Volume 16, Issue 4

October – December 2007

Community Health & Disease Surveillance Newsletter

Sultanate of Oman *Ministry of Health*

Message from the Executive Editor...

Inside this issue:

With sincerity, commitment and hard work we have successfully completed 16 years of this publication since its launch in 1992. On this occasion I appreciate those pioneers who launched and also those who sustained this initiative.

The newsletter is widely circulated nationally and is also available on the Ministry of Health and WHO-EMRO websites. It reflects policies, activities and progress of various health programmes of the Ministry of Health and also serves as an effective feedback tool for communicable diseases data.

From 2008, to make this publication more informative for the readers, we plan to strengthen participation of the Dept. of Family & Community Health, Non-Communicable Disease Surveillance & Control and Primary Health Care besides the founder Dept. of Communicable Disease Surveillance & Control. The future issues will be special thematic issue publishing articles from respective departments. Contrary to our tradition we also decided to cite the names of the authors and institution as an incentive to the contributors.

We hope that the new face and contents will be appreciated by our esteemed readers. I extend my best wishes and look forward to a glorious future for this endeavour and sincerely wish that it indirectly benefits all - children, men, women and all sections of the community.

Dr Ali Jaffer Mohammed

Executive Editor

Evaluation of Public Health Surveillance System (Part-2)

The Regional Eastern Mediterranean Office (EMRO) and World Health Organization (WHO), conducted an in-depth review of Oman's national surveillance and response systems for communicable diseases and assessment of national core capacities for implementation of IHR from 17th to 26th September 2007. The review was conducted by a team of national and international experts based on WHO protocol. Following are the excerpts from the mission report.

Objectives of Assessment

Specific objectives:

- To review the current list of notifiable communicable diseases/syndromes in Oman.
- To identify opportunities to strengthen private sector in surveillance activities.
- To assess the existing national capacities for early detection of outbreaks and preparedness to respond.
- To assess training needs for strengthening the surveillance system.
- To review the national policy and legislative framework of notification and other issues related to surveillance.
- To assess the capacities of public health laboratories and their linkage to surveillance of communicable diseases.

"The mission used WHO International Health regulations implementation guidelines to assess the national core capacities for surveillance & response in accordance with annex 1A of the IHR 2005".

Data collection tools, team composition and field visits:

The mission used WHO International Health regulations (2005) implementation guidelines to assess the national core capacities for surveillance and response in accordance with annex 1A of the IHR 2005. Interviews of policy and decision makers and technical staff at different levels, direct observation and document reviews were used as to obtain relevant data. Visits were made to Ministries of Health, Agriculture and Environment, Sultan Qaboos University and some private medical facilities.

The WHO questionnaires for assessment of communicable disease surveillance and response were adapted to the Omani context. Four teams were composed of one national and at least one International expert. The teams were joined by at least one public health expert from the local DGHS office. Each team spent 2 -3 days in selected regions collecting the required data.

The WHO tool assessed the following main areas of surveillance:

Structure: The organization of the surveillance systems, epidemic preparedness, and response structure were assessed at the central, regional and health facility levels; including the relationship between the different levels and the regulations governing surveillance.

Process: This includes case detection, registration, case confirmation, data analysis and reporting, feedback, supervision, epidemic preparedness, outbreak investigation and flow of information and its use for public health action at peripheral, intermediate and central levels.

Output: The assessment teams examined weekly, monthly, quarterly as well as annual reports and other outputs.

The system attributes: The following system attributes were taken into account: completeness, timeliness, representativeness, usefulness, flexibility, cost and simplicity.

Capacity: The teams looked into the availability and number of trained health staff working on surveillance at each level, and the type and training received and conducted at different levels of the system, pre and post-graduate. In addition the availability of a budget for surveillance and epidemic preparedness and response was veri-

fied. An inventory was done of material resources for surveillance including communication equipment, transport facility and logistics, emergency stocks of drugs and medical supplies for equipment, data management instruments and information education communication (IEC) materials.

Integration: Many functions in the surveillance are similar and as such can offer opportunities for integration. During the assessment opportunities for integration and co-ordination were explored to improve system performance, reduce costs, increase efficiency and promote sustainability.

Laboratory: Assessment of the laboratory capacity (availability, functionality and level of sophistication) were performed at different levels. The structure, capacity and linkage of laboratory services to the surveillance system were assessed such as types of tests, collection and transportation of specimens, availability of reagents, chemicals, equipment and skilled human resources, quality control and quality assurance issues, training, availability of standard operating procedures (SOP) for biosafety, data management, as well as preparedness and experience of laboratories in outbreak investigations.

Special attention: was given to some issues identified as challenges to the health system such as cross-border surveillance, the role of the private sector etc.

Data analysis: The assessment team made daily meetings to make qualitative assessment, based on analysis of the strengths, weaknesses, opportunities and threats.

Findings of the Assessment

Requirements at the National/ Intermediate/ Peripheral Level for the implementation of the IHR were assessed.

(PHEIC—Public Health Event of International Concern)

National Level

Legal framework, policies & regulations

The IHR are intended to rapidly identify and stop the emergence and spread of PHEIC. PHEICs are NOT restricted to communicable diseases with epidemic and pandemic potential but may include emergencies due to contamination with toxins, chemicals or radioactive material either due to industrial leaks or intentional release. This is a much broader mandate than previous international health regulations. In addition, the IHR emphasize the potential impact of PHEICs on multiple sectors of a society. Consequently, any preparedness planning, surveillance, or response must involve the participation of other ministries within the Sultanate.

"Consequently, any preparedness planning, surveillance, or response must involve the participation of other ministries within the Sultanate".

Currently, the Department of Communicable Disease Surveillance and Control (DCDSC) is leading the effort to create the legal framework, the policies and the supporting regulations. The primary goals should be to advocate for full implementation of IHR by increasing the awareness in other ministries and creating necessary changes in existing law. Both of these functions are well underway.

Strengths and opportunities:

- The central level MoH has a strong tradition of disease surveillance, case reporting, case investigation, and disease control. This is critical for the implementation of IHR and may serve as a model to other ministries.
- Proposed national public health laws are consistent with the IHR
- A list of reportable diseases and syndromes currently exists. Many of these are potential PHEIC and can serve as a framework for the implementation of IHR. This list is defined at central level of the MoH.

