
Fig.1: VVM: colour changes in inner square due to cumulative heat exposure

Types of VVM	VVM2	VVM7	VVM14	VVM30
The color of the inner square will become gradually darker to match the color of the outer circle at fixed temperature of 37°C in...	2 days	7 days	14 Days	30 days

Contribution of VVM in immunization programs

In the last ten years one of the most remarkable changes in vaccine logistics and management has been the introduction of VVM. VVM is a simple managerial tool which enables health workers at all levels to use or to discard heat-damaged vaccines. VVM's practical use at the field level made it a controlling device of choice. VVM also determines which vial of vaccine should be used first as it indicates which has been exposed to heat more than the other. It increases the confidence of health workers on the potency of vaccines and the efficiency and effectiveness of the cold chain in which vaccines are stored, trans-

Fig.2: Cold Chain Monitor (CCM): *...Predecessor of VVM*



"There is 20 years of history behind the development of VVM. It is the 2nd generation of temperature-time devices, the first was called 'Cold Chain Monitor' (CCM)."

"VVM has been instrumental for increasing vaccination coverage & to reach hard-to-reach target population as it allows vaccines out of the traditional cold chain."

ported and administered. VVMs have become a requirement by many programs since the cost of VVM compared to the cost of vaccines is negligible (usually less than 1% of the cost of the vaccine) and its utility as a managerial tool has become more and more evident in field studies.

VVM has been instrumental in conducting National Immunization Days (NIDs) for polio eradication. VVM has enabled program managers to confidently take OPV (one of the most heat-sensitive vaccines) out of the traditional vaccine cold chain, and thus reach children in remote areas without electricity and ice. VVM helped programs to take hepatitis B vaccines out of the refrigerators and keep them with traditional birth attendants to reach new-borns shortly after birth in remote areas.

Gradual colour change of VVMs warns health workers to hasten the use of the vaccines and also indicates problem in the cold chain. VVM has been instrumental for

Fig.3: In a health facility in Oman: *OPV vials with darker inner square used first*

increasing vaccination coverage and to reach hard-to-reach target population as it allows vaccines out of the traditional cold chain. Vaccines which can be taken out of the cold chain primarily depend on use of VVM.

VMM has also been instrumental in extending use of opened multidose vial of liquid vaccine for a maximum of four weeks (WHO, multi dose vial policy or MDVP policy).

VVM was first used for OPV and mainly for campaigns in 1996. It was gradually used for other vaccines and for routine immunization activities. In February 2009 WHO and PATH jointly celebrated 10 years of successful VVM use in Geneva.

VVM AVAILABILITY & USE

An in-depth review in Oman

The Sultanate of Oman with a population of 2.7 million has a good health care infrastructure and was one of the first countries in Eastern Mediterranean Region to achieve zero-polio status. The National Vaccine Store in Muscat was the first vaccine store certified by WHO and UNICEF in 2003 under the EVSM initiative. Oman has one of the most comprehensive childhood vaccination programme. All vaccines are imported by the Ministry of Health and are free to all. A small proportion of children are vaccinated by the private sector.

VVM availability

During the recent years most of the vaccines were purchased through pooled system of procurement with other Gulf Countries. The SGH is responsible for the purchase of all drugs, including vaccines for all the Gulf Countries for competitive pricing. Only BCG and PCV-7 that makes 25% of total EPI vaccines from 2007 to 2009 were locally purchased in Oman. There is a plan for including PVC-7/13 in the SGH purchase tender plan of 2010. There is no mention of VVM as a requirement in the original SGH tender specification document for vaccines. Yet in other tender document VVM is mentioned as a *preferred requirement* under packaging specifications. Vaccines purchased locally in Oman also do not carry VVM.

GCC countries generally follow policies adopted in the developed countries for instance in US and Europe where VVM use is not widespread, the utility of VVM is always questioned. In addition the manage-

ment wonders why VVM is also not used in PAHO countries where polio and measles have been eradicated long before. Moreover it may be argued that the final impact of vaccine quality and coverage is reflected in the incidence of vaccine-preventable diseases (VPDs) then Oman along with other GCC countries have already achieved commendable success in near elimination of most VPDs.

