



Sultanate of Oman

Ministry of Health



## Human Rabies: Epidemiology & Control

### Background

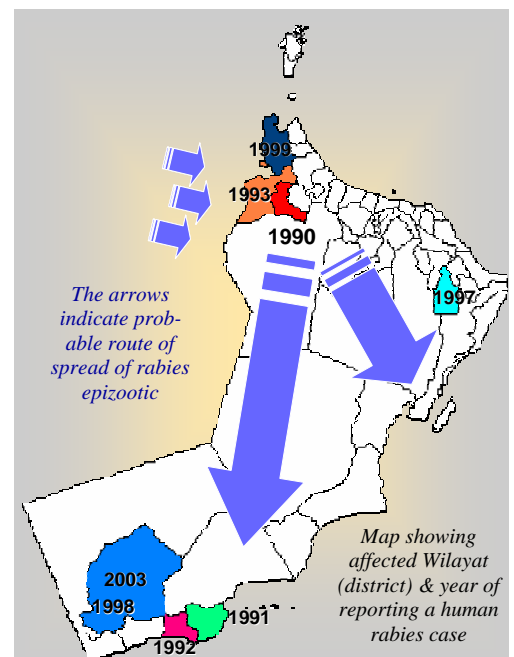
Rabies still remains a permanent threat to human populations in many parts of the world despite being eminently preventable. Although the reporting and surveillance are poor, WHO's primary estimates indicate that each year over 50,000 deaths from rabies occur worldwide concentrated mostly in Asia. Approximately 10 million people require the post-exposure treatment (PET) in over 80 endemic countries. Most rabies deaths are attributed to failure to seek prompt treatment, shortage of vaccines or the use of low-quality vaccines.

Rabies, besides its high public health importance due to its invariable fatal outcome, represents an economic burden for both developed and developing countries. The costs of PET, surveillance of human and animal rabies, the immunization and control of domestic and wild animals including quarantine, and provision of diagnostic facilities are significantly high. The control and elimination of the disease requires an efficient surveillance system to produce appropriate data to evolve specific plans. The sustained control and subsequent elimination of rabies requires a strong collaboration between public health and animal health sectors, sufficient financial budget, awareness amongst people and lasting political commitment.

### Rabies in Oman

It is generally believed that before 1990 rabies was non-existent in Oman. The Ministry of Agriculture & Fisheries (MoA&F) monitoring rabies amongst domestic animals and wildlife (sylvatic) consistently found absence of infection in all the suspected cases from 1979 to 1989. The first case of rabies reported in Oman was a school boy bitten by a rabid fox in the Wilayat of *Yankul*

Fig.1  
The Rabies Map of Oman: 1990 - 2003



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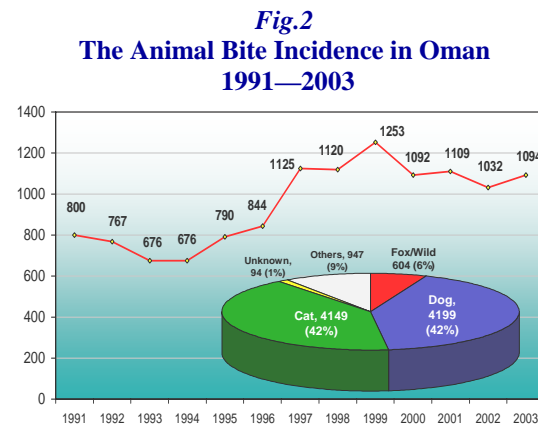
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(Dhahira region) in April 1990. Epizootic of sylvatic rabies that started in the north-western part of Oman then swept within a couple of years throughout the country.

In response following policies were implemented by the Ministry of Health:

- Standard Operating Procedures (SOP) were laid down for
- **Animal bite surveillance** was launched from December 1990. The bites were required to be notified within 24 hours with immediate management. On an average over 1000 bites are notified annually (Fig.1). According to the Ministry policy rodent bites neither should be notified nor should be offered anti-rabies treatment.

*“In Oman WHO recommended modified Essen regime was adapted consisting of four doses of HDCV, 2 on day ‘zero’, 3rd on day 7<sup>th</sup> & 4th on the 21<sup>st</sup> day. In addition human rabies immunoglobulin (HRIG) is also offered in specific cases”.*



- **Anti-rabies vaccination policy** implemented with the use of the best available vaccine in the market viz. human diploid cell (HDCV) culture vaccine was included in the post-exposure treatment (PET). In Oman WHO recommended **modified Essen regime** was adapted consisting of four doses of HDCV, 2 on day ‘zero’, 3rd on day 7<sup>th</sup> and 4<sup>th</sup> on the 21<sup>st</sup> day. In addition human rabies immunoglobulin (HRIG) is also offered in specific cases.
- The method of offering PET was in-

cluded in the SOP manual. Specific indications for the use of HDCV & HRIG were included. The rational use of anti-rabies vaccine was emphasized due to its high cost.

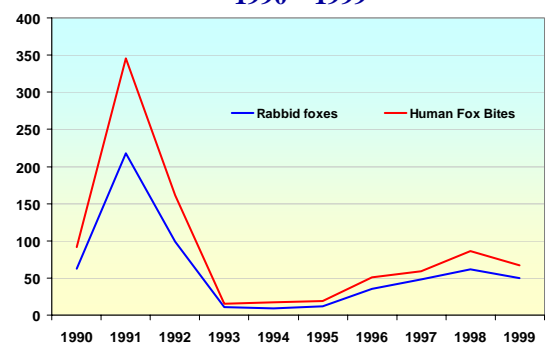
### Reported Rabies Cases in Oman

Table 1 shows the rabies cases on record in Oman since the beginning of surveillance. Out of total 8 cases of rabies one was imported (a man bitten by rabid dog in Bangladesh). Most of the local cases (6 out of 7) were due to fox bite. One case was due to a wolf or dog bite. However 1 case from Mahda Wilayat was due to a cat bite. It shows that dogs are not the major vectors of rabies in Oman as against the rest of the world.

It is also evident that rabies is enzootic amongst the red fox (*Vulpus vulpus*) population in Oman and occasionally when there is an epizootic of sylvatic rabies human exposure and human rabies cases occur. The following figure-3 shows the annual incidence of human fox bite cases versus the occurrence of wildlife rabies with almost overlapping trend lines.