- An "IHR Task Force" currently exists within the MoH
- Several inter-ministerial committees have been established dealing with emergency and disaster preparedness

Inter-agency coordination, collaboration and partnerships

While the legal framework, policies, and regulations that allow IHR implementation are being developed, systems that increase the coordination and collaboration between ministries must also be developed. These responsibilities generally will be of MoH (DCDSC) and specially of National IHR Focal Point or their designee.

"The National IHR Focal Point serves as a conduit for information flow from district & regional levels through the central level & to WHO & other international agencies".

The National IHR Focal Point serves as a conduit for information flow from district and regional levels through the central level and to WHO and other international agencies. In addition, the designated focal person should oversee the coordination, collaboration, and partnerships between the ministries as well as establish agreements with relevant Omani authorities on animal health, food safety, water safety, ocean resources, and toxin/chemical contamination with relevant international authorities.

Oman shares borders with Yemen, Saudi Arabia, and the United Arab Emirates. Coordination, collaboration and partnerships with these immediate neighbours are also critical to identify risks that exist in the immediate vicinity of the borders and to identify and contain PHEICs. Although there is cooperation between Omani and Yemeni officials with regards to the provision of medical care for persons living along the Oman-Yemen border, the potential for communicable disease surveillance has not yet been fully developed. Similarly, cooperation between countries to map risks and share disease surveillance information has not been fully developed.

In addition to the coordination, collaboration, and partnerships involving multiple agencies and neighbouring countries, there needs to be development of this same coordination, collaboration and partnerships with the private health sector especially in Muscat Region where approximately 60% of the expatriate population lives.

It is one of the primary functions of the National IHR Focal Point and their designees to promote this coordination, collaboration, and partnership. At this time, this is readily recognized by the MoH (DCDSC) and these functions have been undertaken.

Strengths and opportunities:

- The National IHR Focal Point and their back-up have been designated
- Several standing and *ad hoc* inter-ministerial co-ordinating committees have been established in the past including one for emergency preparedness and pandemic influenza preparedness
- Although this may still be underutilized, clear policy and guidance on the role of the private sector in communicable disease surveillance is in place.

"Event" surveillance system structure, organization and functions

The IHR requires clear surveillance structures in place for monitoring communicable disease or large-scale contamination "events" that may have potential to develop into PHEICs. In addition, implementation of the IHR requires the presence of as clearly defined roles and responsibilities at the central level that are preferably defined in a written national surveillance manual. With regards to the communicable diseases, these structures and roles are well defined in the Oman MoH and operating well in the DCDSC. In fact, the structure, organization, and functions of DCDSC surveillance system is likely its greatest strength and can serve as a model to other "event" surveillance systems that are devel-

oped for the implementation of IHR.

The "event" surveillance unit(s) should be appropriately staffed and resourced to deal with the surveillance and response to PHEICs. It is anticipated that with the inclusion of other ministries in the implementation of IHR, that additional staff will be required to receive and properly process "event" surveillance data .

Strengths and opportunities:

- Surveillance standards, guidelines and epidemiological tools (GIS-related tools including Epimap and HealthMapper, EpiInfo, Information for Action, and other statistical packages) are present.
- Clear guidelines and standards (including case definitions and data collection methods) have been well-developed by the Oman MoH
- Algorithms have been developed for surveillance and response to communicable diseases including some priority events
- Surveillance system is mostly computerized.
- Telecommunications (telephones, e-mail, faxes, SMS) for the immediate reporting of "events" are in place
- Regular reporting on weekly and monthly schedule is in place and functioning well
- At the central level, MoH (DCDSC) has the capacity to receive data, information, and notification from regions and governorates 24 hours/day, 7 days a week. Regions appear to be well aware of all the contact information necessary to contact MoH (DCDSC)
- Data are consistently analysed and used at the epidemiological unit (central level). Data analysis is done on a weekly basis at national level.
- Monthly communicable disease surveillance bulletins are produced at central level, and contain epidemiological profiles, disease trends and distributed to MoH personnel at intermediate levels.
- Adequate financial resources are generally available for surveillance although full adoption of IHR will require additional staff.
- MoH (DCDSC) is comprised of dedicated and highly capable personnel who work in very flexible fashion

"Event" identification

The primary purposes of the IHR are to rapidly:

- Identify public health events that may be a potential PHEIC
- Determine whether such an event is a PHEIC and
- Convey information regarding the PHEIC to WHO and other international public health agencies so that other countries can be made aware of these events that may have international effects.

This can only occur when there is a Disease (Event) Surveillance System in place to identify potential PHEICs. It should be emphasized that PHEICs may include toxin, chemical or radiological "events" that may threaten country's large population, neighbouring countries and international seas. Currently, there is a well-developed communicable disease surveillance system in place in Oman which may serve as a model for development of an "event" surveillance system.

Because of the importance of rapidly identifying PHEICs, other "event" monitoring systems should be developed to complement the primary Disease (Event) Surveillance System. These may include:

- Death certificate system
- Rumour verification system

"Currently, there is a well-developed communicable disease surveillance system in place in Oman which may serve as a model for development of an "event" surveillance system".

- Community- or facility-based sentinel surveillance system
- Disease-specific drug consumption monitoring system
- Systems that monitor:
- Admissions from hospital emergency wards,
- School absenteeism,
- Occurrence of disease in neighbouring countries, and
- Occurrence of disease in arriving travellers and animals;
- Linkages to disease- and event-specific monitoring systems such as systems that monitor food-borne diseases, adverse drug reaction, malaria, hepatitis, dengue, etc.

Currently, in Oman, there are no alternative "event" monitoring systems submitting data to MoH (DCDSC). Other data sources may be maintained by:

- Other Ministries within Oman (e.g., Ministry of Education [MoE], Ministry of Agriculture [MoA])
- Other MoH groups that provide public health services (e.g., malaria and vector-control disease-specific programs)
- Poison control centres
- Animal health sources (especially zoonotic diseases)
- Pharmacovigilance centres, and
- Public and private laboratories.

To comprehensively meet the IHR requirements, information sources outside of the MoH, MoA, and MoEn must be identified and developed to determine areas of human health risk for "events" due to exposure to toxic, chemical and radioactive material. Specifically, there is a need to map areas where there is an increased risk of such exposures. The agencies that should be included in the development of these risk maps and "event" list are:

"To comprehensively meet the IHR requirements, information sources outside of MoH, MoA, & MoEn must be identified & developed to determine areas of human health risk for "events" due to exposure to toxic, chemical & radioactive material".