Only OPV vials carry VVM in Oman i.e. 31% of total vaccines available are with VVM. The EPI staffs in Oman were aware of the importance and utility of VVM on all vaccines but expressed their concern over the apathy of other GCC EPI managers for non insistence of VVM on vaccines except OPV.

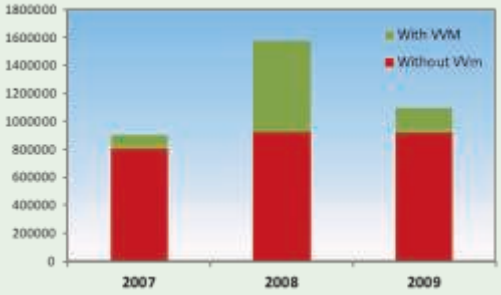
Table-1 shows the total cost of VVM if all vaccines imported through SGH and purchased directly would have had VVM. In Oman the cost of VVM as proportion of total vaccine costs would be below one per cent (0.3%) for 2009 i.e. total incremental cost of US $ 25,936.

VVM Utilization

VVM is only available on OPV which comprises 54% of total EPI vaccines from 2007 to 2009 (Fig.4) although the staffs believe that all vaccine must have VVM indicating the utilization of VVMs is not as widespread. Most of the staffs directly involved in providing vaccination services were aware of VVM and its utility and importance.

One of the issues mentioned during discussion and interviews was that the electricity supply is quite reliable in Oman at all levels; VVMs may not therefore play a significant role in ensuring the potency of vaccines. Posters on four stages of VVM were printed in 2006. The use of VVM as a managerial tool appears limited in Oman. Decisions are made based on VVM stages, whether to use or not only for OPV vials. In the last edition of the EPI Manual (2003) a chapter on VVM is included. Most of the staff interviewed learnt about VVM through on-job training.

Fig.4: Availability of VVM on Vaccines in Oman: 2007-09



The staffs at the Central Vaccine Store in Muscat filled Vaccine Arrival Reports (VAR) for all vaccine shipments (2007 to 2009). However, the boxes related to VVM were left blank on VAR and stages of VVM were not filled on the assumption that VVMs were at stage 1 and hence vaccines were intact.

There is no specific column for the registration of VVM stages on the forms used in distribution of vaccines. However, in the district visited in Rustaq, the store staff registered VVM on the "Remark" column and stage 1 was referred to as "normal". All these observations indicate need of standardized training on VVM.

Table-1: Cost of adding VVM to all vaccines in Oman: 2009

Vaccines	#of doses	Dose/Vial	# of vials	VVM Cost (US $)*
BCG	150,000	20	7,500	387
DPT	50,000	1	50,000	2,581
Hepatitis B	40,000	1	40,000	2,065
IPV	60,000	10	6,000	310
MMR	120,000	1	120,000	6,195
OPV	185,400	10	18,540	VVM available
PCV-7	135,000	1	135,000	6,969
Pentavalent	120,000	1	120,000	6,195
TT	239,000	10	23,900	1,234
			Total extra cost of VVM	US $ 25,936

Summary of fo-

Total cost of vaccines in 2009 RO = 3,321,011

Total cost of VVM RO = RO 10,052

Incremental cost of VVM = 0.3%

**Average cost of VVM = 5.1625 US Cent (1 RO=US $2.58)*

"In Oman the cost of VVM as proportion of total vaccine costs would be below one per cent (0.3%) for 2009 i.e. total incremental cost of US $ 25,936."

cused group discussions

- WHO should specifically recommend that all vaccines must carry VVM especially those against targeted diseases
- Except national staff, other staffs in the country were not aware of different types of VVM for vaccines.
- National staff believed that VVM must be on all vaccines and that actions should be taken to convince SGH tender body to make VVM as one of the essential requirements for all vaccines.
- They expressed opinion that one of the GCC EPI managers should be included in the SGH tender meeting.
- At the vaccination service delivery level, staff said that they always checked VVM on OPV vials before use. They all believed that all vaccines must have VVM and that would give them confidence and ensure the efficiency of the system and also efficacy of the vaccines.