Rabies cases were mostly observed in females. The age distribution shows the high-risk factor to be old people and young

**Fig.3**  
**Rabid Foxes v/c Human Fox Bites 1990—1999**



Source: Ministry of Agriculture & Fisheries

**Table-1**  
**The Line-list of Rabies Cases in Oman (1990 to Jun 2004)**

#	Village	Wilayat	Age/ Sex	National- ity	Animal	Date of Bite	Date of Report	Site	Vaccina- tion	Remarks
1	Yankul	Yankul	Boy	Omani	Fox	Apr'90	—	—	No	—
2	Jabal Sadam	Sadah	55/F	Omani	Dog/Wolf	06 Nov'91	25 Nov'91	—	ARV	—
3	Jabal Assan	Taqah	5m/F	Omani	Dog	20Jan'92	04Feb'92	Scalp	ARV & HRIG	—
4	Wadi Jizzi	Buraimi	30/M	Bangladeshi	Fox	04Jun'93	09Aug'93	Thumb	No	Exposed abroad
5	Wahiba	Bidiyah	17/F	Omani	Fox	22Apr'97	08May'97	Face	ARV	HRIG not given
6	Mazyoona	Thumrait	60/M	Omani	Fox	21Nov'98	06Dec'98	Face	No	Self neglect
7	Al Juwaif	Mahda	13/F	Omani	Cat	11Jan'99	21Jan'99	Face	No	Parental neglect
8	Mudai	Thumrait	48/F	Omani	Fox	15Jul'03	13Sep'03	leg	No	? Self neglect

children.

Geographical distribution (Fig.1) shows that rabies cases occurred all over the country. However almost 60% of the local cases were from the Governorate of Dhofar. In this southern region the population is sparse (9% of the national population). Most of the people of the region live in the fertile coastal zone. The people living in the mountains (*The Jabali*) have an occupation of animal herding and rearing. They often sleep in the open. This custom may favour increased contact with the wild animals.

### The Rabies Prevention & Control

The Ministry of Health had introduced the PET for rabies and the treatment is available in all health care facilities throughout the country. The PET with HDCV and HRIG offers almost certain protection against rabies. Each human rabies case is therefore analyzed to assess whether there was any programmatic errors in delivering the PET. Initial case of rabies (case #1) was due to the lack of awareness due to the apparent absence of the disease in Oman. It is observed that in most of the other cases bitten by the fox or wild animals either neglected or approached the health services late to receive the PET (case #2, 3 & 6). The bites in head & neck area have a

very short incubation. In one (case #7) the parents did not bring their daughter for PET with a cat bite on the face. This also happens to be the first case of rabies in Oman due to the bite of a domestic/peridomestic animal (cat). On one occasion HRIG although indicated was not offered (case #5).

It should be expected that an absence of the disease in an area for long time may induce a sense of complacency amongst the community as well as the health care staffs. It should be always remembered that sylvatic rabies is established in Oman since 1990 and will continue to remain enzootic. The moment the guards are lowered i.e. assuming that the human rabies is no more a threat, the cases will continue to occur.

The low incidence of human rabies in Oman is due to the excellent surveillance of animal bites and the management protocol including the highly effective PET using the best available vaccines in the world.

Another important contributing factor to success is the health seeking behaviour of the community. Almost all animal bites cases approach the health services indicating awareness about rabies in the general community. Every opportunity should be

(Continued on page 9)

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*“The low incidence of human rabies in Oman is due to the excellent surveillance of animal bites & the management protocol including the highly effective PET using the best available vaccines in the world”.*

## Care of Children with 'Low Vision' Disability

Ministry of Health in collaboration with WHO and *Al Noor Association for the Blind*, Muscat recently launched a project to initiate '*Low Vision Care*' for the children. *Prof. Lea Hyvarinen*, Paediatric Ophthalmologist from Finland and dedicated to this field for the past 30 years visited Oman from 14<sup>th</sup> June to 22<sup>nd</sup> June 2004. She conducted assessment of *Low Vision* in the children in Oman and subsequently helped prepare a plan to provide care to them.

A conference was organized on 16<sup>th</sup> June for the Ministry of Health staff, teachers of disabled children under the Ministry of Education, volunteers and teachers of Associations for children with special needs and *Al Wafa Centres* of the Ministry of Social Development. The objective was to introduce the concept of *Low Vision* and care of children with special needs. A three day training workshop was also held for selected participants to offer practical demonstration of methods of assessment of visual function using special *Low Vision* kit.

In Oman, ophthalmologists examine pre-schoolers using distant vision 'E' chart to assess their visual function. Those with less than 3/60 vision in better eye are con-

### *Prof. Lea Demonstrating the Low Vision Kit*



sidered as blind (WHO definition) However, this criterion is for estimation of magnitude and not for offering rehabilitation services. To assess visual function of a person nearly 30 parameters are tested and a child may have limitations in some of

### *Conducting Assessment of Low Vision*



these. Identifying these limitations and training the person with *Low Vision* to develop compensatory skills could improve the quality of life. initiation of such assessment and then subsequent training of individuals with *Low Vision* disability is the goal.

The project will focus initially on children with multiple disabilities. At present nearly 87 students are studying in *Omar Bin Khatab School for Blind*. Many of them have residual vision. Nearly 68 children are visiting association for children with special need. Nearly 300 children with hearing impairment are attending school for hearing disabled and similar numbers of intellectually challenged children attend school under the Ministry of Education. Twenty *Al Wafa Centres* of Ministry of Social Development offers rehabilitative services to the children with disabilities.

Under the new project all these children would be reassessed for *Low Vision* using the '*Lea Test Kits*' in the school academic year 2004-05. Such assessment is not pos-

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*"To assess visual function of a person nearly 30 parameters are tested & a child may have limitations in only some of these".*

### *Low Vision Assessment in Infant*



sible to by the ophthalmologists as it is time consuming process. Instead it should be done in play situation by the teachers in the institute as well as by parents under the guidance of the teachers.

