



Sultanate of Oman

Ministry of Health



## Confronting Tropical Cyclone 'Gonu'

(Following article summarizes measures implemented by the Ministry of Health in the preparation and the aftermath of the tropical storm 'Gonu' that hit the Sultanate on 5th June. Report period 4th to 10th June 2007)

### Tropical Storm

A cyclone is formed when the temperature of sea surfaces rise over 25<sup>0</sup> C, relative high humidity above the sea surface, winds spiralling at low level and divergent winds. At mature stage the tropical cyclone covers some hundreds of kilometres, with a very low atmospheric pressure at the centre where an eye is formed, which can extend to some dozens of kilometre with dense wall of clouds around it causing heavy rain fall and strong winds.

### Birth of 'Gonu'

On the satellite imagery, a widespread convection persisted over the south eastern Arabian Sea on 27<sup>th</sup> May that gradually intensified into a deep depression, and later by 2<sup>nd</sup> June 2007 developed into a severe cyclonic storm. It was further upgraded to cate-

gory five by June the 4<sup>th</sup>. The name 'Gonu' was contributed by Maldives meaning a bag made of palm leaves. The storm moved towards eastern coastline of Oman with winds at 260 km/hr and gusts to 315 km/hr, with an estimated pressure of 920 mbar while located about 285 km from the coast line of Ras Al Hadd and Masirah Island at latitude 21<sup>0</sup> N and longitude 83<sup>0</sup> E. After maintaining peak winds for about 9 hours, the meteorology department downgraded it as very severe cyclone in early

Fig-1  
Satellite Map of Tropical Storm 'Gonu' on 5th June 2007



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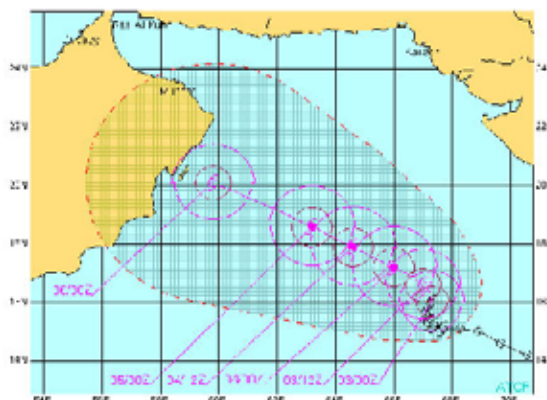
hours of June 5<sup>th</sup>. As the cyclone hit the land, the inner core of deep convection rapidly weakened and over a period of 24 hours the intensity of winds decreased to 95 km/hr. On June 6<sup>th</sup> it hit the eastern tip of Oman, making it the strongest tropical cyclone ever to strike the Arabian Peninsula.

About seven hours before passing near the north-eastern coastline of Oman, cyclone *Gonu* began affecting the country with rough winds, and torrential rainfall reaching 24 inches near the coast leaving many areas flooded. Strong winds knocked out power and telephone lines across the eastern region of the country leaving thousands isolated. The cyclone caused extensive damage along the coastline, including the city of *Sur* and the village of *Ras Al Hadd* at the easternmost point of the Oman. In *Muscat* winds reached 100 km/hr leaving areas in capital city without power and water and de-linking communication. Strong waves and heavy rainfall flooded the streets and some buildings.

#### Cyclone warning: Tuesday, 4<sup>th</sup> June

The Ministry of Health received a warning issued on 4<sup>th</sup> June from the office of H.E. The commander and the Inspector General

Fig-2  
Projected Path of Cyclone 'Gonu'



of Police which stated “*The satellite pictures showed development of a tropical cyclone at latitude 20° North and longitude 80° East in Arabian sea which is expected to strike Masirah Island and Ras Al Hadd on the eastern coast of Oman by 5<sup>th</sup> June '07. The storm is expected to further move to the Gulf of Oman along the coast. The impact of the cyclone could also be seen in Dakhliyah, Muscat Governorate and South Batinah in the form of heavy rains and strong winds.*”

#### Disaster preparedness and management

A “Task Force” was formed in the Ministry of Health (DGHA) on 4<sup>th</sup> June '07 and an emergency meeting was called to deliberate on contingency plan to be implemented as part of ‘Disaster Management and Preparedness’. The chairman briefed the members about the alert and proceedings in the meeting of the ‘**National Disaster Committee**’ at the Police headquarters.

The task force focused on the core issues concerning the Ministry of Health.

- Disseminate the alert of cyclone to all hospitals and Regional Health Directorates with periodic updating.
- *Sur* and *Ibra* hospitals were alerted to launch their disaster management plan and prepare to receive emergency patients.
- *Nizwa* hospital was instructed to send their trauma team to *South Sharqiyah* Region. *Rustaq* hospital was informed to be ready to receive cases from *Sohar*.

**Staff Status:** As an initial measure to ensure adequate strength of medical/paramedical staff to meet the disaster situation and manage mass casualties station leaves of all health staff were cancelled with immediate effect.

**Drugs & Disposables:** Directorate of Drug Stores initiated the process of provi-

“About seven hours before passing near the north-eastern coastline of Oman, cyclone *Gonu* began affecting the country with rough winds, and torrential rainfall reaching 24 inches near the coast leaving many areas flooded.”

Fig-3

**Final Path of 'Gonu' showing diminishing Strength as it hit Oman Coast & moved to Iran**



sion of emergency medical supplies to all hospitals that were expected to be affected.

- It was noted that *Sur* and *Masirah* hospitals had adequate stocks of medical supplies that could last for 2 months.
- The indent for medical supplies from *Ibra* and *Sinaw* hospitals was reviewed and supply arrangements were made.
- A sub-store in *Nizwa* was stocked with all requisite drugs and disposables.
- The availability of adequate quantities of vaccines was also ensured.

**Blood Bank:** The blood bank status was reviewed. All blood banks were instructed to communicate prospective blood donors to be prepared to donate in this hour of need.

**Ambulances:** All hospitals were requested to ensure availability of ambulances to mobilize patients or staff or other transportation purposes if required.