Recommended actions

- NITAG to specify VVM as a fundamental requirement for registering vaccines in Oman.
- SGH tender board should insist that VVM should be on all vaccines.
- Insist on VVM for vaccines purchased locally.
- Develop advocacy material for on VVM for all health facilities providing vaccines.
- Register VVM stage on 'Vaccine Arrival Report (VAR)' at primary store.
- Add space in vaccine receiving forms to record VVM stage at all levels of distribution.
- Emphasis all issues related to VVM as a managerial tool.

Editor's comments

The matter of "VVM on every vaccine vial imported in Oman" has been taken up seriously by the EPI manager and the subject is included in the agenda of the upcoming NITAG meeting. MoH representative in SGH tender board will also seek consensus and amendments to tender specifications in the next board meeting. All other recommendations of the report will be implemented soon.

Original Report: Mojtaba Haghgou, WHO EMRO

Edited by: Dr Shyam Bawikar, DCDSC

"National staff believed that VVM must be on all vaccines & that actions should be taken to convince SGH tender body to make VVM as one of the essential requirements for all vaccines."

(Continued from page 4)

Affairs in the Regions and Governorate. The Executive Director/Superintendent of the Regional Hospitals will be responsible for hospital information.

- At the national level, the Director, DCDSC and the Surveillance Section I/c will coordinate all activities including support such as epidemiological investigation.
- The Regional Epidemiologist or the Focal Point for the Communicable Disease Surveillance in the Region/Governorate will organize the surveillance activity, analyse weekly data reports, notify, initiate investigation and prepare reports.
- The school health Directorate will inform all schools to watch for outbreaks or absenteeism through their Regional counterparts and report to DHA office and the DCDSC for investigation and further actions.

Editor's comments

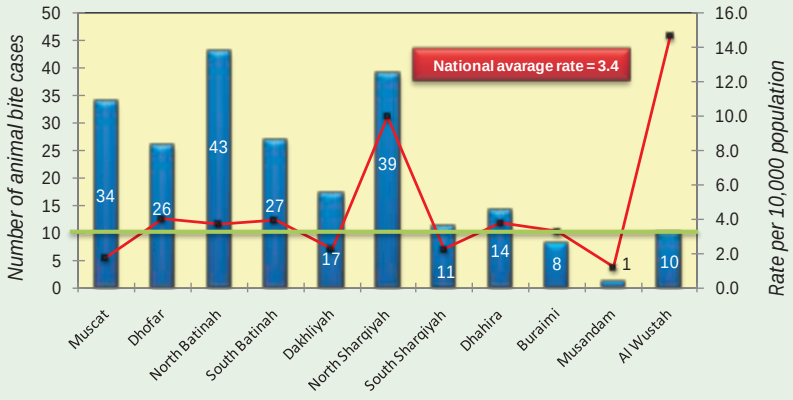
During the inter-pandemic period it is vital that the surveillance activity must continue. Monitoring influenza activity should be as an integral part of the national surveillance system and there should be clear national guidelines on the adopted strategies. The national preparedness committee thus will be armed with the right tool to deal effectively with the impending pandemics.

Source: National Strategic Plan on Acute Respiratory Infections (Draft): 2010

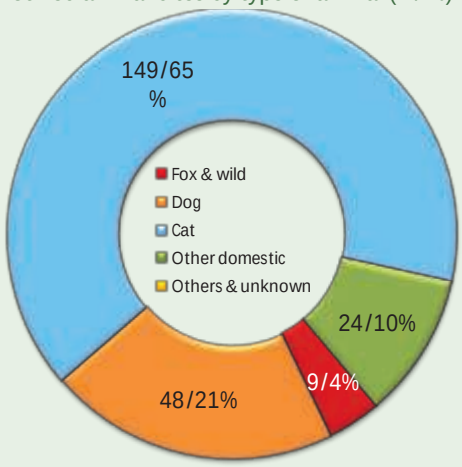
Animal Bite Surveillance Data

Fourth Quarter: September to December 2009

Notified animal bites by Regions (# & Annual rate/10,000 population)