The teachers will be trained in assessment procedure in February 2005. An English and Arabic manual for teachers is in the preparation for the assessment, referrals and follow-up system for *Low Vision Care* in Oman.

The health staff of primary health care would utilize developmental checks to detect visual impairments in children during their vaccination visits e.g. rapid eye movement (nystagmus), strabismus, (crossed eyes) white pupil, small/disorganized/absent or large eyeball etc. If mother complains of the child's vision, the child visual

function must be assessed. A child with multiple disabilities also needs detailed assessment of the visual function. They should all be referred to the ophthalmologist.

As a policy the ophthalmologists should never say that *'nothing can be done'* even in a child with severe visual function restriction. Rehabilitation is an integral part of the total care and a lot is possible and can be done after the therapeutic care is over.

Such efforts need support for procuring assessment kits, build capacity of dedicated manpower and distribute visual aids in the form of spectacles etc. Close collaboration of all the partners viz. Ministry of Health, Ministry of Education, Ministry of Social Development, Non-Government Organizations (NGOs) and philanthropic individuals could make this dream possible.

Oman is the first among the GCC countries to adopt the *Low Vision Care* concept in its totality and has laid down the foundation for early detection and care giving system. This project could become a model that other countries are sure to follow.



*"Oman is the first among the GCC countries to adopt the 'Low Vision Care' concept in its totality & has laid down the foundation for early detection & care giving system".*

### *Workshop on Low Vision Care in Progress*



## Optimal Use of Partograph in Obstetric Practice

### Partograph: the concept

Partograph is a record of all the observations made on a woman in labour. Its central feature is the graphic recording of dilatation of the cervix assessed by the vaginal examination. It is a decision making tool.

Implementation of partograph implies a functioning referral system with essential obstetric services in place. Its use improves the efficiency as well as effectiveness of the maternity services.

### Background

During early fifties large numbers of normal labours were studied and it was concluded that functionally labour could be divided into two parts i.e. latent phase and active phase and the cervical dilatation during labour could be plotted graphically. In late sixties and early seventies several extensive studies were carried out and it was inferred that labour in primipara and multipara behaved differently and deviation of labour from normal could be diagnosed by use of the partograph. It provides a sound scientific basis for an early intervention to prevent prolonged labour and its sequelae.

Over the last two decades several developed and developing countries have used partograph pragmatically in variety of different settings and have found it to be an inexpensive and effective tool for diagnosing cephalo-pelvic disproportion.

For advocacy of partograph WHO conducted a multi-centre trials in Thailand, Indonesia and Malaysia on an agreed format. The findings were that with the use of partograph the labour that was lasting 18 hours could be reduced to half. There was a drop in caesarean section rate amongst women without high-risk. The percentage of women requiring augmentation of labour was also reduced to half.

Other independent trial also showed the impact on reducing neonatal and perinatal mortality.

Partograph effectively prevents prolonged labour and thus reduces the risk of post-partum haemorrhage, sepsis, uterine rupture, operative interventions and improving neonatal outcomes and reducing maternal and foetal mortality and morbidity. Ministry of Health has introduced Partograph's use in labour rooms of all health institutions with maternity services since the early nineties.

### *What was the objective of introduction of partograph?*

#### *Partograph facilitates the providers in:*

- Differentiating between latent & active phase of labour & its deviation from normal
- Monitoring the progress of labour and well being of mother and foetus
- Recognising the need for action at the appropriate time like early decision on transfer of the case to higher level of health care service.

### *When should it be initiated?*

Partograph should be initiated when the cervical dilatation is 3 cm or more & uterine contractions are 1 or more in 10 minutes and are lasting for at least 20 seconds.

### *What should be observed, assessed & plotted during labour on partograph?*

#### **Foetal variables**

- Descent of presenting part
- Foetal heart rate
- Membranes and Liquor
- Moulding of foetal skull bones

#### **Maternal variables**

- Cervical dilatation against time
- Pulse
- Temperature
- Blood pressure
- Uterine contractions – frequency, lengths & strength
- Drugs/IV fluids given &
- Urine protein, acetone and volume

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*“Studies in the late sixties & early seventies have inferred that deviation of labour from normal could be diagnosed by use of the partograph”.*

*What should be the frequency of recording of variables on partograph?*

- **Every 30 min:** Foetal heart, uterine contractions & maternal pulse
- **Every 2 hours:** Maternal blood pressure
- **Every 4 hours:** Maternal temperature, urine test, vaginal examination

*Conditions that need to be screened prior to partograph plotting & require action without delay...*

- Very short stature
- Ante-partum haemorrhage
- Severe pre-eclampsia & eclampsia
- Foetal distress
- Previous caesarean section
- Moderate to severe anaemia
- Multiple pregnancies
- Mal-presentation
- Very pre-mature labour
- Obvious obstructed labour

*What conditions can be diagnosed?*

Obstructed labour can be diagnosed easily, the main reason for which is cephalo-pelvic disproportion that can lead to maternal dehydration, exhaustion, uterine rupture and vesico-vaginal fistula. Obstructed labour indirectly could also lead to postpartum haemorrhage and sepsis and neonatal infections.

*What are the prerequisites for its use?*

It is essential that providers plotting it have good understanding on when to start plotting partograph; what is normal and abnormal partograph; and have necessary skills to:

- Do **accurate recording**
- Do **interpretation**
- Do **timely communication, referral & intervention**

*Training & motivation of labour room staff:*

It is imperative that nurses allocated in labour rooms have good pre-service midwifery knowledge and skills. They should also have received in-service training to further strengthen these skills and are

committed to efficient patient care in the labour room.

*What problems are encountered in its use?*

Although partographs are available in all labour rooms (MoH) and are being plotted appropriately, at times there had been delays in the appropriate actions.

*When quick action is warranted during the active phase of labour?*

If there had been delay in cervical dilatation (*1 cm/hour*) or the descent of head and graph has moved to the 2 hours to the right of alert line

OR

- **Foetal heart rate** < 120 or > 160/min on three observations
- **Ruptured membranes** & meconium-stained liquor
- **Ruptured membranes & absence of liquor**
- **Foetal skull moulding** with bones touching each other/overlapping/severe overlapping

**Recommendations**

*All staff posted in the labour room...*

1. Should receive orientation on how to use the partograph
2. Should be thoroughly conversant with the peri & postnatal manuals and should receive specific need based training on the perinatal module (*MCH training manual*)
3. Are given sufficient practical exercises to understand normal and abnormal partograph readings
4. Are monitored for accuracy of plotting and promptness of action
5. Should discuss periodically abnormal labours with partograph findings in the clinical or continued medical education (CME) meeting.