- Water and sanitation services
- Veterinary services
- Animal slaughtering (Ministry of Municipalities)
- Chemical and petroleum industry monitoring (Ministry of Environment [MoEn]),
- Nuclear regulation (not applicable)
- Food safety authorities

In addition to the risk maps and a list of reportable events, surveillance systems need to be established for possible exposures. In summary, systems other than the more traditional disease surveillance system must be in established to:

- Support the findings of disease surveillance systems operated by the MoH's DCDSC
- Verify that outbreaks of communicable disease with outbreak potential are not occurring at a level below the detection of DCDSC's surveillance system
- Map risk of communicable diseases due to zoonotic source & exposure to toxins, chemicals & radioactive materials.
- Provide surveillance for significant toxin exposures within Oman and bordering nations.
- Provide surveillance for significant chemical events within Oman and bordering nations.
- Provide surveillance for significant radiological events in bordering nations

Strengths and opportunities:

- A list of communicable diseases of public health significance already maintained by DCDSC.
- MoA strongly committed to exclusion of animal and zoonotic diseases that pose a threat.
- At the central level, joint activities of MoH and MoA are already occurring.
- There is a MoH presence at most inter-

national port of entry.

- School health section within MoH
- Strong Infection Control unit in MoH
- Annual regional meetings with GCC countries for sharing information and coordination of activities are occurring.
- Annual meetings with Yemen for sharing of information and coordination of activities are occurring.
- The MoEn has a system that would allow the assessment of toxin and chemical risks throughout Oman; this could serve as a valuable resource for risk mapping.

"Event" investigation and designation of an "event" as a PHEIC by the National Risk Assessment Authority

Potential PHEIC Investigation: One of the goals of the IHR is to mobilize a rapid investigation team following the identification of an "event" representing a PHEIC.

This team should:

- Be multisectoral and include trained members from ministries other than the MoH (especially MoA & MoEn).
- Be fully trained in the performance of a joint field investigation.
- Be fully equipped with sample collection supplies, telecommunication devices, computers, personal protection equipment, transportation etc.
- Be appropriately immunized.
- Receive appropriate prophylactic medications if indicated.
- Use standardized tools for data collection constructed prior to "event".

The *Rapid Investigation Team* (RIT) should, at a minimum, be composed of a public health professional trained in epidemiology, a social mobilization expert, and a clinician. In addition, should the "event" appear related to animals or appear to be due to zoonotic transmission, persons with expertise in animal health and vector control should accompany the team. Similar policy should be for event due to toxin or chemical. These persons should also serve as a link between their ministry and MoH.

In addition, this RIT should be available 24 hours a day and 7 days a week. In addition, this team should have the capacity to respond within 48 hours.

Prior to the emergence of a potential PHEIC, guidelines and SOPs for these investigations should be developed by representatives of the appropriate ministries.

National Risk Assessment Authority: The IHR also requires the designation of a national responsible authority for initial risk assessment and determination whether an "event" qualifies as a PHEIC.

Because PHEICs are multisectoral events they require the cooperation and activities of multiple ministries. To accomplish this, this authority will in consultation with appropriate technical consultants from relevant ministries determine the appropriate response. Like Focal Point and the IHR RRT, this authority or its designee should be available 24 hrs a day and 7 days a week.

Strengths and opportunities:

- IHR Focal Point and his designees are already identified
- Several inter-ministerial committees already exist. Although some are event specific (e.g., pandemic influenza preparedness), there are committees with a broader scope such as the National Disaster Management Committee.
- Inter-ministerial committees have recently been "exercised" during the recent in typhoon in the early 2007.
- One common report form used for all communicable disease reporting from peripheral and regional levels

"The Rapid Investigation Team (RIT) should, at a minimum, be composed of a public health professional trained in epidemiology, a social mobilization expert, & a clinician".

Emergency response following designation of a PHEIC

Following the investigation of an "event" and the determination that such an "event" is a PHEIC, an emergency response should be initiated intended to limit the PHEIC before it spreads to other countries. An emergency response plan must address:

- Identification and training of multisectoral members in RRT.
- Identification and "stockpiling" of supplies, equipment, and other resources that must be immediately mobilized.
- Identification of national and international partners and stakeholders.
- Development of guidelines & SOPs on:

1. Case management
2. Decontamination/infection control measures and
3. Non-pharmaceutical interventions such as: *isolation, quarantine, use of cordon sanitaire, use of PPE and use of social mobilization to decrease secondary infection transmission and secondary contamination in toxic, chemical, and radiological "events"*
4. Pharmaceutical interventions to decrease further transmission viz.. *stockpiling of medicines, supplies, vaccines, and other supplies. Special consideration should be given to stock rotation, shelf life, storage, transport, and the national supply and distribution plan.*

Successful limitation of the PHEIC will be more likely to be successful if the emergency response is:

- Planned and developed PRIOR TO the "event" occurrence,
- "Tested" through the performance of drills, tabletop exercises, field exercises, etc. with emphasis on mobilizing the necessary resources PRIOR TO "event".
- Managed by an incident commander who is directing the activities of multiple ministries and is receiving technical consultation from an inter-ministerial emergency response committee.

The RRT should be assembled within 24 hours of designating an "event" as a PHEIC. Team members should be previously trained on:

- Case management & Contact tracing
- Decontamination & infection control
- Use of pharmaceutical & non-pharmaceutical interventions

Strengths and opportunities:

- A pandemic influenza response plan addressing many aspects of emergency response has already been developed
- Demonstrated capacity to rapidly form *ad hoc* response & disease control teams

Case management

The intent is to care for persons and to decrease the risk of secondary transmission. These policies and plans should include specific recommendations for treatment, triage, referral, and support. The plan should also include the designation of authorities responsible to develop SOPs and protocols and training programs for healthcare providers. In addition, there is a need to designate centres for the care of highly contagious or heavily contaminated patients. The designated authority is responsible for a coordinated plan for stockpiling medicines (e.g. *Oseltamivir, Ribavirin*) and other supplies and equipment.

Strengths and opportunities:

Within the pandemic influenza plan there is case management plan for HPAI. This should serve as a model.

Infection control and decontamination

One important aspect of an emergency response is to decrease the number of additional cases done through the practices of infection control and decontamination.

To accomplish this there is a need to establish infection control and decontamination

"One important aspect of an emergency response is to decrease the number of additional cases done through the practices of infection control & decontamination".

committees that would develop up-to-date plans for PHEICs due to communicable disease-, toxin-, chemical-, or radioactive material-related emergencies.