**Communication and Coordination:** To ensure uninterrupted communication *Thuraya* satellite mobile telephone sets were arranged in case of failure of landline and mobile networks.

### Emergency Command Centre

In response to the cyclone warning an **Emergency Command Centre** was established at the Directorate General of Health Affairs, Ministry Headquarters.

- Two 24 hours on-call schedules were prepared for Ministry officials. One to represent Ministry of Health in police **Central Command Centre (Seeb)** and the other for **Emergency Command Centre** in Ministry headquarters.
- Dedicated telephone lines were installed and calls to public relations were also linked to this line.
- The **Emergency Command Centre** at DGHA was fully operational from 9.00 pm on 4<sup>th</sup> of June 2007.

### Ministry of Civil Aviation & Meteorology Alert on 4<sup>th</sup> June '07 at 9.00 pm

*"The latest satellite pictures indicate that the centre of Tropical Cyclone Gonu is located on 20.02 North and 63.58 East in the middle of the Arabian Sea around 498 km from the coast of Ras Al Hadd and Masirah Island, with a dense cloud mass at 290 km. It continues to move towards the cost line at a speed of 18 km/hr (carrying dense clouds, heavy rains and winds with a speed of 115 - 125 km/*

*"Two 24 hours on-call schedules were prepared for Ministry officials. One to represent Ministry of Health in police Health in police Central Command Centre (Seeb) & the other for Emergency Command Centre in DGHA".*

*hr), and sea will be rough with high tides ranging to a height of 6.12 m. Furthermore, the satellite maps indicate that the path of the cyclone is directed towards the coastline of Oman and is expected to affect Sharqiyah coast and extend to other areas of Sharqiyah, Muscat Governorate, Batinah and Musandam. The other regions of Buraimi and Dakhliyah are expected to experience heavy rains and strong winds”.*

### **Tuesday, the 5<sup>th</sup> June**

The information in the *Alert* was circulated to all Regional Health Directorates and Hospitals. It was ensured that all hospitals and health centres were ready to manage emergency cases.

- All regional hospitals were instructed to suspend elective surgeries, elective admissions and to discharge cold cases.
- Ensured maximum staff strength.
- The hospital bed availability in the country was reviewed.
- Medical supplies for two months were sent to all hospitals and health centres.
- Units of blood from Central Blood Bank were delivered to Royal, Khoula and SQU Hospitals.

### **Preparedness in the Regions**

#### **South Sharqiyah**

Regional Emergency Control room was initiated in *Sur* and separate teams were established at each Wilayat to liaise with the centre.

An organization/flow chart was drawn highlighting various tasks in the contingency plan and the responsibility and accountability of each member in the team was clearly defined.

- All health institutions were instructed to assemble teams to manage casualties.

- All medical supplies with buffer stocks were made available in *Sur* Regional hospital and other hospitals in *Masirah, Bu Hassan, Bu Ali* and *Sur EHC* and it was ensured that all these hospitals work 24 hours around the clock.
- Alternative mobile clinics were established in schools to provide emergency medical care wherever required.
- Medical supplies stock and computers from the *Sur EHC* were shifted to safer places in view of anticipated flooding.
- All health care staffs residing in the low-lying areas of *Ras Al Hadd HC, Suwaih HC, Arruias HC, Ashkara HC, Aseela HC, Quima HC* were evacuated to other areas.
- Ambulances were mobilized from these areas, equipped with emergency equipment and medical supplies and moved to mobile clinics.

#### **Sur Hospital**

The Disaster Management Plan was activated with establishment of the Disaster Command Centre. The main focus was on water, electricity and medical supplies. Availability of all categories of staff was ensured. At least 2 doctors were on duty at any given time. Accident & Emergency (A&E) department was equipped with adequate medical equipment and supplies. Two wards were earmarked as disaster wards. A mobile team comprising of doctors and staff was formed. Elective surgeries were postponed and the theatres were made available for emergencies.

#### **Muscat Governorate**

#### **Royal Hospital**

An adhoc disaster management committee was established. Elective admissions and elective surgeries were suspended until further notice. Accommodation was provided in the campus to doctors, nurses and

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*“An organization/flow chart was drawn highlighting various tasks in the contingency plan & the responsibility & accountability of each member in the team was clearly defined”.*

certain senior staff.

### **Khoula Hospital**

A disaster team was also established and similar arrangements were made in Khoula hospital. Two triage areas were setup and equipped with essential medical supplies and staff. A disaster operation room was setup close to A&E with provision of telephone and intercom facilities. Staffs were posted to handle telephones and message deliveries. Waiting areas in radiology and specialty clinics were identified for patients discharged from triage who would not be able to leave due to weather conditions. The backup teams were stationed in orthopaedic, general surgery and plastic surgery conference rooms. The bed strength was temporarily increased with placement of additional mobile beds and further arrangements in staff cafeteria to receive approximately 100 additional patients. All emergency equipment was checked by respective ward I/c. Nursing staffs from the hospital complex were evacuated due to old building structure and shifted to Institute of Health Sciences complex. Group pagers were distributed to disaster team members. All ambulances were kept ready. Additional security personnel were arranged.

### **Al-Nahdha Hospital**

The Disaster Management Plan was activated. The postgraduate centre was converted to command and control centre. Special duty rosters were made by all departments. All on-call doctors of each specialty were stationed in the hospital premises on 24 hours shift. Additional staff from each department was listed and was kept on alert. Treatment areas were allocated as per the plan. The elective surgeries were cancelled and the operation theatres were kept on standby to meet the emergencies.

### **Ibn Sina Hospital**

Emergency committee was established in the hospital. All patients were evacuated from the wards that were at lower level. Areas were identified to receive emergency cases. It was ensured that adequate quantities of food, fuel and water were stored including the medical supplies to manage all emergencies. Measures were taken to prevent inflow of flood water in the hospital. Duty rosters of medical staff were arranged in shifts around the clock. Maintenance department was put on alert to handle emergency repair jobs.

## **Post-Cyclone Scenario**

### **South Sharqiyah Region**

The tropical cyclone struck the *Sharqiyah* coast on 5<sup>th</sup> June '07 with heavy winds and high tides in view of which the entire region was affected severely.