*“Partograph has been effective in preventing prolonged labour & thus reducing maternal & foetal mortality & morbidity”.*



## Soil Transmitted Helminthiasis (STH) Survey

### Background

Intestinal parasites on the basis of the type of causative agents can be broadly categorized into protozoal infections such as *Amoebiasis* and *Giardiasis* and helminthiasis (worm infestations) e.g. roundworm, tapeworm, liver fluke etc.

Soil-transmitted helminthes (STH) is a subcategory within helminthic infestations referring to the geo-worms requiring soil for a developmental stage in their transmission cycle. These include *Ascaris lumbricoides* (roundworm), *Ancylostoma duodenale* & *Necator americanus* (hookworms) and *Trichuris trichura* (pinworm). Infections are associated with poor living conditions (inadequate sanitation, water supplies, soil quality and climate), poor personal and environmental hygiene and poor health awareness.

Soil-transmitted helminthes in general cause malnutrition, anaemia and growth retardation as well as higher susceptibility to other infections. Hookworms cause chronic blood loss and are one of the major contributors to iron deficiency anemia.

### Global Disease Burden

WHO estimates that more than one billion (1/6th) of the world's population is chronically infected with it. Children and pregnant women are particularly vulnerable to it which decreases the work capacity and fitness and especially in the case of children influencing their nutritional status causing growth retardation and reduced learning ability.

Roundworms approximately infect 250 million people worldwide with associated morbidity and the estimated annual mortality is 60,000. The hookworms on the other hand infect an estimated 151 million people in the world in whom there will be

an associated morbidity and the annual mortality is 65,000. The pinworm affects estimated 46 million people with associated morbidity, and an annual mortality of 10,000.

### STH prevalence in Oman

The distribution and prevalence of STH infestations in Oman is largely unknown. Earlier study conducted in 1988 amongst 937 school students revealed ancylostomiasis, ascariasis and trichuriasis prevalence to be 0.6, 0.6 and 4.1% respectively while a survey in Dhofar showed prevalence of the same to be 3.5, 1.6 and 1.2% during the period 1981 to 1989. Another survey conducted in Dhofar in 1991 amongst children 6-18 years old showed high prevalence of hookworm in the study area. Prevalence of hookworm ranging from 13 to 60% was observed in another study in Dhofar in 1995. A baseline survey based on WHO protocol was conducted in South Batinah region in April 2002 amongst 9 to 11 yr old children. The STH prevalence was observed to be low i.e. 2.2% in hilly zone (n=270) and 0.2% in coastal zone (n=256).

In most of these published studies information available is patchy, techniques differ and sampling is unrepresentative of the population. Hence these cannot be relied upon as baseline prevalence studies. The stool examination which is highly subjective if standardization is not done the results may not reflect the true prevalence. A study in Dhofar governorate has shown hookworm infestation in the area of Taqah Wilayat. Therefore a baseline survey is proposed.

### Proposed STH Survey

Population survey provides information concerning the burden of STH in a commu-

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*“The distribution & prevalence of STH infestations in Oman is largely unknown. In most of the published studies information available is patchy, techniques differ & sampling is unrepresentative of the population”.*



nity and enables judgment to be made as to the need for intervention. Data collected from children attending schools are generally representative of the situation in the community.

**Sampling:** The target population of the survey would be the primary school children because the peak prevalence is observed in this age group. This group also suffers from nutritional deficiencies because these children are undergoing a period of intense physical and mental development. Experience shows there is generally a good compliance from children and parents.

**Sample size:** 200 to 250 individuals for each ecologically homogeneous areas or zones with the first administrative division (regions & governorates) is adequate to

*(Continued from page 3)*

exploited by the health care staffs to educate the people about the real risk of rabies and the importance of timely PET.

The *Ministry of Agriculture & Fisheries* is continuously monitoring the sylvatic rabies situation. The regional health administration should be in constant communication with the local veterinary staffs from the Ministry. The high-risk areas in the region should be earmarked with their help. The pattern of animal bite notifications should also be useful. Health education and distribution of pamphlets on rabies in these areas would help in sensitizing the community as well as the health care staffs.

The regional health authority should be vigilant and continue to orient and train the old and new health staffs (CME) in rabies situation and prevention. The appropriate and timely management of PET should be emphasized. The staffs especially from remote areas known to have reported cases of animal and/or human rabies in the

assess the problem of STH.

**Stool Examination:** The Kato-Katz technique will be utilized to enable standardization of the diagnosis of STH. The technique consists of microscopic examination of a fixed quantity of faecal material; this enables semi-quantitative diagnosis based on the number of eggs in faeces. This is also a useful indirect measure of the worm burden; usually the greater the eggs count the greater is the number of the female worms. The public health

**Study sites:** Dhofar, South Sharqiyah and Dhahira Region.

**Proposed Study Period:** The survey in the regions will be completed by end of 2004.



*“The staffs especially from remote areas known to have reported cases of animal &/or human rabies in the past or present should be specifically targeted for orientation & training”.*

past or present should be specifically targeted.

If these recommended policies and actions are followed Oman will continue to be free of human rabies cases.

### The Cost of Rabies Prevention

Rabies prevention is a costly affairs. Both vaccines used for effective PET, the HDCV and HRIG are expensive. The average annual expense on vaccine alone is estimated to be RO 80,000 (US \$200,000). Other cost for the Ministry of Health includes cost of human resources for surveillance and administration of vaccine as well as the cost borne by the Ministry of Agriculture & Fisheries for human resource, animal vaccination, laboratory diagnosis etc. Thus the cost of human rabies prevention is enormous but essential to the cause of preventing deaths. However it is of paramount importance that the vaccine is used **rationally** and for appropriate indications.