Strengths and opportunities:

- Within the central level of MoH, there is a well-developed infection control infrastructure that provides good infection control operations.
- Identifying and containing source of the PHEIC is critical for decreasing further cases. In order to identify a SPECIFIC source of infection or contamination, the CPHL & other laboratories in the MoA and MoEn should be included.
- Similarly preventing subsequent development of other sources is critical to stop emergence of other PHEICs in future.
- For outbreak investigation and source identification for the epidemiology units and the CPHL have well-developed system.

Communication and social mobilization:

The communication is intended to coordinate the activities of multiple national and international agencies involved in controlling a PHEIC and to the general population. This plan would:

- Identify the intended recipients of communication during a PHEIC,
- Establish procedures for media response using multiple communication channels (i.e. telephone, SMS, e-mails, fax, and public meetings),
- Identifying appropriate spokespersons,
- Specify methods to coordinate communication among different partners in case of emergency, and
- Develop a plan to test the communication package to identify gaps prior to the emergence of a PHEIC.
- A communication plan should be activated early in the emergence of a PHEIC. Consequently, communication officers should be regularly appraised in the routine functions of the MoH, MoA, and MoEn as they pertain to "event" investigation. It is only in this way that a communication plans can be activated at the time that an "event" becomes a PHEIC.
- Two important goals of communication to the public are to allow the public to assess their level of risk and then to participate in behavioural change that can reduce their risk of infection or contamination. This latter point has been labelled "social mobilization." e.g. use of masks and respirators, hand washing, avoiding sources of infection and cough etiquette. This desired content of the social mobilization method should be consistent across ministries and regions/districts and hence, should be centrally coordinated. In addition, special targets audiences (e.g., healthcare workers, first responders) may be identified to receive communication messages to modify their behaviour.

Strengths and opportunities:

- A communication plan exists within the pandemic influenza preparedness plan. This can serve as a model for a broader PHEIC preparedness plan.
- Oman has a relatively small population with well-maintained communication.

Other:

- Human resources committed to promoting the public's health is a key element for disease surveillance and control. One critical element was identified. It was noted that several epidemiology positions at the central and regional levels were vacant.

"Two important goals of communication to the public are to allow the public to assess their level of risk & then to participate in behavioural change that can reduce their risk of infection or contamination".

Communicable Diseases Quarterly Report

Fourth Quarter (October to December 2007)

ICD Code	Priority Communicable Diseases	2007 Fourth Quarter Oct	Nov	Dec	Total	2006 Q4 Oct-Dec	2007 Q1 Jan-Mar	Q2 Apr-Jun	Q3 Jul-Sep
Group 'A' Diseases									
A00	Cholera	-	2 (i)	-	**2 (i)**	-	-	-	3
A20	Plague	*Never reported*							
A95.9	Yellow Fever	*Never reported*							
A39, 39.0, 39.2-39.4	Meningococcal Infection	1	-	1	2	-	-	-	-
G00.0	H. influenzae type b, meningitis *(Hib)*	-	-	-	0	-	-	-	-
A82	Rabies	-	-	-	0	-	-	-	-
B50-54	Malaria	70	75	42	187	104	62	213	245
A-15	Pulmonary Tuberculosis (sputum positive)	5	7	6	18	29	37	24	37
	Group 'A' Syndromes								
-	Acute Flaccid Paralysis [Polio]	5	9	3	17	4	7	5	3
-	Fever & Rash-Illness	40	60	60	160	184	175	276	133
B05	*Clinical Cases*	-	-	-	0	4	4	-	3
B06	Measles (*IgM positive*)	-	-	4	4	1	1	2	1
	Rubella (*IgM positive*)	-	-	-	0	-	-	-	-
P35.0	Congenital Rubella Syndrome (*CRS*)	-	-	-	0	-	-	-	-
U04, 04.9	Severe Acute Respiratory Syndrome *(SARS)*	*Never reported*							
A99	Acute Haemorrhagic Fever Syndrome	-	-	-	0	-	-	-	-
A02	Food Poisoning (*Infectious origin*)	72	20	24	116	77	70	124	208
Group 'B' Diseases									
G00.1-9	Bacterial Meningitis *(other than Hib & Nm)*	2	2	4	8	3	6	5	5
A87	Viral Meningitis	-	2	-	2	1	1	3	2
G03	Other Meningitis (*unspecified*)	1	3	7	11	5	15	9	3
	Acute Viral Hepatitis (*Total*)	39	56	39	134	133	158	215	143
B15	Acute Viral Hepatitis A	11	42	8	61	83	88	136	87
B16	Acute Viral Hepatitis B	4	1	2	7	8	16	14	2
B17.1	Acute Viral Hepatitis C	2	-	1	3	2	7	7	8
B17.0	Acute Viral Hepatitis D (*amongst B positive*)	-	-	-	0	-	-	-	-
B17.2	Acute Viral Hepatitis E	2	1	-	3	1	5	1	-
B19/B17.8	Acute Viral Hepatitis (*unspecified*)	20	12	28	60	39	42	57	46
A03.0, 01.4	Typhoid & Paratyphoid Fever	5	2	6	13	15	11	18	12
A37	Clinical Pertussis [IgM positive]	6	8	5	19	5	23	35	34 [1]
A71	Trachoma (*active*)	2	4	-	6	13	36	35	20
A23	Brucellosis *(human)*	5	3	5	13	14	25	24	25
B55.1	Leishmaniasis Cutaneous (CL)	1	1	-	2	-	3	-	1
B55	Leishmaniasis Visceral (VL)	-	-	-	0	-	1	-	-
B65	Schistosomiasis (*intestinal*)	1	-	-	1	1	-	-	-
A16	Pulmonary Tuberculosis (*sputum negative*)	1	1	1	3	7	6	8	10
A17-19	Extra-pulmonary Tuberculosis	5	6	3	14	21	29	21	33
A30	Leprosy	-	-	-	0	1	-	-	-
B20-24	HIV [AIDS]	2 [1]	3 [1]	2 [0]	7 [2]	13 [11]	15 [11]	10 [9]	10 [8]
Group C Diseases & Syndromes									
J10-11	Influenza Like Illnesses (*ILI*)	4476	4759	5554	14789	17166	12619	8673	11431
-	aLRTI & Pneumonia *(childhood)*	2048	1988	1985	6021	4803	5026	4237	2947
-	Acute 'Watery' Diarrhoea *(childhood)*	2263	3407	3127	8797	9478	11652	8224	6302
B01	Chickenpox	2955	4099	4902	11956	7084	12947	18647	18637
10461B26	Clinical Mumps [IgM positive]	30 [4]	65 [7]	58 [11]	153 [22]	175	172	173	124 [10]