### **Sur Hospital**

Due to heavy rains water flooded into the courtyard and into the wards reaching window level. Due to strong winds there was power breakdown. The hospital services were carried out on four backup generators. There was total failure of telephone lines. The LPG gas connection to kitchen was damaged. The catering services continued using gas cylinders. Water supply was also disrupted. However supply was restored by tankers through Ministry of Defence. Radiological and laboratory investigations were suspended due to power cut. Mobile X-Ray units were functional. Electricity supply was resumed by midnight of Friday, the 8<sup>th</sup> June. As the computer system was out-of-service medical records were maintained manually.

Although the entire region was severely affected no casualties directly due to cyclone were received in the hospital.

### **Sur Extended Health Centre**

All speciality clinics, pharmacy and medi-

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*“ The bed strength in Khoula Hospital was temporarily increased with placement of additional mobile beds & further arrangements in staff cafeteria to receive approximately 100 additional patients” .*

cal stores, laboratory, radiology departments and administrative building were flooded with water and the ceiling was also damaged due to uprooted trees with major damage to the power supply lines. The GP clinic and the medical records building were the only areas which escaped flooding. The Ophthalmology, ENT, Surgery and Orthopaedic clinics were damaged beyond repairs. Vaccines stored in the refrigerators was damaged due to power breakdown for long hours. The ceiling of the laboratory collapsed and completely flooded with water. There was water leakage in the Radiology department, Pharmacy and medical stores, and the generator room. Sur EHC started resuming its services from Sunday, the 10<sup>th</sup> June.

No cases of injuries related to cyclone were noticed.

**Health Centres:** *Al-Ayyah HC, Tiwi HC, Wadi Bani Jaber HC, Al-Ruways HC, Al-Suwayah HC, Al-Ashkara HC, Aseela HC, Alkhwaima HC, and Tawha HC* suffered damage to the building, approach road and the communication and power supply was cut off in some places.

*Masirah hospital, Jalan Bu Ali Hospital, Jalan Bu Hassan Hospital, Al-Kamil Al-wafi HC, Seik and Sabt HC, Falaz I-Mashaiq HC, Al-Ghaynah HC* suffered 'NO' damage.

## Muscat Governorate

### **Royal Hospital**

The main impact of the storm was on water supply although telephone lines were also disrupted. Water supply to the hospital was disrupted. However, the Hospital received logistic support and assistance from the Emergency Command Centre at the Ministry. Water was provided by tankers by the Ministry of Defence, Royal Oman Police, Ministry of Diwan of the Royal Court and some private companies. Water was also transferred to the Hospital

from the swimming pool and tanks from the accommodation complex. The Dakhliyah Regional Directorate was supportive and arranged for the CSSD and laundry services during the acute water crisis period from 8<sup>th</sup> to 9<sup>th</sup> June. Although the municipal water supply was restored on 11<sup>th</sup> June it was erratic until the evening of 13<sup>th</sup> June. One of the buildings occupied by student nurses was evacuated as a precautionary measure due to heavy flooding of the adjacent *Wadi*. The sewage treatment plant was flooded discharging sewage into the adjoining *Wadi*. The inpatient services and the outpatient department resumed full normalcy from 10<sup>th</sup> June.

### **Khoula Hospital**

During the cyclone more than 600 staffs were available in the hospital. Continuous communication was maintained with the Emergency Control Room and other government hospitals. Water leakage in most of the places in the hospital building kept the maintenance teams busy during the aftermath. The hospital services were being run on generators due to power outage. Water supply however was the main concern and arrangements were made using tankers from various sources organized by the Emergency Control Centre through Ministry of Defence, Royal Oman Policy, Ministry of Diwan of Royal Court and private sources as well. Due to limited facilities the clean linen was provided by *Sohar Hospital* and CSSD sterilization was done at *Rustaq Hospital*. The hospital also provided logistic support to other Hospitals viz. *Al Nahda* and *Ibn Sina*.

### **Al-Nahdha hospital**

Water flooded the building and the ceiling of the operation theatres 5 and 6 collapsed due to heavy rains. 20 patients under the care of various specialties were shifted to *Khoula Hospital* on 6<sup>th</sup> June. The services of

(Continued on page 11)

*“Although the entire South Sharqiyah region was severely affected by cyclone no casualties directly due to cyclone were received in the hospital.*

## Review of Breastfeeding Trends in Oman - *Impact of BFHI*

### Introduction

Child health programs in Oman are considered a model of success. Before 1970, the infant mortality rate was estimated to be 214 that declined to 25 by 1992. The importance of breastfeeding in the survival and health of the children was recognized by the health authorities and the 'Baby Friendly Hospitals Initiative' (BFHI) was launched in the early 1990's. The UNICEF and WHO embarked on a national certification of all hospitals in Oman and by 1999 all target hospitals were thus certified<sup>[1, 2]</sup>.

The health system in Oman has evolved over the years. Only 2 hospitals with 12 beds existed in 1970s and now the ministry of health has 49 hospitals with 4,542 beds. The number of primary health care centres also increased from 40 in 1975 to 140 in 2005. Antenatal care coverage mostly at public health services was 99.6% in 2000.

This article reviews the trend of breastfeeding in Oman based on the available reports and will attempt to elucidate the impact of the BFHI and provide recommendations for future directions in infant and young child feeding programs.

**National studies on breastfeeding reviewed:** Studies have been carried out by various agencies since 1979 to assess the feeding patterns of the Omani children. The first documented report was that of the UNICEF - Oman Nutrition Survey in 1979<sup>[3]</sup> in which breastfeeding, artificial feeding and mixed feeding were studied for infants at the ages of <3 months, 3-6 months, 6-9 months, and 9-12 months. The indicators collected at this survey were significantly different from the indicators collected by *Mussaigher* at the wake of the BFHI program in 1992<sup>[4]</sup>. In his report information on rate of bottle feeding, predominant or exclusive breastfeeding for 4 months, and continued breastfeeding into

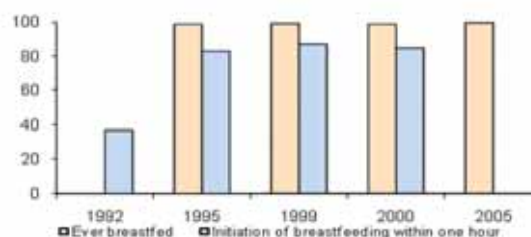
the second year was collected. The first survey to collect percentage ever-breastfed, initiation of breastfeeding, timely introduction of complementary foods and mean duration of breastfeeding was in the 'Oman Family Health Survey' in 1995<sup>[5]</sup>. The *Aspect of Care* national study (62,000) and the *National Health Survey* (72,000) followed a data collection scheme similar to the *Oman family health survey*.