### Rational Use of Anti-Rabies Vaccine

On number of occasions it has been observed that PET is given inappropriately. Most of the time it is due to either the lack of awareness amongst the health care staffs or panic reaction amongst the community due to the fear of rabies. Due to the 100% mortality associated with rabies the tendency of the staff is to offer vaccine for trivial and inappropriate reasons on several occasions (to be on the safer side). ARV has on occasions also been offered to the human contacts of a case without any scientific rationale.

The regional health authorities should therefore monitor the use of rabies vaccine regularly and ensure that it is used rationally. Training and orientation of the staffs on the rational use of anti-rabies vaccine should be conducted annually.

*“Moreover due to the 100% mortality of rabies the tendency of the staffs (to be on the safer side) is to offer vaccine for trivial & inappropriate reasons on several occasions”.*

### Anti-Rabies Vaccination Policy for Rational Use of HDCV & HRIG

#### Factors influencing the PET:

- Presence of rabies in the area (wildlife or domestic animals)
- Species of biting animal (wild or domestic)
- Whether biting animal is unknown type (always presumed as wild)
- Health status of the animal (sick/rabid within 10 days)
- Whether biting animal is known and traceable?
- Whether bite was unprovoked? (details of circumstances of bite should be elicited)
- Previous immunization history of the biting animal & bitten man
- Site of bite (proximity to brain)
- Nature of contact (degree of bite, through clothes or lick)

#### When HDCV & HRIG ‘MUST’ be given:

- Bite by wild animals
- Bite by unknown animal
- Bite due to animals that cannot be traced or observed for 10 days
- Bite in and around head & neck area
- Bite in infants
- An unprovoked bite

**Note: There are ‘NO’ known contraindications to anti-rabies treatment.**

#### When HDCV is “NOT” recommended:

- Rat or any rodent bite
- Minor bites or scratches by animals in which skin is not punctured
- Provoked bites by pets or known animals
- Bites of vaccinated animal
- Contacts of human rabies case (*health care staffs attending the case including doctors, nurses & paramedical staff*)
- Drop the vaccine doses if the animal is healthy after an observation period of 10 days

#### When HRIG is “NOT” recommended:

- If over 8 days have passed since the administration of vaccine (HDC)
- Bites of vaccinated animals
- Minor bites or scratches on extremities (skin not punctured)

**Note: In case of doubt obtain advice on PET from either the epidemiologist in the region or from the national headquarters.**

#### Acknowledgements:

*The data on sylvatic rabies was kindly provided by Dr. Sultan Al Ismaily, Assistant Director General, Department of Animal Wealth, Ministry of Agriculture & Fisheries.*



## Frequently Asked Questions (FAQ): Revision of IHR

### Q1: What are the International Health Regulations (IHR)?

**Ans.:** The *International Health Regulations* are a code of practices and procedures to prevent the international spread of disease and are legally binding instruments.

### Q2: How IHR came to the existence?

**Ans.:** In 1951 the WHO member states adapted the *International Sanitary Regulations* which were renamed the *International Health Regulations* in 1969 with minor changes in 1973 and 1981.

### Q3: For which diseases IHR is applicable?

**Ans.:** The IHR were originally intended to help monitor and control six serious infectious diseases viz. cholera, plague, yellow fever, smallpox, relapsing fever and typhus. In the current regulations only three diseases viz. cholera, plague and yellow fever are notifiable (since 1969).

### Q4: How IHR are being revised?

**Ans.:** The *World Health Assembly* (WHA) in 1995 passed a resolution for the revision of IHR in the wake of emergence of new infectious diseases (e.g. Ebola). In 2001 the WHA adopted resolution on *Global Health Security: epidemic alert and response*. WHO in 2003/04 prepared a comprehensive draft on revised IHR for review by the member states.

### Q5: How revised IHR differ from the old?

**Ans.:** The reporting of merely three diseases (cholera, plague & yellow fever) fails to address the new emerging and re-emerging public health threats of global significance. Moreover some unwarranted and damaging trade restrictions and population movements have been imposed in the past. The revision will be an important step in strengthening the world's collective defences against the infectious disease threats.

### Q6: What will be the legal status of the revised IHR?

**Ans.:** The IHR and any revisions adopted by the World Health Assembly, WHO's governing body are legally binding on any states party to the agreement. The revised IHR will be an international legal instrument which is binding on the member or non-member states who have accepted the regulations.

### Q7: Who will implement the revised IHR?

**Ans.:** The responsibility rests with the WHO and the member states party to the agreement. The WHO will provide the technical guidance to all states.

### Q8: What is "public health emergency of international concern" in IHR?

**Ans.:** Its an event with following 4 criteria as defined in the revised IHR

- Seriousness of the public health impact
- Unusual or unexpected nature of the event
- Potential for the event to spread internationally
- The risk that restrictions to travel or trade may result because of the event

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*"The draft International Health Regulations strengthen procedures for rapidly gathering information, for determining when a disease event constitutes an international threat & for seeking international assistance."*