Communicable Diseases Quarterly Report by Regions

Fourth Quarter (October to December 2007)

ICD Code	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	2 (i)	2 (i)	-	-	-	-	-	-	-	-	-
A20	Plague	*Never reported*										
A95.9	Yellow Fever	*Never reported*										
A39, 39.0, 39.2-39.4	Meningococcal Infection	2	-	-	-	-	1	-	-	1	-	-
G00.0	H. influenzae type b, meningitis *(Hib)*	0	-	-	-	-	-	-	-	-	-	-
A82	Rabies	0	-	-	-	-	-	-	-	-	-	-
B50-54	Malaria	187	53	14	16	11	6	43	16	20	8	-
A-15	Pulmonary Tuberculosis (sputum+)	18	2	3	1	3	-	6	3	-	-	-
	Group 'A' Syndromes											
	Acute Flaccid Paralysis (*AFP*)	17	2	6	2	-	2	4	1	-	-	-
	Fever & Rash-Illness	160	18	6	21	5	30	32	41	3	-	4
B05	*Clinical Cases*	0	-	-	-	-	-	-	-	-	-	-
B06	Measles (*IgM positive*)	4	-	-	-	-	-	4	-	-	-	-
	Rubella (*IgM positive*)	0	-	-	-	-	-	-	-	-	-	-
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*)	**116**	3	-	8	51	6	15	16	11	-	6
	Group 'B' Diseases											
G00.1-9	Bacterial Meningitis *(except Hib & Nm)*	8	3	-	-	1	2	-	2	-	-	-
A87	Viral Meningitis	2	2	-	-	-	-	-	-	-		-
G03	Other Meningitis (*unspecified*)	11	1	1	1	3	1	4	-	-	-	-
	Acute Viral Hepatitis (*total*)	134	6	27	8	9	41	20	12	6	2	3
B15	Acute Viral Hepatitis A	61	5	3	3	6	28	9	7	-	-	-
B16	Acute Viral Hepatitis B	7	-	-	1	1	1	-	3	-	-	1
B17.1	Acute Viral Hepatitis C	3	-	-	1	-	-	1	1	-	-	-
B17.0	Acute Viral Hepatitis D (*amongst B +*)	0	-	-	-	-	-	-	-	-	-	-
B17.2	Acute Viral Hepatitis E	3	-	-	-	1	-	1	1	-	-	
B19/B17.8	Acute Viral Hepatitis (*unspecified*)	60	1	24	3	1	12	9	-	6	2	2
A03.0,	Typhoid & Paratyphoid Fever	13	2	3	1	1	-	5	1	-	-	-
A37	Clinical Pertussis [*IgM positive*]	21	8	3	1	1	1	5	2	-	-	-
A71	Trachoma (*active*)	6	-	-	1	5	-	-	-	-	-	-
A23	Brucellosis *(human)*	13	-	13	-	-	-	-	-	-	-	-
B55.1	Leishmaniasis Cutaneous (*CL*)	2	-	2	-	-	-	-	-	-	-	-
B55	Leishmaniasis Visceral (*VL*)	0	-	-	-	-	-	-	-	-	-	-
B65	Schistosomiasis (*intestinal*)	1	1	-	-	-	-	-	-	-	-	-
A16	Pulmonary Tuberculosis (*sputum neg.*)	3	-	1	-	-	-	1	1	-	-	-
A17-19	Extra-pulmonary Tuberculosis	14	2	4	-	-	-	4	4	-	-	-
A30	Leprosy	0	-	-	-	-	-	-	-	-	-	-
B20-24	HIV [AIDS]	7 [2]	-	1 [0]	-	-	-	4 [2]	2 [0]	-	-	-
	Group C Diseases & Syndromes											
J10-11	Influenza Like Illnesses (*ILI*)	14789	-	278	67	14358	-	2	5	79	-	-
-	aLRTI & Pneumonia *(childhood)*	6021	270	1299	959	251	734	503	1929	8	58	10
-	Acute 'Watery' Diarrhoea *(childhood)*	8797	1443	1356	2228	-	710	1822	208	803	226	1
B01	Chickenpox	11956	1108	527	2330	463	1500	2073	2098	1577	37	243
B26	Clinical Mumps [IgM positive]	153 [22]	29	46 [1]	13	10 [2]	20 [3]	17 [2]	13 [9]	4 [4]	1 [1]	-

Selected Communicable Diseases by Wilayat: *Annual Report 2007*

Region	Wilayat	AFP	Measles IgM positive	Rubella IgM positive	Meningo-coccal Infection	Hib Meningitis	TB (Total)	TB Sputum Positive	Viral Hepatitis A	Viral Hepatitis B	Malaria (All)	Clinical Pertussis [IgM pos.]	Leprosy
MUSCAT	Muscat								7		3	1	
	Seeb	2			1		21	11	4		49	11	
	Mutrah	1					14	7	1		71	4	
	Bowsher	2					10	5	8		105	13	
	Al Amerat						5	2	12		6	2	
	Quriyat						4	3	27		7		
DHOFAR	Salalah	5	1				42	11			41	7	
	Thumrait						1				1	1	
	Taqah	1					7	2	1		2	1	1
	Mirbat						1		1				
	Sadah												
	Rakhyut						3	3					
	Dhalqut						1		2				
	Muqshan												
	Shaleem						3	2					
	Mazyoona								1				
NORTH BATINAH	Sohar		3				10	6	12	2	97	3	
	Shinas	2					8	4	7		2		
	Liwa		1				2	1	2	1	36		
	Saham	2	1				17	6	3	3	6	3	
	Khabura						10	6			7		
	Suwaiq	2	2				11	8	2	2	10	8	
SOUTH BATINAH	Rustaq	1					11	5	16	1	11	3	
	Nakhl						1	1	1	1	2	1	
	Wadi Maawil										1		
	Al Awabi						1				1		
	Musanah	1					8	3	1		7	1	1
	Barka	2					14	9	31	8	26	5	
DAKHLIYAH	Nizwa	2					1		3		23	1	
	Bahla										3		
	Adam						1	1		1	18		
	Al Hamra						1	1					
	Manah	1									11	1	
	Samail	1					4	2	62		8		
	Izki						2	1	5	1	3		
	Bid Bid						1		6		2		
DHAHIRA	Ibri				1				21	1	29	2	
	Yanqul	1							3		2	1	
	Dhank								1		1		
	Al Buraimi						4	4	6		22	1	
	Mahda										2		
	Sunainah										7		
NORTH SHARQIYAH	Ibra						1		22	1	8	1 [1]	
	Al Mudhaibi						2	1	4	2	19	[1]	
	Bidiyah						1	1			4		
	Al Qabel						1	1		1	4		
	Dima Al Tayeen						1	1	1				
	Wadi Bani Khalid									1			
SOUTH SHARQIYAH	Sur	1			1		4	1	51	3	2		
	Masirah						1		12		9	1	
	Al Kamil Wa Al Wafi	2					3	2	7		3		
	Bilad Bani Bu Ali	2					3	2	77			1	
	Bilad Bani Bu Hassan								9		2	1	
MUSANDUM	Khasab	1					1				2		
	Dibba										2		
	Bukha												
	Madha												
AL-WUSTAH	Haima									1	25		
	Duqum									1			
	Mahoot									2	5	1	
	Al Jazer						1	1					
NATIONAL TOTAL		**32**	**8**	**0**	**3**	**0**	**238**	**114**	**429**	**33**	**707**	**75 [2]**	**2**