The indicators used in assessing breastfeeding are dissimilar in these surveys; therefore it is difficult to obtain data on trend of all the variables. Moreover WHO produced a recommended set of indicators to assess BFHI, in which the age cut-offs of exclusive breastfeeding have been modified. In 2000 the World Health Assembly issued a resolution that states changing the recommended duration of exclusive breastfeeding from 4 to 6 months that resulted in the change in the definition of "Timely Complementary Feeding". Subject to the availability of the data, this article will review the indicators as reported by the authors.

### Results:

**Early initiation of breastfeeding, and ever breastfeeding rates:** The proportion of mothers who initiated breastfeeding within 1 hr of delivery increased from 36.8% in 1992 to 83% (1995), 87.1% (1999), to 84.8% (2000). The rate of ever breast-

Fig 1  
Ever-breastfeeding & initiation of  
breastfeeding within 1 hr



*"In 2000 the World Health Assembly issued a resolution that states changing the recommended duration of exclusive breastfeeding from 4 to 6 m that resulted in change in the definition of Timely Complementary Feeding".*

# World Sight Day

## White Cane Day

*The 10<sup>th</sup> Anniversary of*

### Al Noor Association for the Blind - Oman



#### *Theme: Childhood Blindness*

- ❖ Every minute one child goes blind in the world
- ❖ Blindness in childhood causes loss of earning capacity of US \$ 6,000 to 27,000 million.
- ❖ There are 1.4 million children blind and 50,000 are added every year.
- ❖ It is second leading cause of the burden due to blindness.
- ❖ Childhood blindness rate is 3/10,000 children in industrialized countries & 12/10,000 children in developing countries. In 1996, 7/10,000 children in Oman were blind.
- ❖ 40% of causes are preventable or curable.
- ❖ Blindness due to measles, vitamin A deficiency, rubella, use of traditional medicines in eye, retinopathy of prematurity and congenital cataract could be detected and managed.
- ❖ Rehabilitation is very important for visually disabled child's development.

*Oman will celebrate this occasion on 24<sup>th</sup> October 2007 - Join the celebrations*

Ministry of Health



Al Noor Association for the Blind

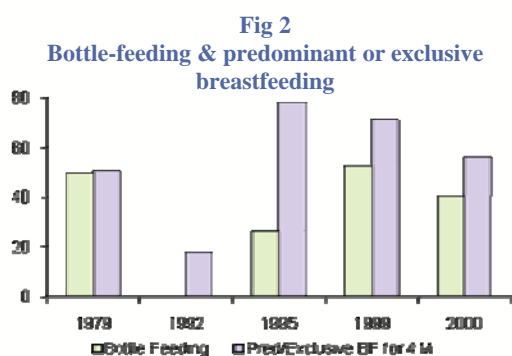




feeding however was 98.8% in 1992 and was maintained at the same level i.e. 99.1% (1999), 98.8% (2000) and 99.6% (2005).

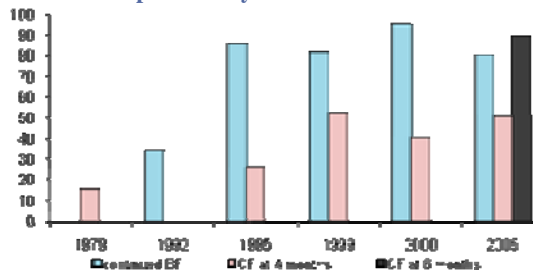
**Rate of bottle feeding:** Bottle feeding rate fluctuated over the years as it was 49.5% in 1979; and went down to 26.2% (1995), then increased to 52.3% (1999), and declined slightly in 2000 to reach 40.5%. There are no data on bottle feeding after 2000.

**Predominant or exclusive breastfeeding:** The cut-offs for the indicators for predominant and exclusive breastfeeding ranged from 3, 4, and 6 months. The only data available on exclusive breastfeeding are for 3 months in 1999 (31%) and 2005 (33%). *Amine* found in 1979 that 50.5% of the mothers breastfed exclusively or predominantly for 4 months. This ratio fell to 17.5% in 1992 then increased to 78% in 1995, 71.5% in 1999, and 56% in 2000. The rate of exclusive breastfeeding rate was 1.2% from the monthly statistical data of primary health care centres in 2005.



**Continued Breastfeeding into 2<sup>nd</sup> and timely introduction of complementary foods:** The rates of mothers who continue breastfeeding into the second year showed a similar pattern as the other indicators. In 1979 the rate was 34.1%, and went up to 85.7% in 1992, 81.5% in 1995, 95% in 1999 and fell to 80.6% in 2005 probably because of the increase in proportion of working mothers after the late 1990's.

**Fig 3**  
Continued breastfeeding into 2nd yr & introduction of complementary foods after 4<sup>th</sup> & 6<sup>th</sup> m



Timely introduction of complementary foods which was defined as introducing complementary foods between the 4<sup>th</sup> month of age was 15.6% in 1979 then it increased to 84.7% in 1995, 99.9% in 1999, and 91.1% in 2000. The cut-off for this indicator was then changed to 6 months.

The monthly reports indicate that 1.9% of the children were introduced to complementary food earlier than 4<sup>th</sup> month, 50.9% of them were fed solid foods by the 5<sup>th</sup> month, and 89.4% by 7 months.