*Source: WHO. For further reading logon to <http://www.who.int/csr/ihr/en/>*



## Communicable Diseases Quarterly Report

### Second Quarter (April to June 2004)

ICD Code	Diseases	2004				2003			2004
		First Quarter				Q2	Q3	Q4	Q1
		Jan	Feb	Mar	Total	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar
<b>GROUP 'A' DISEASES</b>									
A00	Cholera	-	-	-	0	-	2+1(i)	-	-
A20	Plague	<i>Never Reported</i>							
A36	Diphtheria	<i>Last Case in 1992</i>							
A39	Meningococcal infection	-	-	-	0	4	2	3	2
A80	Poliomyelitis	<i>Last Case in 1993</i>							
	<i>Acute Flaccid Paralysis</i>	4	3	2	9	3	2	4	8
B05	Measles	2	7	7	16	-	-	-	-
B06	Rubella & [CRS]	1	2	6	9	-	-	1	-
A95	Yellow fever	<i>Never Reported</i>							
A82	Rabies	-	-	-	0	-	-	1	-
A75.0	Louse-borne typhus	<i>Never Reported</i>							
A68	Relapsing fever	<i>Last Case in 1997</i>							
A33	Tetanus Neonatorum (NNT)	<i>Last Case in 1995</i>							
A99	Viral Hemorrhagic fever	-	-	-	0	-	-	-	-
<b>GROUP 'B' DISEASES</b>									
A03.0	Typhoid fever	1	4	3	8	17	13	11	4
A01.4	Paratyphoid fever	-	1	1	2	2	2	1	1
A02	Food poisoning	42	63	73	178	256	307	115	156
A22	Anthrax	<i>Never Reported</i>							
A23	Brucellosis	9	11	10	30	55	57	34	32
A37	Pertussis	13	8	1	22	49	43	25	29
A35	Tetanus (Excluding NNT)	-	1	1	2	-	1	2	-
A90	Dengue (Including DHF)	-	1 (i)	1 (i)	2 (i)	2 (i)	1 (i)	1 (i)	1
	<b>Viral Hepatitis - Total</b>	<b>66</b>	<b>71</b>	<b>48</b>	<b>185</b>	<b>361</b>	<b>269</b>	<b>180</b>	<b>228</b>
B15	Viral Hepatitis 'A'	35	24	24	83	53	91	88	136
B16	Viral Hepatitis 'B'	3	4	2	9	18	14	13	8
B17.1	Viral Hepatitis 'C'	2	-	1	3	2	8	9	2
B17.0	Viral Hepatitis 'D' among 'B'	-	-	-	0	-	-	-	-
B17.2	Viral Hepatitis 'E'	3	-	-	3	-	3	3	9
B19/B17.8	Viral Hepatitis (Unspecified)	23	43	21	87	288	153	67	73
B55	Visceral Leishmaniasis	-	-	-	0	-	-	-	-
B55.1	Cutaneous Leishmaniasis	-	-	-	0	1	3	-	1
B65	Schistosomiasis	2	9	2	13	24	41	-	-
B74	Filariasis	-	-	-	0	1 (i)	1 (i)	-	-
B72	Dracunculiasis	<i>Certified by WHO as Eradicated from Oman</i>							
G00.0	Haemophilus influenzae type b, Meningitis	-	-	-	0	-	3	3	-
G00.1-9	Bacterial meningitis other than Nm & Hib	3	4	2	9	10	8	11	11
A87	Viral meningitis	2	1	-	3	2	8	6	2
G03	Meningitis - Unspecified	2	3	6	11	1	13	7	15
A30	Leprosy	-	-	1	1	1	2	1	1
A15	Pulmonary Tuberculosis Sputum Positive	8	9	10	27	27	24	24	30
A16	Pulmonary Tuberculosis Sputum Negative	2	2	5	9	11	7	3	9
A17-19	Extra-Pulmonary Tuberculosis	4	6	6	16	32	18	21	23
B50-54	Malaria (All sources)	49	60	66	175	124	286	273	80
B20-24	HIV & [AIDS]	4 [3]	5 [1]	3 [3]	12 [7]	10 [6]	6 [5]	18 [8]	9 [10]
A50-53	Syphilis	9	27	17	53	30	32	17	22
A54	Gonococcal Infections	27	9	18	54	58	62	55	79
<b>GROUP 'C' DISEASES</b>									
A03	Shigellosis	62	74	43	179	234	171	181	198
A06	Amoebiasis	556	483	230	1269	1,259	1,153	1,184	1,131
A09	Acute Gastro-Enteritis & Diarrhoea	8,356	6,948	7,046	22,350	24,205	22,732	30,131	31,263
B01	Chicken Pox	7,976	6,322	4,310	18,608	7,349	4,313	7,539	16,204
B26	Mumps	92	96	65	253	639	288	358	235
A71	Trachoma	34	52	68	154	65	100	82	99
J10-J11	Influenza	117	38	27	182	425	460	533	451