Monthly Notified Cases of Communicable Diseases 2007

Annual Notified Cases of Communicable Diseases 1998-2007

Diseases	2007													2006	2005	2004	2003	2002	2001	2000	1999	1998
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total									
GROUP 'A' DISEASES																						
Cholera	-	-	-	-	-	-	-	3	-	-	2(i)	-	**3+2(i)**	1 (i)	1 (i)	-	2+1(i)	1(i)+1	6+2(i)	8+1(i)	7 (i)	-
Plague	*Never Reported*																					
Yellow Fever	*Never Reported*																					
Meningococcal Infection	-	-	-	-	-	-	1	-	1	-	-	1	**3**	3	1	4	10	6	15	28	2	4
H. influenzae type b, meningitis	-	-	-	-	-	-	-	-	-	-	-	-	**0**	1	1	-	7	26	25	20	31	23
Rabies	-	-	-	-	-	-	-	-	-	-	-	-	**0**	-	-	-	1	-	-	-	1	-
Malaria	13	13	36	60	70	83	66	90	89	70	75	42	**707**	437	555	616	741	590	635	696	446	882
Pulmonary Tuberculosis (sp.+)	9	17	10	8	9	7	15	6	15	5	7	6	**114**	118	96	114	91	119	109	115	85	109
GROUP 'A' SYNDROMES																						
Acute Flaccid Paralysis (*AFP*)	2	3	2	3	1	1	-	1	2	5	9	3	32	16	23	31	13	17	15	10	21	8
Fever & Rash-Illness *(clinical)*	-	1	3	4	5	-	-	1	2	-	-	-	**16**	17	(11)							
Measles (*IgM positive*)	1	-	-	2	-	-	1	-	-	-	-	4	**8**	11(2)	19	18	1	5	13+2	15	9	5
Rubella (*IgM positive*)	-	-	-	-	-	-	-	-	-	-	-	-	**0**	11	16+1(i)	9	1	3	-	3	5	4
Congenital Rubella Syndrome	-	-	-	-	-	-	-	-	-	-	-	-	**0**	1 (i)	1 (i)	-	-	-	-	-	1	-
SARS	*Never Reported*																					
Acute Haemorrhagic Fever Syndrome	-	-	-	-	-	-	-	-	-	-	-	-	**0**	-	-	-	-	-	-	-	2	3
Food Poisoning (*Infectious origin*)	13	9	47	46	36	45	78	74	57	72	20	24	**521**	673	447	703	891	929	1167	953	838	1062
GROUP 'B' DISEASES																						
Bacterial Meningitis *(except Hib, & Nm)*	3	1	4	3	3	-	-	-	4	2	2	4	**26**	16	19	35	40	87				
Viral Meningitis	1	-	-	-	3	-	2	-	-	-	2	-	**8**	6	4	11	22	21				
Other Meningitis (*unspecified*)	7	5	1	4	2	2	2	1	1	1	3	7	**36**	36	51	39	32	16	97	154	175	127
Acute Viral Hepatitis (*total*)	**33**	**48**	**65**	**80**	**69**	**63**	**49**	**41**	**49**	**39**	**56**	**39**	**631**	**1353**	**866**	**684**	**1243**	**2188**	**1555**	**1164**	**1308**	**1219**
Acute Viral Hepatitis A	18	37	51	60	54	51	36	30	31	11	42	8	**429**	1060	607	294	373	580				
Acute Viral Hepatitis B	5	2	3	4	2	5	-	2	3	4	1	2	**33**	45	54	34	65	53	59	49	85	313
Acute Viral Hepatitis C	2	1	2	2	1	3	5	1	1	2	-	1	**21**	18	19	11	21	14				
Acute Viral Hepatitis D (*in B +*)	-	-	-	-	-	-	-	-	-	-	-	-	**0**	-	-	-	-	1				
Acute Viral Hepatitis E	2	1	2	-	2	-	-	1	-	2	1	-	**11**	14	14	17	13	4				
Acute Viral Hepatitis (*unspecified*)	**6**	**7**	**7**	**14**	**10**	**4**	**8**	**7**	**14**	**20**	**12**	**28**	**137**	**216**	**172**	**328**	**771**	**1536**	**1496**	**1115**	**1223**	**906**
Typhoid & Paratyphoid Fever	4	4	3	3	7	8	2	6	4	5	2	6	**54**	54	67	48	60	87	112	137	119	105
Clinical Pertussis [IgM pos]	1	5	4	6[1]	6	3	13	13[1]	5	6	8	5	**75[2]**	39	36	76	149	96	54	190	205	484
Trachoma (*active*)	8	8	7	9	7	4	8	4	3	2	4	-	**64**	34	16							
Brucellosis *(human)*	6	10	10	8	4	12	13	4	8	5	3	5	**88**	74	113	107	199	133	162	307	316	307
Leishmaniasis Cutaneous (*CL*)	-	-	3	-	-	-	1	-	-	1	1	-	**6**	4	8	1	13	12	9	14	20	25
Leishmaniasis Visceral (*VL*)	-	-	1	-	-	-	-	-	-	-	-	-	**1**	-	2	2	-	1	2	3	2	5
Schistosomiasis (*intestinal*)	-	-	-	-	-	-	-	-	-	1	-	-	**1**	2	2	15	167	2	4	3	3	11
Pulm. Tuberculosis (*sputum neg.*)	3	2	2	5	1	2	3	2	5	1	1	1	**28**	29	33	37	30	25	25	30	38	26
Extra-pulmonary Tuberculosis	7	13	8	9	10	2	14	8	11	5	6	3	**96**	104	83	79	92	96	87	98	70	77
Leprosy	-	-	-	-	2	-	-	-	-	-	-	-	**2**	4	5	2	7	8	4	12	27	39
HIV [AIDS]	5 [4]	5 [4]	5 [3]	4 [6]	5 [2]	3 [1]	6 [3]	4 [4]	4 [4]	2 [0]	3 [1]	2 [1]	**48 [33]**	50 [36]	67 [38]	41 [30]	51 [31]					
GROUP 'C' DISEASES																						
Influenza Like Illnesses (*ILI*)	5284	3218	4117	3376	2821	2495	4222	3414	3795	4476	4759	5554	47531	28751	3814							
aLRTI & Pneumonia *(<5 yr)*	1723	1101	2210	1740	1661	851	732	821	1394	2048	1988	1985	18254	20549	16738							
Acute 'Watery' Diarrhoea *(<5 yr)*	4359	3884	3411	3536	2770	1926	1952	2591	1759	2263	3407	3127	34985	30651	39947							
Chickenpox	3980	4058	4910	6793	7186	4803	4295	3223	2943	2955	4099	4902	54147	27173	17620	47050	24711	15410	15038	15803	12103	9345
Clinical Mumps ([IgM positive]	50 [3]	34 [4]	49 [6]	35 [11]	50 [12]	37 [5]	33 [6]	27 [2]	36 [2]	29 [4]	61 [7]	52 [11]	493 [73]	1127	856	829	1664	2497	3661	10443	12628	5951