Notified animal bites by type of animal (# / %)



Brief Summary & Observations on

Communicable Disease Surveillance Data: *Fourth Quarter: September to December 2009*

Group A Diseases & Syndromes

- AFP: Three AFP cases were reported. One from Jalan Bani Bu Hassan Wilayat (South Sharqiyah) and one each from Ibri and Yanqul Wilayat (Dhahira). The final classification for these cases was Gullion Barre Syndrome (GBS), Post-traumatic limp, and Myositis respectively. The 60 days follow-up did not revel residual paralysis in all 3 cases. Unfortunately the contact stool samples were collected for the Ibri case but were lost in transit.
- Fever & Rash illness: Of the 87 cases reported, 9 were classified as clinical. Nil cases of measles were confirmed during the quarter. One case from Nizwa Wilayat (Dakhliyah) was confirmed as rubella while no CRS cases were reported from Oct to Dec 2009.
- Meningococcal infections/Hib Meningitis: Nil cases were reported.
- Pulmonary Tuberculosis: Of the reported cases, 22 were sputum positive and 6 were sputum negative. 30 extra-
- Food poisoning: Total 47 cases were notified. No major episode of food poisoning was reported during the quarter. In 7 minor episodes of food poisoning 26 cases were involved.
- Other diseases (unlisted): One case of travel associated Dengue fever type-1 was reported from Royal Hospital during Q3. She was a Korean flight attendant.

Group B Diseases

- Meningitis: Nine cases of meningitis other than Nm and Hib were reported. Of these 5 cases were from North Batinah Region.
- Viral Hepatitis: Total 42 cases were reported and of these 24 were unspecified. 14 cases were confirmed as Hepatitis A, 1 case of Hepatitis B and 2 of C were confirmed.
- Pertussis: Eight clinical cases were reported and none were serologically confirmed.
- Brucellosis: Seventeen cases were reported, 16 of them were from the endemic Dhofar Governorate.
- Leishmaniasis/Schistosomiasis: Nil cases were reported during the 4th quarter.
- HIV [AIDS]: Twenty new HIV infections were diagnosed and 4 AIDS cases were reported among the HIV positive chronic carriers.

Group C Diseases

- Varicella: In the 3rd quarter a total of 7348 cases of chickenpox were reported from all over the country.
- Mumps: 147 cases of clinical mumps were reported through the passive surveillance system while from sentinel sites 55 cases were reported that were subjected to laboratory confirmation. Of these 1 was IgM positive.