## Discussion

The surveys reviewed were different in the sampling and data collection methods. The 1979 and 1992 surveys were based not on a clear sampling frame but the reports indicated that these were more of convenient samples from major populated areas in Oman. The *Oman Family Health Survey: 1995* and the *National Health Survey: 2000* used the census data as a sampling frame, whereas the *Aspect of Care* survey used the primary health care centres. Breastfeeding indicators were collected for the first time from all primary health care centres in 2005 and these are reported here.

The data collection tools were different among various surveys too as *Amine* used a different age and variable categorization, whereas all studies from 1995 used the WHO recommended variable indicators. However some changes persisted on the cut-offs for the age of exclusive breastfeed-

*“The surveys reviewed were different in the sampling and data collection methods. The Breastfeeding indicators were collected for the first time from all primary health care centres in 2005”.*

ing i.e. some studies specifically recommended the period as 3 months while others 4 months.

Despite these methodological differences in the surveys an overall general picture can be elucidated. Almost all Omani women inherently prefer breastfeeding and it is worthwhile noting that the introduction of the BFHI program in the early 1990's further encouraged improving the breastfeeding rates to above 80% which were then maintained. The program also helped the reduction of bottle feeding and improvement of predominant or exclusive breastfeeding for four months. However this impact was maintained only for a few years and over the turn of the century (year 2000 onwards) these figures dropped. These are also consistent with breastfeeding into the second year. After its decline in the late 1990's the rate of introducing complementary foods on a timely manner improved from 40% to 50% at the 4<sup>th</sup> month. At the age of 6 months 89% of children were introduced to complementary foods.

It is evident that there are a few encouraging aspects of the breastfeeding practices and the BFHI program in Oman although an improvement is desirable. With the re-organization of the Ministry of Health and the introduction of the primary health care facilities widely all over the country. It was important to integrate the program in primary health care and create a system of monitoring to establish various indicators and the trend. The hospitals were accredited in the early 1990's; however there was no re-accreditation or re-certification since then. Recent review showed that the majority of the hospitals are committed and several steps were still maintained over the years. All hospitals in Oman practice rooming-in and prohibit bottles in the vicinities.

The deteriorating indicators as seen require an urgent community action. The

role of the *Community Support Groups* who were created to promote breastfeeding during the initiation of the program requires a re-emphasis. Frequent turnover of the staff and volunteers over the years may have diminished their role in the promotion of breastfeeding.

It is also important to establish a coherent monitoring system for the process activities of BFHI at all levels of primary and secondary health care. The current tools are primarily targeted towards the hospitals and are based on the assumption that all pre-natal, delivery and postnatal activities take place at the same institution. In Oman often only deliveries are in secondary care services and all other services are provided at the primary health care facilities. Therefore a thorough analysis of the assessment tool is essential to place the evaluation where it is most relevant.

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*“In Oman often only deliveries are in secondary care services and all other services are provided at the primary health care facilities.”*



(Continued from page 6)

the hospital were suspended on June 6<sup>th</sup> except the department of A&E which worked for 4 hours. During the power outage the automatic stand-by generators became operational and the services were continued. Due to heavy rains and flooded roads the hospital had to make local arrangements in the hospital kitchen on emergency footing for catering services. All call staff remained on duty from 6<sup>th</sup> to 8<sup>th</sup> June. No patients with cyclone related sickness or injuries were noted during or after the cyclone.

### **Ibn Sina Hospital**

Water flooded into hospital premises and all approach roads were also flooded and damaged. There was break down of power, water supply and telephone. Medical supplies and equipment were inadequate to meet the demands. Additional stock was airlifted. Severe shortage of medical speciality staff was alleviated by staff from *Khoula* and *Al-Nahdha* Hospital. The hospital provided shelter to several families from surrounding areas leading to food shortage. *Khoula* hospital catering services provided food for the patients, families and staff. Hospital continued its services on generators however diesel was in short supply.

Some of the emergency cases were managed within the hospital while critical cases were airlifted to *Khoula* Hospital. Separate teams were established to handle specific jobs viz. patient management and transfer of patients. The police helped in providing water and food and also in transferring patients by land or air.

### **Post-Cyclone Communicable Disease Surveillance**

Due to disruption of civic amenities and displacement of population following storms there is usually a rise in the incidence of water-borne diseases. Hence a

circular was issued to all the health institutions in the Sultanate to activate the 'Regional Epidemic Preparedness Plan' and to monitor disease outbreaks.

Telephonic communication was established with the health institutions in the cyclone hit areas of Muscat Governorate and South Sharqiyah Region. A circular was sent to these health institutions by the Department of Communicable Disease Surveillance & Control on 13th June to monitor the incidence of flood related diseases. A daily 'zero' reporting form for diarrhoea, fever and jaundice was devised as a reporting mechanism. The information was scrutinized on a daily basis to note any unusual rise in the number of cases reported. The monitoring was continued until 7th of July. During this period of surveillance no outbreaks due to water borne diseases or unusual health related events were noted.

### **Editors' note**

The experience of dealing with the natural disaster is relatively new and unique for the Ministry of Health as well as for Oman. Although the organization and implementation of various measures to deal with the emergency situation were excellent. All the health care staff all over the Sultanate contributed their share to face the natural calamity effectively and efficiently.

It is worthwhile to note that there may have been some shortages of supplies at some places or problems associated with unavailability of basic civic amenities in some of the health institutions but there was neither a shortage of the spirit of dedication nor the readiness to work among all the health care staff. The Ministry of Health gratefully acknowledges their contribution to the services of this country.