## Communicable Diseases Quarterly Report by Regions

### Second Quarter (April to June 2004)

ICD Code	Diseases	Total	Muscat	Dhofar	Dakhliyah	North Sharqiyah	South Sharqiyah	North Batinah	South Batinah	Dhahira	Musandam	Al-Wustah
<b>GROUP 'A' DISEASES</b>												
A00	Cholera	0	-	-	-	-	-	-	-	-	-	-
A20	Plague	<i>Never Reported</i>										
A36	Diphtheria	<i>Last Case in 1992</i>										
A39	Meninococcal infection			-		-	-	-	-	-	-	-
A80	Poliomyelitis	<i>Last Case in 1993</i>										
	<i>Acute Flaccid Paralysis</i>	9	1	2	1	1	-	2	1	-	-	1
B05	Measles	16	1	6	-	1	5	2	-	1	-	-
B06	Rubella & [CRS]	9	1	1	1	-	1	3	2	-	-	-
A95	Yellow fever	<i>Never Reported</i>										
A82	Rabies	0	-	-	-	-	-	-	-	-	-	-
A75.0	Louse borne typhus	<i>Never Reported</i>										
A68	Relapsing fever	<i>Last Case in 1997</i>										
A33	Tetanus Neonatorum (NNT)	<i>Last Case in 1995</i>										
A99	Viral Haemorrhagic fever	0	-	-	-	-	-	-	-	-	-	-
<b>GROUP 'B' DISEASES</b>												
A03.0	Typhoid fever	8	2	-	1	-	1	3	-	-	-	-
A01.4	Paratyphoid fever	2	-	-	-	-	-	1	-	1	-	-
A02	Food poisoning	178	30	4	23	20	-	35	22	41	-	3
A22	Anthrax	<i>Never Reported</i>										
A23	Brucellosis	30	1	28	1	-	-	-	-	-	-	-
A37	Pertussis	22	8	6	-	2	-	3	3	-	-	-
A35	Tetanus (Non-NNT)	2	1	-	-	-	1	-	-	-	-	-
A90	Dengue (including DHF)	2 (i)	-	-	-	1 (i)	-	1 (i)	-	-	-	-
	<b>Viral Hepatitis - Total</b>	<b>185</b>	<b>22</b>	<b>16</b>	<b>4</b>	<b>4</b>	<b>54</b>	<b>40</b>	<b>14</b>	<b>7</b>	<b>1</b>	<b>23</b>
B15	Viral Hepatitis 'A'	83	3	-	-	-	38	19	12	1	1	9
B16	Viral Hepatitis 'B'	9	-	1	1	1	2	1	2	-	-	1
B17.1	Viral Hepatitis 'C'	3	1	-	2	-	-	-	-	-	-	-
B17.0	Viral Hepatitis 'D' among 'B positive'	0	-	-	-	-	-	-	-	-	-	-
B17.2	Viral Hepatitis 'E'	3	-	-	1	-	1	-	-	-	-	1
B19/17.8	Viral Hepatitis Unspecified	87	18	15	-	3	13	20	-	6	-	12
B55	Visceral Leishmaniasis	0	-	-	-	-	-	-	-	-	-	-
B55.1	Cutaneous Leishmaniasis	0	-	-	-	-	-	-	-	-	-	-
B65	Schistosomiasis	13	2	11	-	-	-	-	-	-	-	-
B74	Lymphatic Filariasis	0	-	-	-	-	-	-	-	-	-	-
B72	Dracunculiasis	<i>Certified by WHO as Eradicated from Oman</i>										
G00.0	Haemophilus influenzae type b, meningitis	0	-	-	-	-	-	-	-	-	-	-
G00.1-9	Bacterial meningitis except Nm & Hib	9	1	-	1	1	-	2	1	2	-	1
A87	Viral meningitis	3	2	-	1	-	-	-	-	-	-	-
G03	Meningitis - Unspecified	11	2	1	1	3	-	3	-	1	-	-
A30	Leprosy	1	-	-	-	-	1	-	-	-	-	-
A15	Pulmonary Tuberculosis Sputum Positive	27	9	2	1	1	3	5	4	2	-	-
A16	Pulmonary Tuberculosis Sputum Negative	9	3	-	1	-	-	2	2	-	1	-
A17-19	Extra-Pulmonary Tuberculosis	16	3	5	-	1	-	4	2	1	-	-
B50-B54	Malaria (All sources)	175	76	4	22	7	23	12	13	16	1	1
B20-24	HIV [AIDS]	12 [7]	5 [1]	0 [1]	-	1 [0]	2 [0]	1 [2]	1 [2]	2 [1]	-	-
A50-A53	Syphilis	53	18	11	3	-	3	9	2	6	-	1
A54	Gonococcal Infections	54	4	12	-	-	12	3	8	6	8	1
<b>GROUP 'C' DISEASES</b>												
A03	Shigellosis	179	17	2	50	59	14	7	3	24	2	1
A06	Amoebiasis	1,269	127	-	187	158	368	40	26	186	56	122
A09	Acute Gastro-Enteritis & Diarrhoea	22,350	3289	2116	3359	1497	1920	3989	3008	1374	1523	275
B01	Chicken Pox	18,608	4391	1440	2662	764	1307	3075	2484	1860	573	52
B26	Mumps	253	71	24	31	12	12	28	25	40	10	-
A71	Trachoma	154	104	-	11	-	-	3	20	16	-	-
J10-J11	Influenza	182	34	-	24	-	-	26	1	80	17	-

## Selected Communicable Diseases by Wilayah

### *Second Quarter (April to June 2004)*

Region	Wilayah	AFP	Measles	Rubella	Pertussis	TB (Total)	TB Sputum Positive	Tetanus (Ex. NNT)	Malaria (All)	Viral Hepatitis (Total)	Leprosy	Meningo. Infection	Hib Meningitis	Leishmaniasis Visceral	Leishmaniasis Cutaneous
<b>MUSCAT</b>	Muscat				1	2	1		5	5					
	Seeb		1		5	2	1		22	1					
	Muttrah					4	2		13	5					
	Bowsher	1		1	2	5	3	1	28	4					
	Al Amerat					1	1		7						
	Quriyat					1	1		1	7					
<b>DHO FAR</b>	Salalah	1	4		3	4	2		3	4					
	Thumrait	1	1		1				1	10					
	Taqah					1				1					
	Mirbat			1	1	1				1					
	Sudah					1									
	Rakhyut		1												
	Dhalqut														
	Muqshan														
	Shaleem				1										
<b>NORTH BATINAH</b>	Sohar		1	2	1	2	1		5	25					
	Shinas					3	3		2	4					
	Liwa					1				1					
	Saham			1					2						
	Khabura	1				1			1	3					
	Suwa'iq	1	1		2	4	1		2	7					
<b>SOUTH BATINAH</b>	Rustaq			1	1	3	2		2	12					
	Nakhl								1						
	Wadi Maawil									1					
	Al Awabi														
	Musanah	1		1		4	2		1	1					
	Barka				2	1			9						
<b>DAKHLIYAH</b>	Nizwa								4	1					
	Bahla			1					6	2					
	Adam					1			6						
	Hamra	1								1					
	Manah					1	1								
	Sumail								2						
	Izki								2						
	Bid Bid								2						
<b>DHAHIRA</b>	Ibri					2	1		8	4					
	Yanqul								1						
	Dhank								1						
	Buraimi		1			1	1		5	3					
	Mahda								1						
<b>NORTH SHARQIYAH</b>	Ibra					1			3						
	Mudhaibi		1						2	1					
	Bidiyah	1				1	1		1	2					
	Al-Qabel									1					
	Dima Al-Tayeen				2										
	Wadi Bani Khalid								1						
<b>SOUTH SHARQIYAH</b>	Sur		4	1		2	2	1	22	5					
	Masirah									1					
	Al Kamil & Al Wafi								1	6					
	BBB Ali		1							38					
	BBB Hassan					1	1			4	1				
<b>MUSANDUM</b>	Khasab					1									
	Dibba								1	1					
	Bukha														
	Madha														
<b>AL-WUSTAH</b>	Haima								1						
	Duqum									1					
	Mahoot	1													
	Al-Jazer									22					
<b>NATIONAL TOTAL</b>		<b>9</b>	<b>16</b>	<b>9</b>	<b>22</b>	<b>52</b>	<b>27</b>	<b>2</b>	<b>175</b>	<b>185</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Age Distribution of Communicable Diseases