Communicable Disease Surveillance Data: *By Month*

Fourth Quarter: October to December 2009

Priority Communicable Diseases	2009				2008	2009		
	October	November	December	Total	Q4 Oct-Dec	Q1 Jan-Mar	Q2 Apr-Jun	Q3 Jul-Sep
Group A Diseases								
Cholera	-	-	-	0	-	-	-	-
Plague	*Never reported*							
Yellow Fever	*Never reported*							
Meningococcal Infection	-	-	-	0	1	-	-	-
H. influenzae type b, meningitis *(Hib)*	-	-	-	0	-	1	-	-
Rabies	-	-	-	0	-	-	-	-
Malaria (*Imported Cases*)	130	63	39	232	247	92	288	279
Pulmonary Tuberculosis (*sputum positive*)	8	4	10	22	18	27	27	22
Group A Syndromes								
Acute Flaccid Paralysis [Polio]	-	3	-	3	9	8	4	4
Fever & Rash-Illness	33	31	23	87	148	158	231	120
Clinical Cases	4	4	1	9	2	3	1	6
Measles (*IgM positive*)	-	-	-	0	-	1	2	-
Rubella (*IgM positive*)	-	1	-	1	-	1	-	1
Congenital Rubella Syndrome (*CRS*)	-	-	-	0	-	-	-	-
Severe Acute Respiratory Syndrome *(SARS)*	*Never reported*							
Acute Haemorrhagic Fever Syndrome	-	-	-	0	-	-	-	-
Food Poisoning (*Infectious origin*)	25	4	18	47	60	36	77	97
Group B Diseases								
Bacterial Meningitis *(other than Hib & Nm)*	-	1	1	2	11	6	2	2
Viral Meningitis	-	1	-	1	-	1	-	-
Other Meningitis (*unspecified*)	-	3	3	6	13	6	8	3
Acute Viral Hepatitis (*Total*)	21	8	13	42	186	222	292	62
Acute Viral Hepatitis A	9	4	1	14	133	175	199	37
Acute Viral Hepatitis B	-	1	-	1	7	2	7	7
Acute Viral Hepatitis C	1	-	1	2	2	2	9	2
Acute Viral Hepatitis D (*amongst B positive*)	-	-	-	0	-	-	-	0
Acute Viral Hepatitis E	-	1	-	1	3	-	7	3
Acute Viral Hepatitis (*unspecified*)	11	2	11	24	41	43	70	13
Typhoid & Paratyphoid Fever	9	5	1	15	14	16	22	13
Clinical Pertussis [IgM positive]	1	1	6	8	6	10	14	6
Trachoma (*active*)	1	-	1	2	16	13	12	5
Brucellosis *(human)*	7	9	1	17	19	18	19	25
Leishmaniasis Cutaneous (CL)	-	-	-	0	1	-	2	2
Leishmaniasis Visceral (VL)	-	-	-	0	-	-	1	0
Schistosomiasis (*intestinal*)	-	-	-	0	-	-	1	0
Pulmonary Tuberculosis (*sputum negative*)	2	2	2	6	1	4	1	7
Extra-pulmonary Tuberculosis	10	10	10	30	29	28	29	24
Leprosy	-	-	-	0	1	-	1	1
HIV [AIDS]	4 [1]	8 [1]	9 [2]	21 [4]	19 [3]	14 [7]	18 [5]	16 [4]
Group C Diseases and Syndromes								
Influenza Like Illnesses (*ILI*)	72251	105750	82331	260332	13152	153137	124384	128069
aLRTI & Pneumonia *(childhood)*	213	234	358	805	4896	773	637	433
Acute 'Watery' Diarrhoea *(childhood)*	7092	6461	8143	21696	7045	30588	17310	11949
Chickenpox	678	568	936	2182	4747	8607	10068	4462
Clinical Mumps [Sentinel sites-IgM positive]	61 [0]	37 [0]	49 [1]	147 [1]	418 [3]	195 [5]	161 [2]	132 [4]