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## Communicable Diseases Quarterly Report

### Second Quarter (April to June 2007)

ICD Code	Priority Communicable Diseases	2007				2006			2007
		Second Quarter				Q2	Q3	Q4	Q1
		Apr	May	Jun	Total	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar
<b>Group 'A' Diseases</b>									
A00	Cholera	-	-	-	0	-	1 (i)	-	-
A20	Plague	<i>Never reported</i>							
A95.9	Yellow Fever	<i>Never reported</i>							
A39, 39.0, 39.2-39.4	Meningococcal Infection	-	-	-	0	-	-	-	-
G00.0	H. influenzae type b, meningitis ( <i>Hib</i> )	-	-	-	0	-	-	-	-
A82	Rabies	-	-	-	0	-	-	-	-
B50-54	Malaria*	60	70	83	213*	125*	141*	104*	62*
A-15	Pulmonary Tuberculosis (sputum positive)	9	9	7	25	30	27	29	37
<b>Gr. 'A' Syndromes</b>									
-	Acute Flaccid Paralysis ( <i>AFP</i> )	3	1	1	5	5	4	4	7
-	Fever & Rash-Illness	99	105	72	276	202	149	184	175
-	Clinical	-	-	-	0	7	-	4	4
B05	Measles ( <i>IgM+</i> )	2	-	-	2	6	-	1	1
B06	Rubella ( <i>IgM+</i> )	-	-	-	0	2	3	-	-
P35.0	Congenital Rubella Syndrome ( <i>CRS</i> )	-	-	-	0	-	-	-	-
U04, 04.9	Severe Acute Respiratory Syndrome ( <i>SARS</i> )	<i>Never reported</i>							
A99	Acute Haemorrhagic Fever Syndrome	-	-	-	0	-	-	-	-
A02	Food Poisoning ( <i>Infectious origin</i> )	43	36	45	124	96	357	77	70
<b>Group 'B' Diseases</b>									
G00.1-9	Bacterial Meningitis ( <i>other than Hib &amp; Nm</i> )	2	3	-	5	6	4	3	6
A87	Viral Meningitis	-	3	-	3	2	1	1	1
G03	Other Meningitis ( <i>unspecified</i> )	5	2	2	9	13	10	5	15
<b>Acute Viral Hepatitis (Total)</b>		<b>81</b>	<b>67</b>	<b>67</b>	<b>215</b>	<b>507</b>	<b>224</b>	<b>133</b>	<b>158</b>
B15	Acute Viral Hepatitis A	55	44	37	136	55	129	83	88
B16	Acute Viral Hepatitis B	9	1	4	14	10	13	8	16
B17.1	Acute Viral Hepatitis C	2	2	3	7	5	3	2	7
B17.0	Acute Viral Hepatitis D ( <i>amongst B positive</i> )	-	-	-	0	-	-	-	0
B17.2	Acute Viral Hepatitis E	-	1	-	1	1	2	1	5
B19/B17.8	Acute Viral Hepatitis ( <i>unspecified</i> )	15	19	23	57	436	77	39	42
A03.0, 01.4	Typhoid & Paratyphoid Fever	3	7	8	18	8	17	15	11
A37	Pertussis	9	13	13	35	6	8	5	23
A71	Trachoma ( <i>active</i> )	22	8	5	35	14	6	13	36
A23	Brucellosis ( <i>human</i> )	8	4	12	24	18	21	14	25
B55.1	Leishmaniasis Cutaneous (CL)	-	-	-	0	3	1	-	3
B55	Leishmaniasis Visceral (VL)	-	-	-	0	-	-	-	1
B65	Schistosomiasis ( <i>intestinal</i> )	-	-	-	0	-	-	1	0
A16	Pulmonary Tuberculosis ( <i>sputum negative</i> )	4	1	2	7	7	9	7	6
A17-19	Extra-pulmonary Tuberculosis	9	10	2	21	24	28	21	29
A30	Leprosy	-	-	-	0	1	2	1	0
B20-24	HIV [AIDS]	4 [6]	2 [1]	4 [2]	10 [9]	8 [1]	-	13 [11]	15 [11]
<b>Group C Diseases &amp; Syndromes</b>									
J10-11	Influenza Like Illnesses ( <i>ILI</i> )	3376	2821	2476	8673	2570	8227	17166	12619
-	aLRTI & Pneumonia ( <i>childhood</i> )	1740	1661	836	4237	2590	3159	4803	5026
-	Acute 'Watery' Diarrhoea ( <i>childhood</i> )	3530	2770	1924	8224	6050	8407	9478	11652
B01	Chickenpox	6793	7186	4658	18637	7654	4716	7084	12947
B26	Mumps	63	62	48	173	464	197	175	182