Monthly Distribution of Communicable Diseases *Annual Report 2007*

ICD Code	Priority Communicable Diseases	Oman	Mus-cat	Dhofar	Dakhliyah	North Sharqiyah	South Sharqiyah	North Batinah	South Batinah	Dhahira	Musan-dam	Al-Wustah
Group 'A' Diseases												
A00	Cholera	3+2 (i)	3+2 (i)	-	-	-	-	-	-	-	-	-
A20	Plague	*Never reported*										
A95.9	Yellow Fever	*Never reported*										
A39, 39.0, 39.2-39.4	Meningococcal Infection	3	1	-	-	-	1	-	-	1	-	-
G00.0	H. influenzae type b, meningitis *(Hib)*	0	-	-	-	-	-	-	-	-	-	-
A82	Rabies	0	-	-	-	-	-	-	-	-	-	-
B50-54	Malaria	707	241	44	68	35	16	158	48	63	12	22
A-15	Pulmonary Tuberculosis (sputum+)	114	28	18	5	4	5	31	18	4	-	1
	Group 'A' Syndromes											
	Acute Flaccid Paralysis [Polio]	32	5	6	4	-	5	6	4	1	1	-
	Fever & Rash-Illness	746	107	22	125	16	149	136	135	20	3	13
B05	*Clinical*	16	8	2	-	1	-	4	-	1	-	-
B06	Measles (*IgM positive*)	8	-	1	-	-	-	7	-	-	-	-
	Rubella (*IgM positive*)	0	-	-	-	-	-	-	-	-	-	-
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*)	521	62	12	47	133	31	90	69	66	-	11
Group 'B' Diseases												
G00.1-9	Bacterial Meningitis *(except Hib & Nm)*	26	9	2	1	3	2	3	5	1	-	-
A87	Viral Meningitis	8	3	1	-	2	1	-	-	1	-	-
G03	Other Meningitis (*unspecified*)	36	2	1	3	5	2	23	-	-	-	-
	Acute Viral Hepatitis (*total*)	631	63	56	87	45	185	57	72	53	5	8
B15	Acute Viral Hepatitis A	429	59	5	76	27	156	26	49	31	-	-
B16	Acute Viral Hepatitis B	33	-	-	2	5	3	8	10	1	-	4
B17.1	Acute Viral Hepatitis C	21	-	-	5	-	1	5	10	-	-	-
B17.0	Acute Viral Hepatitis D (*amongst B+*)	0	-	-	-	-	-	-	-	-	-	-
B17.2	Acute Viral Hepatitis E	11	-	-	-	2	2	3	3	-	-	1
B19/B17.8	Acute Viral Hepatitis (*unspecified*)	137	4	51	4	11	23	15	-	21	5	3
A03.0,	Typhoid & Paratyphoid Fever	54	6	4	3	8	4	17	3	2	3	4
A37	Clinical Pertussis [IgM positive]	75 [2]	31	9	2	2 [2]	3	14	10	4	-	-
A71	Trachoma (*active*)	64	-	-	9	48	-	-	7	-	-	-
A23	Brucellosis *(human)*	88	1	80	-	-	-	3	2	1	1	-
B55.1	Leishmaniasis Cutaneous (*CL*)	6	-	3	2	-	-	1	-	-	-	-
B55	Leishmaniasis Visceral (*VL*)	1	-	1	-	-	-	-	-	-	-	-
B65	Schistosomiasis (*intestinal*)	1	1	-	-	-	-	-	-	-	-	-
A16	Pulmonary Tuberculosis (*sputum neg.*)	28	4	9	-	-	1	11	2	-	1	-
A17-19	Extra-pulmonary Tuberculosis	96	21	32	5	2	5	16	15	-	-	-
A30	Leprosy	2	1	-	-	-	-	-	1	-	-	-
B20-24	HIV [AIDS]	48 [33]	9 [10]	1 [0]	0 [3]	-	6 [6]	23 [12]	4 [1]	5 [1]	-	-
Group C Diseases & Syndromes												
J10-11	Influenza Like Illnesses (*ILI*)	47531	-	863	227	46180	-	8	15	219	10	-
-	aLRTI & Pneumonia *(childhood)*	18254	799	4339	2794	1173	2072	1361	5450	18	180	68
-	Acute 'Watery' Diarrhoea *(childhood)*	34985	4864	5781	9673	3	2575	6702	867	3651	862	7
B01	Chickenpox	54147	7466	2821	10843	3573	5609	9180	7644	6254	229	528
B26	Clinical Mumps [IgM positive]	493 [73]	142[4]	113[1]	52[5]	32[7]	37[8]	77[13]	24[22]	7[10]	4[3]	5[0]