Communicable Disease Surveillance Data: *By Regions*

Fourth Quarter: October to December 2009

Priority Communicable Diseases	Total	Muscat	Dhofar	North Batinah	South Batinah	Dakhli-yah	North Sharqi-yah	South Sharqi-yah	Dhahira	Buraimi	Musan-dam	Al Wustah
Group A Diseases												
Cholera	0	-	-	-	-	-	-	-	-	-	-	-
Plague	*Never reported*											
Yellow Fever	*Never reported*											
Meningococcal Infection	0	-	-	-	-	-	-	-	-	-	-	-
H. influenzae type b, meningitis *(Hib)*	0	-	-	-	-	-		-	-	-	-	-
Rabies	0	-	-	-	-	-	-	-	-	-	-	-
Malaria (*Imported Cases*)	232	88	26	63	12	8	5	10	10	4	-	6
Pulmonary Tuberculosis (*sputum +ve*)	22	3	4	8	2	2	-	-	-	2	-	1
Group A Syndromes												
Acute Flaccid Paralysis [Polio]	3	-	-	-		-	-	1	2	-	-	-
Fever & Rash-Illness	87	9	12	17	18	9	2	13	4	2	-	1
Clinical Cases	9	6	1	2	-	-	-	-	-	-	-	-
Measles (*IgM positive*)	0	-	-	-	-	-	-	-	-	-	-	-
Rubella (*IgM positive*)	1	-	-	-	-	1	-	-	-	-	-	-
Congenital Rubella Syndrome (*CRS*)	0	-	-	-	-	-	-	-	-	-	-	-
Severe Acute Respiratory Syndrome *(SARS)*	*Never reported*											
Acute Haemorrhagic Fever Syndrome	0	-	-	-	-	-	-	-	-	-	-	-
Food Poisoning (*Infectious origin*)	47	3	-	13	4	14	2	-	-	-	2	9
Group B Diseases												
Bacterial Meningitis *(other than Hib & Nm)*	2	-	1	1	-	-	-	-	-	-	-	-
Viral Meningitis	1	1	-	-	-	-	-	-	-	-	-	-
Other Meningitis (*unspecified*)	6	-	-	4	-	-	2	-	-	-	-	-
Acute Viral Hepatitis (*Total*)	42	3	4	5	1	1	13	7	-	6	1	1
Acute Viral Hepatitis A	14	2	1	-	-	1	4	6	-	-	-	-
Acute Viral Hepatitis B	1	-	-	-	-	-	1	-	-	-	-	-
Acute Viral Hepatitis C	2	-	-	-	-	-	1	1	-	-	-	-
Acute Viral Hepatitis D (*amongst B +ve*)	0	-	-	-	-	-	-	-	-	-	-	-
Acute Viral Hepatitis E	1	1	-	-	-	-	-	-	-	-	-	-
Acute Viral Hepatitis (*unspecified*)	24	-	3	5	1	-	7	-	-	6	1	1
Typhoid & Paratyphoid Fever	15	8	1	-	1	-	-	-	3	1	1	-
Clinical Pertussis [IgM positive]	8	-	-	4	1	0	3	-	-	-	-	-
Trachoma (*active*)	2	-	-	-	-	1	1	-	-	-	-	-
Brucellosis *(human)*	17	-	16	-	1	-	-	-	-	-	-	-
Leishmaniasis Cutanious (CL)	0	-	-	-	-	-	-	-	-	-	-	-
Leishmaniasis Visceral (VL)	0	-	-	-	-	-	-	-	-	-	-	-
Schistosomiasis (*intestinal*)	0	-	-	-	-	-	-	-	-	-	-	-
Pulmonary Tuberculosis (*sputum negative*)	6	1	-	2	1	2	-	-	-	-	-	-
Extra-pulmonary Tuberculosis	30	11	6	5	2	2	1	2	1	-	-	-
Leprosy	0	-	-	-	-	-	-	-	-	-	-	-
HIV [AIDS]	20 [4]	5 [1]	4 [0]	6 [2]	1 [0]	1 [0]	2[1]	-	1 [0]	-	-	-
Group C Diseases and Syndromes												
Influenza Like Illnesses (*ILI*)	260332	62907	12633	43850	24874	43388	13436	17172	20617	10620	8157	2678
aLRTI & Pneumonia *(childhood)*	805	230	184	59	59	72	47	132	2	18	-	2
Acute 'Watery' Diarrhoea *(childhood)*	21696	2660	1312	3908	2961	4419	1178	2209	1688	453	149	759
Chickenpox	2182	374	88	283	383	411	56	174	309	61	15	28
Clinical Mumps [IgM positive]	147 [1]	35	29	17 [1]	18	20	2	13	11	-	-	2