## Communicable Diseases Quarterly Report by Regions

### Second Quarter (April to June 2007)

ICD	Priority Communicable 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>										
A95.9	Yellow Fever	<i>Never reported</i>										
A39, 39.0, 39.2-39.4	Meningococcal Infection	0	-	-	-	-	-	-	-	-	-	-
G00.0	H. influenzae type b, meningitis ( <i>Hib</i> )	0	-	-	-	-	-	-	-	-	-	-
A82	Rabies	0	-	-	-	-	-	-	-	-	-	-
B50-54	Malaria*	213*	77	14	18	9	3	55	9	20	1	7
A-15	Pulmonary Tuberculosis (sputum+)	25	8	4	-	-	-	5	6	2	-	-
<b>Group 'A' Syndromes</b>												
	Acute Flaccid Paralysis ( <i>AFP</i> )	5	2	-	-	-	1	-	1	-	1	-
-	Fever & Rash-Illness	276	42	6	56	2	51	51	53	10	-	5
-	<i>Clinical</i>	0	-	-	-	-	-	-	-	-	-	-
B05	Measles ( <i>IgM+</i> )	2	-	1	-	-	-	1	-	-	-	-
B06	Rubella ( <i>IgM+</i> )	0	-	-	-	-	-	-	-	-	-	-
P35.0	Congenital Rubella Syndrome ( <i>CRS</i> )	0	-	-	-	-	-	-	-	-	-	-
U04.04.9	Severe Acute Respiratory Syndrome	<i>Never reported</i>										
A99	Acute Haemorrhagic Fever Syndrome	0	-	-	-	-	-	-	-	-	-	-
A02	Food Poisoning ( <i>Infectious origin</i> )	124	9	5	17	23	4	36	7	18	-	5
<b>Group 'B' Diseases</b>												
G00.1-9	Bacterial Meningitis ( <i>except Hib &amp; Nm</i> )	5	1	1	-	-	-	-	2	1	-	-
A87	Viral Meningitis	3	-	1	-	1	-	-	-	1	-	-
G03	Other Meningitis ( <i>unspecified</i> )	9	1	1	2	-	-	5	-	-	-	-
	<b>Acute Viral Hepatitis (<i>total</i>)</b>	<b>215</b>	<b>27</b>	<b>9</b>	<b>28</b>	<b>12</b>	<b>63</b>	<b>23</b>	<b>27</b>	<b>24</b>	<b>-</b>	<b>2</b>
B15	Acute Viral Hepatitis A	136	20	-	26	3	44	10	21	12	-	-
B16	Acute Viral Hepatitis B	14	4	2	1	2	-	2	3	-	-	-
B17.1	Acute Viral Hepatitis C	7	3	-	-	-	1	-	3	-	-	-
B17.0	Acute Viral Hepatitis D ( <i>amongst B+</i> )	0	-	-	-	-	-	1	-	-	-	-
B17.2	Acute Viral Hepatitis E	1	-	-	-	-	-	1	-	-	-	-
B19/B17.8	Acute Viral Hepatitis ( <i>unspecified</i> )	57	-	7	1	7	18	10	-	12	-	2
A03.0, 1.4	Typhoid & Paratyphoid Fever	18	2	-	-	5	3	5	2	-	1	-
A37	Pertussis	35	5	7	-	5	1	7	10	-	-	-
A71	Trachoma ( <i>active</i> )	35	15	-	3	14	-	-	3	-	-	-
A23	Brucellosis ( <i>human</i> )	24	1	22	-	-	-	1	-	-	-	-
B55.1	Leishmaniasis Cutaneous ( <i>CL</i> )	0	-	-	-	-	-	-	-	-	-	-
B55	Leishmaniasis Visceral ( <i>VL</i> )	0	-	-	-	-	-	-	-	-	-	-
B65	Schistosomiasis ( <i>intestinal</i> )	0	-	-	-	-	-	-	-	-	-	-
A16	Pulmonary Tuberculosis ( <i>sputum neg.</i> )	7	1	3	-	-	-	3	-	-	-	-
A17-19	Extra-pulmonary Tuberculosis	21	3	9	1	1	2	3	2	-	-	-
A30	Leprosy	0	-	-	-	-	-	-	-	-	-	-
B20-24	HIV [AIDS]	10 [9]	2 [5]	-	-	-	1 [0]	4 [4]	1 [0]	2 [0]	-	-
<b>Group C Diseases &amp; Syndromes</b>												
J10-11	Influenza Like Illnesses ( <i>ILI</i> )	8673	-	88	38	8542	-	-	1	-	4	-
-	aLRTI & Pneumonia ( <i>childhood</i> )	4237	142	1078	514	297	501	439	1210	2	43	11
-	Acute 'Watery' Diarrhoea ( <i>childhood</i> )	8224	1018	1082	2657	1	380	1897	210	842	132	5
B01	Chickenpox	18637	2461	925	3594	1221	1276	3977	2891	2114	73	105
B26	Mumps	173	46	30	25	7	9	31	16	7	2	-

## Selected Communicable Diseases by Wilayah

### Second Quarter (April to June 2007)

Region	Wilayah	AFP	Measles	Rubella	Meningo-coccal Infection	Hib Meningitis	TB (Total)	TB Sputum Positive	Viral Hepatitis A	Viral Hepatitis B	Malaria (All)*	Pertussis	Leprosy
<b>MUSCAT</b>	Muscat								2	2	2	1	
	Seeb	1					3	2	1	1	12	1	
	Muttrah						2	2			25	1	
	Bowsher	1					5	3	2	1	33	2	
	Al Amerat								5		3		
	Quriyat						2	1	10		2		
<b>DHOFAR</b>	Salalah		1				8	2			11	6	
	Thumrait									1	1		
	Taqah						6	1			2		
	Mirbat												
	Sadah												
	Rakhyut												
	Dhalqut												
	Muqshan												
	Shaleem						2	1					
	Mazyoona									1		1	
<b>NORTH BATINAH</b>	Sohar						1	1	8	1	33	2	
	Shinas						4	1					
	Liwa		1								16		
	Saham						3		2	1	1	1	
	Khabura										3		
	Suwaiq						3	3			2	4	
<b>SOUTH BATINAH</b>	Rustaq						2	1	2		2	4	
	Nakhl								1				
	Wadi Maawil												
	Al Awabi										1		
	Musanah						2	2	1		1	4	
	Barka	1					4	3	17	3	5	2	
<b>DAKHLIYAH</b>	Nizwa										8		
	Bahla												
	Adam									1	4		
	Al Hamra												
	Manah												
	Samail								25		6		
	Izki												
	Bid Bid						1		1				
<b>DHAHIRA</b>	Ibri								11		6		
	Yanqul												
	Dhank										1		
	Al Buraimi						2	2	1		9		
	Mahda										3		
<b>NORTH SHARQIYAH</b>	Ibra						1		1		2		
	Al Mudhaibi								1	1	4		
	Bidiyah										1	1	
	Al Qabel										2	2	
	Dima Al Tayeen								1			2	
	Wadi Bani Khalid									1			
<b>SOUTH SHARQIYAH</b>	Sur								9		1		
	Masirah								5		2		
	Al Kamil Wa Al Wafi	1					1						
	Bilad Bani Bu Ali						1		28				
	Bilad Bani Bu Hassan								2			1	
<b>MUSANDUM</b>	Khasab	1											
	Dibba										1		
	Bukha												
	Madha												
<b>AL-WUSTAH</b>	Haima										5		
	Duqum												
	Mahoot										2		
	Al Jazer												
<b>NATIONAL TOTAL</b>		<b>5</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>53</b>	<b>25</b>	<b>136</b>	<b>14</b>	<b>213*</b>	<b>35</b>	<b>0</b>