Age Distribution of Reported Communicable Diseases

Annual Report 2007

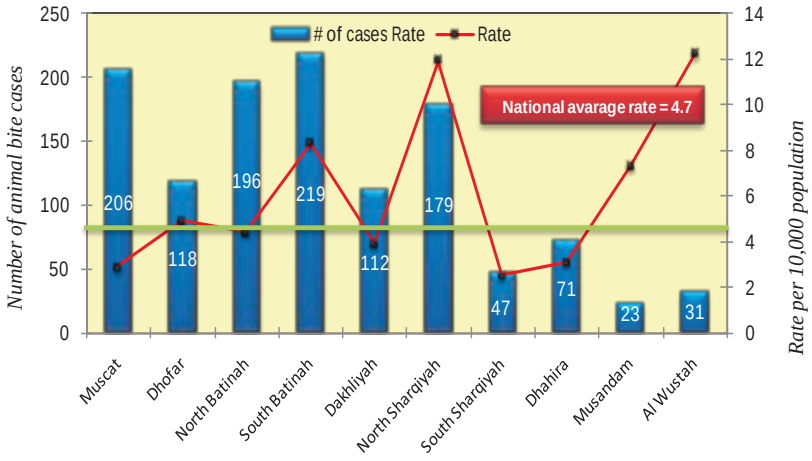
ICD Code	Priority Communicable Diseases	Total	Age Groups in Years								
			< 1	1-4	5-9	10-14	15-19	20-24	25-34	35-45	45+
Group 'A' Diseases											
A00	Cholera	3+2 (i)	-	-	1 (i)	-	-	-	2+1(i)	1	-
A20	Plague	*Never reported*									
A95.9	Yellow Fever	*Never reported*									
A39, 39.0, 39.2-39.4	Meningococcal Infection	3	3	-	-	-	-	-	-	-	-
G00.0	H. influenzae type b, meningitis *(Hib)*	0	-	-	-	-	-	-	-	-	-
A82	Rabies	0	-	-	-	-	-	-	-	-	-
A-15	Pulmonary Tuberculosis (sputum+)	114	-	-	-	4	6	18	20	19	47
	Group 'A' Syndromes										
	Acute Flaccid Paralysis [Polio]	32	1	22	4	5					
B05 B06	Fever & Rash-Illness (*Clinical Cases*) Measles (*IgM positive)* Rubella (*IgM positive)*	746 16 8 0	213 6 4 -	326 5 1 -	146 4 1 -	35 1 1 -	6 - - -	4 - - -	8 - 1 -	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*)	521	16	85	103	92	61	41	58	35	30
Group 'B' Diseases											
G00.1-9	Bacterial Meningitis *(except Hib & Nm)*	26	11	5	5	1	-	-	1	1	2
A87	Viral Meningitis	8	1	1	3	-	2	-	-	-	1
G03	Other Meningitis (*unspecified*)	36	8	7	10	3	1	1	4	2	-
	Acute Viral Hepatitis (*Total*)	631	8	177	239	89	17	29	35	14	23
B15	Acute Viral Hepatitis A	429	4	151	190	66	6	4	3	3	2
B16	Acute Viral Hepatitis B	33	1	-	1	1	1	8	13	3	5
B17.1	Acute Viral Hepatitis C	21	-	-	-	-	-	6	4	3	8
B17.0	Acute Viral Hepatitis D (*amongst B +*)	0	-	-	-	-	-	-	-	-	-
B17.2	Acute Viral Hepatitis E	11	-	2	-	-	-	2	4	1	2
B19/B17.8	Acute Viral Hepatitis (*unspecified*)	137	3	24	48	22	10	9	11	4	6
A03.0, A01.4	Typhoid & Paratyphoid Fever	54	1	6	5	4	7	4	12	6	9
A37	Clinical Pertussis [IgM positive]	75 [2]	58	14 [2]	2	1	-	-	-	-	-
A71	Trachoma (*active*)	64	-	10	15	16	11	4	7	1	-
A23	Brucellosis *(human)*	88	-	17	28	8	8	5	6	8	8
B55.1	Leishmaniasis Cutaneous (*CL*)	6	-	-	1	2	-	-	2	-	1
B55	Leishmaniasis Visceral (*VL*)	1	-	1	-	-	-	-	-	-	-
B65	Schistosomiasis (*intestinal*)	1	-	-	-	1	-	-	-	-	-
A16	Pulmonary Tuberculosis (*sputum Neg.*)	28	2	3	-	3	5	-	3	-	12
A17-19	Extra-pulmonary Tuberculosis	96	1	3	3	2	13	11	16	18	29
A30	Leprosy	2	-	-	-	-	-	-	-	-	2
B20-24	HIV [AIDS]	48 [33]	0 [1]	1 [0]	2 [0]	1 [0]	2 [0]	12 [7]	19 [9]	4 [7]	7 [9]

Note:

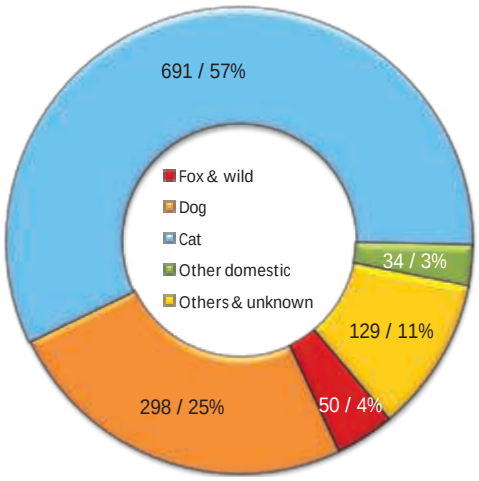
- *The quarterly data are 'provisional' & should be scrutinized & verified by the focal point of communicable diseases (Epidemiologist) at the provincial level. The data would be finalized. after receiving feedback.*
- *The Group C data should be carefully checked & verified for accuracy. Ensure that case definitions are strictly followed .*
- *Tuberculosis, Leprosy & HIV [AIDS] data are for nationals only.*
- **All notified cases of Malaria are imported cases.*
- *(i) = imported case.*

Animal Bite Surveillance *Annual Report 2007*

Notified animal bites by Regions (# & rate)



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



Your opinion matters to us:

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

Your contribution is valuable to us:

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

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