Communicable Disease Surveillance Data: *By Wilayat*

Fourth Quarter: October to December 2009

Region / Governorate	Wilayat	AFP	Measles	Rubella	Meningococcal infection	Viral Hepatitis A	Viral Hepatitis B	Malaria	Pertussis [IgM +ve]	TB Total	TB Sputum positive
Muscat	Muscat										
	Mutrah					1		28		4	1
	Bawsher							30		2	
	Seeb							27		6	2
	Al Amerat							2		1	
	Qurayat					1		1		2	
Dhofar	Salalah					1		20		9	4
	Taqah							2		1	
	Mirbat										
	Thumrait										
	Sadha										
	Rakhyut										
	Dhalkut										
	Shaleem										
	Muqshan										
	Mazyoona							4			
North Batinah	Sohar							52	2	4	3
	Suwaiq							5	1	4	2
	Saham							1		3	1
	Shinas									2	1
	Liwa							4			
	Khaburah							1	1	2	1
South Batinah	Rustaq								1		
	Barka							12		2	1
	Musanah									3	1
	Nakhl										
	Wadi Maawil										
	Al Awabi										
Dakhliyah	Nizwa			1				1		1	
	Samail							3			
	Bahla					1		2		1	1
	Izki									2	1
	Adam							2		1	
	Al Hamra										
	Manah										
	Bidbid									1	
North Sharqiyah	Ibra							3	1	1	
	Mudaibi							4	1		
	Bidiyah					2					
	AL Qabil					2		2	1		
	Dima Wa Al Tayeen							1			
	Wadi Bani Khalid										
South Sharqiyah	Sur					1	1	2		1	
	Jalan Bani Bu Ali					5		1			
	Jalan Bani Bu Hassan	1						1		1	
	Al Kamil Wa Al Wafi										
	Masirah										
Dhahira	Ibri	1						5			
	Yankul	1									
	Dhank									1	
Buraimi	Buraimi							5		2	2
	Mahda							2			
	Sunaina							3			
Musandam	Khasab										
	Daba Al Biya										
	Bukha										
	Madha										
Al Wustah	Haima							2			
	Duqum							4			
	Mahoot										
	Al Jazer									1	1
Total		3	0	1	0	14	1	232	8	58	22

Communicable Disease Surveillance Data: *Age Distribution*

Fourth Quarter: October to December 2009

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										
Cholera	0	-	-	-	-	-	-	-	-	-
Plague	Never reported									
Yellow Fever	Never reported									
Meningococcal Infection	0	-	-	-	-	-	-	-		-
H. influenzae type b, meningitis *(Hib)*	0	-	-	-	-	-	-	-	-	-
Rabies	0	-	-	-	-	-	-	-	-	-
Pulmonary Tuberculosis (sputum positive)	22	-	-	-	-	4	2	7	-	9
Group A Syndromes										
Acute Flaccid Paralysis [Polio]	3	-	2	1	-					
Fever & Rash-Illness	87	29	40	5	5	1	-	2	2	3
Clinical Cases	9	1	6	-	1	-	-	-	-	1
Measles (*IgM positive*)	-	-	-	-	-	-	-	-	-	-
Rubella (*IgM positive*)	1	-	-	-	-	-	-	1	-	-
Congenital Rubella Syndrome (*CRS*)	0	-	-	-	-	-	-	-	-	-
Severe Acute Respiratory Syndrome *(SARS)*	Never reported									
Acute Haemorrhagic Fever Syndrome	0	-	-	-	-	-	-	-	-	-
Food Poisoning (*Infectious origin*)	47	3	8	9	8	6	3	7	1	2
Group B Diseases										
Bacterial Meningitis *(other than Hib & Nm)*	2	2	-	-	-	-	-	-	-	-
Viral Meningitis	1	1	-	-	-	-	-	-	-	-
Other Meningitis (*unspecified*)	6	4	-	1	-	1	-	-	-	-
Acute Viral Hepatitis (*Total*)	42	3	8	7	5	2	7	5	3	2
Acute Viral Hepatitis A	14	-	5	6	2	-	1	-	-	-
Acute Viral Hepatitis B	1	-	-	-	-	-	-	-	1	-
Acute Viral Hepatitis C	2	-	1	-	-	1	-	-	1	-
Acute Viral Hepatitis D (*amongst B positive*)	0	-	-	-	-	-	-	-	-	-
Acute Viral Hepatitis E	1	-	-	-	-	-	1	-	-	-
Acute Viral Hepatitis (*unspecified*)	24	3	2	1	3	2	5	5	1	2
Typhoid & Paratyphoid Fever	15	2	5	2	2	-	1	3	-	-
Clinical Pertussis [IgM positive]	8	5	2	1	-	-	-	-	-	-
Trachoma (*active*)	2	-	-	1	-	-	1	-	-	-
Brucellosis *(human)*	17	-	2	2	2	3	3	3	-	2
Leishmaniasis Cutaneous (CL)	0	-	-	-	-	-	-	-	-	-
Leishmaniasis Visceral (VL)	0	-	-	-	-	-	-	-	-	-
Schistosomiasis (*intestinal*)	0	-	-	-	-	-	1	-	-	-
Pulmonary Tuberculosis (*sputum negative*)	6	-	-	1	-	1	1	-	-	3
Extra-pulmonary Tuberculosis	30	-	-	1	-	1	5	7	7	9
Leprosy	0	-	-	-	-	-	-	2	-	-
HIV [AIDS]	20 [4]	-	0 [1]	-	-	2 [0]	4 [2]	8 [0]	4 [1]	2 [0]