## Age Distribution of Communicable Diseases

### Second Quarter (April to June 2007)

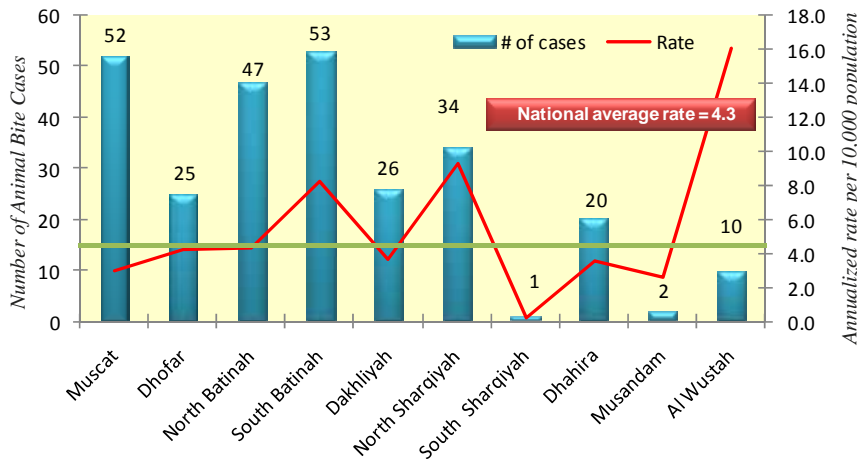
ICD Code	Priority Communicable Diseases	Total	Age Groups in Years									
			< 1	1-4	5-9	10-14	15-19	20-24	25-34	35-45	45+	
<b>Group 'A' Diseases</b>												
A00	Cholera	0	-	-	-	-	-	-	-	-	-	-
A20	Plague	Never reported										
A95.9	Yellow Fever	Never reported										
A39, 39.0, 39.2-39.4	Meningococcal Infection	0	-	-	-	-	-	-	-	-	-	-
G00.0	H. influenzae type b, meningitis ( <i>Hib</i> )	0	-	-	-	-	-	-	-	-	-	-
A82	Rabies	0	-	-	-	-	-	-	-	-	-	-
A-15	Pulmonary Tuberculosis (sputum+)	25	-	-	-	-	2	1	6	3	13	
<b>Gr. 'A' Syndromes</b>												
	Acute Flaccid Paralysis ( <i>AFP</i> )	5	-	5	-	-	-	-	-	-	-	-
-	Fever & Rash-Illness	276	74	125	57	13	-	2	2	2	1	
-	Clinical	0	-	-	-	-	-	-	-	-	-	
B05	Measles ( <i>IgM+</i> )	2	-	1	-	1	-	-	-	-	-	
B06	Rubella ( <i>IgM+</i> )	0	-	-	-	-	-	-	-	-	-	
P35.0	Congenital Rubella Syndrome ( <i>CRS</i> )	0	-	-	-	-	-	-	-	-	-	
U04, 04.9	Severe Acute Respiratory Syndrome	Never reported										
	Acute Haemorrhagic Fever Syndrome	0	-	-	-	-	-	-	-	-	-	
A02	Food Poisoning ( <i>Infectious origin</i> )	124	5	27	22	18	11	9	8	12	12	
<b>Group 'B' Diseases</b>												
G00.1-9	Bacterial Meningitis ( <i>except Hib &amp; Nm</i> )	5	2	1	-	-	-	-	1	-	1	
A87	Viral Meningitis	3	-	-	2	-	1	-	-	-	-	
G03	Other Meningitis ( <i>unspecified</i> )	9	3	3	2	-	-	1	-	-	-	
	<b>Acute Viral Hepatitis (Total)</b>	<b>215</b>	<b>8</b>	<b>68</b>	<b>75</b>	<b>21</b>	<b>8</b>	<b>5</b>	<b>17</b>	<b>6</b>	<b>7</b>	
B15	Acute Viral Hepatitis A	136	6	50	57	16	1	1	3	2	-	
B16	Acute Viral Hepatitis B	14	-	-	1	1	1	1	8	-	2	
B17.1	Acute Viral Hepatitis C	7	-	-	-	-	-	1	2	1	3	
B17.0	Acute Viral Hepatitis D ( <i>amongst B+</i> )	0	-	-	-	-	-	-	-	-	-	
B17.2	Acute Viral Hepatitis E	1	-	-	-	-	-	1	-	-	-	
B19/B17.8	Acute Viral Hepatitis ( <i>unspecified</i> )	57	2	18	17	4	6	1	4	3	2	
A03.0, A01.4	Typhoid & Paratyphoid Fever	18	1	3	1	1	2	2	4	1	3	
A37	Pertussis ( <i>clinical</i> )	35	25	8	2	-	-	-	-	-	-	
A71	Trachoma ( <i>active</i> )	35	-	2	6	9	8	4	5	-	1	
A23	Brucellosis ( <i>human</i> )	24	-	7	6	3	3	-	1	1	3	
B55.1	Leishmaniasis Cutaneous ( <i>CL</i> )	0	-	-	-	-	-	-	-	-	-	
B55	Leishmaniasis Visceral ( <i>VL</i> )	0	-	-	-	-	-	-	-	-	-	
B65	Schistosomiasis ( <i>intestinal</i> )	0	-	-	-	-	-	-	-	-	-	
A16	Pulmonary Tuberculosis ( <i>sputum Neg.</i> )	7	-	3	-	1	1	-	-	-	2	
A17-19	Extra-pulmonary Tuberculosis	21	-	1	3	1	2	4	2	3	5	
A30	Leprosy	0	-	-	-	-	-	-	-	-	-	
B20-24	HIV [AIDS]	10 [9]	-	-	-	-	-	3 [3]	37 [2]	3 [2]	1 [2]	

**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 the 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.

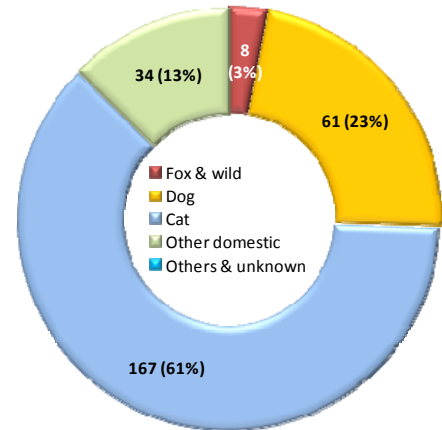
# Animal Bite Surveillance *Second Quarter (April to June 2007)*

**Notified Animal Bites by Regions (# & rate)**



Note: Under-reporting from South Sharqiyah Region.

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



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