### Second Quarter (April to June 2004)

ICD Code	Diseases	Total	Age Groups in Years								
			< 1	1-4	5-9	10-14	15-19	20-24	25-34	35-45	45+
<b>GROUP 'A' DISEASES</b>											
A00	Cholera	0	-	-	-	-	-	-	-	-	-
A20	Plague	<i>Never Reported</i>									
A36	Diphtheria	<i>Last Case in 1992</i>									
A39	Meningococcal infection	0	-	-	-	-	-	-	-	-	-
A80	Poliomyelitis	<i>Last Case in 1993</i>									
	<i>Acute Flaccid Paralysis</i>	9	1	3	2	3	-	-	-	-	-
B05	Measles	16	7	6	2	-	-	1	-	-	-
B06	Rubella & [CRS]	9	1	7	-	-	-	1	-	-	-
A95	Yellow fever	<i>Never Reported</i>									
A82	Rabies	0	-	-	-	-	-	-	-	-	-
A75.0	Louse borne typhus	<i>Never Reported</i>									
A68	Relapsing fever	<i>Last Case in 1997</i>									
A33	Tetanus Neonatorum	<i>Last Case in 1995</i>									
A99	Viral Haemorrhagic fever	0	-	-	-	-	-	-	-	-	-
<b>GROUP 'B' DISEASES</b>											
A03.0	Typhoid fever	8	-	-	1	-	-	1	4	-	2
A01.4	Paratyphoid fever	2	-	-	-	-	-	-	-	2	-
A02	Food poisoning	178	-	17	35	33	21	27	24	10	11
A22	Anthrax	<i>Never Reported</i>									
A23	Brucellosis	30	1	2	12	2	2	1	3	3	4
A37	Pertussis	22	17	3	-	-	2	-	-	-	-
A35	Tetanus (Non NNT)	2	-	-	-	-	-	-	2	-	-
A90	Dengue	2 (i)	-	-	1 (i)	-	-	-	-	-	1 (i)
	<b>Viral Hepatitis - Total</b>	<b>185</b>	-	<b>40</b>	<b>67</b>	<b>21</b>	<b>10</b>	<b>9</b>	<b>22</b>	<b>5</b>	<b>11</b>
B15	Viral Hepatitis 'A' (ELISA)	83	-	31	42	7	2	-	1	-	-
B16	Viral Hepatitis 'B' (ELISA)	9	-	-	-	1	1	1	3	-	3
B17.1	Viral Hepatitis 'C' (ELISA)	3	-	-	-	-	-	-	-	2	1
B17.0	Viral Hepatitis 'D' (ELISA) among 'B'	0	-	-	-	-	-	-	-	-	-
B17.2	Viral Hepatitis 'E' (ELISA)	3	-	-	-	-	-	-	2	-	1
B19/B17.8	Viral Hepatitis Unspecified	87	-	9	25	13	7	8	16	3	6
B55	Visceral Leishmaniasis	0	-	-	-	-	-	-	-	-	-
B55.1	Cutaneous Leishmaniasis	0	-	-	-	-	-	-	-	-	-
B65	Schistosomiasis	13	-	-	-	-	6	5	-	-	2
B74	Lymphatic Filariasis	0	-	-	-	-	-	-	-	-	-
B72	Dracunculiasis	<i>Certified by WHO as Eradicated from Oman</i>									
G00.0	Haemophilus Meningitis type b	0	-	-	-	-	-	-	-	-	-
G00.1-9	Bacterial meningitis other than Nm & Hib	9	6	1	-	1	-	-	-	-	1
A87	Viral meningitis	3	-	1	1	1	-	-	-	-	-
G03	Meningitis - Unspecified	11	5	1	3	2	-	-	-	-	-
A30	Leprosy	1	-	-	-	-	-	-	-	-	1
A15	Tuberculosis: Sputum Positive	27	-	-	-	-	3	2	4	3	15
A16	Tuberculosis: Sputum Negative	9	-	-	-	-	-	2	2	2	3
A17-19	TB Extra-Pulmonary	16	-	-	1	1	3	1	2	2	6
B20-24	HIV [AIDS]	12 [7]	-	-	-	1 [0]	-	1 [0]	5 [2]	4 [2]	1 [3]

**Note:**

1. The quarterly data are provisional & should be scrutinized & verified by the focal point of communicable diseases (Epidemiologist) in the regions. Previous quarter data would be finalized in the following quarter after receiving the feedback.
2. Tuberculosis, Leprosy & HIV [AIDS] data are for nationals only.
3. (i) = imported case.
4. Currently laboratory diagnostic procedures are in the process of being laid down and standardized to categorize Viral hepatitis into different types. Cases not subjected to testing therefore are classified as unspecified viral hepatitis.

# Animal Bite Surveillance by Regions

Second Quarter (April to June 2004)

Region	Estimated Population at Risk	Type of Animal					Total Animal Bites	Annualized rate per 10,000 population	Annualized Rates in Previous Quarters			
		Fox or Wild	Dog	Cat	Other Domestic	Others & (unknown)			2003			2004
									Q2	Q3	Q4	Q1
Muscat	631,031	-	30	28	2	-	60	3.8	2.1	2.1	2.2	3.6
Dhofar	214,331	25	-	25	10	-	60	11.2	1.3	1.3	2.1	4.1
North Batinah	408,833	-	7	4	2	-	13	1.3	5.1	4.5	4.5	4.0
South Batinah	243,834	-	7	33	8	-	48	7.9	7.0	8.1	9.1	7.5
Dakhliyah	265,083	-	2	12	2	-	16	2.4	4.2	5.0	4.1	5.1
Dhahira	204,250	-	1	4	-	-	5	1	2.8	0.5	2.0	1.4
North Sharqiyah	140,088	1	4	35	5	-	45	12.8	14.1	9.2	12.1	12.8
South Sharqiyah	172,620	1	3	1	1	-	6	1.4	3.0	3.2	4.3	3.5
Musandam	28,263	-	1	3	-	-	4	5.7	2.2	4.5	4.5	2.8
Al-Wustah	23,058	-	-	2	-	-	2	3.5	7.5	5.6	8	6.9
<b>Total</b>	<b>2,331,391</b>	<b>27</b>	<b>35</b>	<b>147</b>	<b>30</b>	<b>0</b>	<b>259</b>	<b>4.4</b>	<b>4.2</b>	<b>3.8</b>	<b>4.2</b>	<b>4.7</b>

Note: Rodent bites are excluded



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