Note:

- *The quarterly data are **'provisional'** & should be scrutinized & verified by the focal point of communicable diseases (Epidemiologist) at the provincial level. The data would be finalized. after receiving feedback.*
- *From year 2009, Group C data are compiled from computerized database by certain grouping of ICD-10 codes (Source: Nabd Al Shifa, DGIT, MoH)*
- *Tuberculosis, Leprosy & HIV [AIDS] data are for nationals only.*
- *All notified cases of Malaria are imported cases.*
- *(i) = imported case.*

"The wisest mind has something yet to learn."

Sultanate of Oman
Ministry of Health

Address for Communication:

Directorate General of Health Affairs

Ministry of Health HQ, PO Box 393, PC 113,

MUSCAT , Sultanate of Oman

Tel: + (968) 24 600808

Fax: + (968) 24 696099

E-mail: dg-ha@moh.gov.om

Visit: http://
www.moh.gov.om

Your contribution is valuable to us:

Please write to us concerning your ideas and experiences, 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.

Note to contributors:

While submitting articles related to studies conducted in Oman, the authors should attach a copy of the approval of ethical committee/research committee of the institution or the Regional Directorate.

Your opinion matters to us. Any suggestions to improve the contents and the design of this Newsletter will always be gratefully received.

Citation should be according to the following example: Ministry of Health Oman, National Response Strategy for HIV/AIDS in Oman, Comm & Dis Surv Newsletter, 2008; 17 (1): 1-6.

Editorial Board

Concept, layout & Design
Dr Shyam Bawikar

Back issues of this Newsletter are posted in PDF format on...

http://www.emro.who.int/emrinfo/oman-newsletter.asp
http://www.moh.gov.om/ ...Reports & Publications

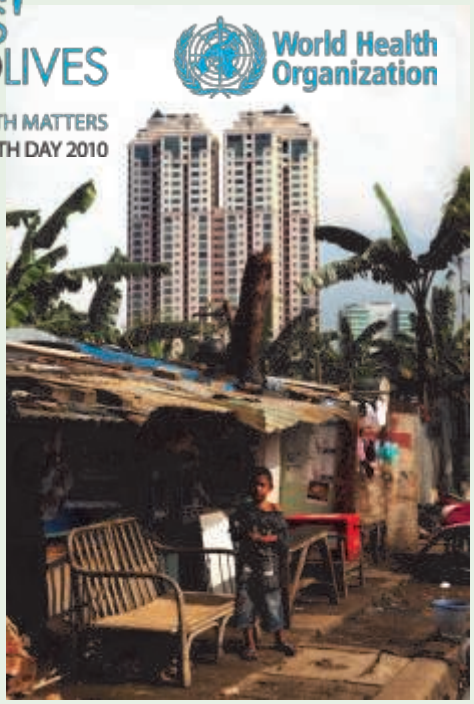
Disclaimer

The statements of facts and opinions expressed in the articles of this newsletter are solely those of the respective authors and or contributors.

This quarterly Newsletter is published by
Directorate General of Health Affairs,
Ministry of Health, Oman

1000CITIES 1000LIVES
URBAN HEALTH MATTERS
WORLD HEALTH DAY 2010

World Health Organization



7th April 2010:
World Health Day
Theme

http://www.who.int/world-health-day/2010/en/index.html