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Community Health & Disease Surveillance Newsletter

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Non-communicable diseases screening: *Starts in Oman*

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Introduction

The national screening program for non-communicable diseases is a pioneer project and is intended to provide a screening service for all Omanis aged 40 years and above who have never been previously diagnosed with diabetes or hypertension or chronic kidney disease. The screening targets five common conditions, which include diabetes, hypertension, chronic renal impairment, obesity, and hypercholesterolemia.

This program has been given high priority by the top-level policy makers at the ministry following evaluation of results of the pilot project that preceded it. This service is offered in many primary health care institutions in the sultanate and will soon be offered from all PHC institutions. A guideline to standardize the operational process and procedure of case management has been made. From the experience of the pilot phase, adjustments were

The Oman National Cancer Registry -*Every case counts*

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Introduction

The word "cancer" stirs up great fear in people and is associated with pain grief and death. There are over 20 million living with cancer in the world today and a majority of them are in the developing countries. Changes in lifestyle like high fat, high calorie diet, tobacco and alcohol use and lack of physical activity, have been expected to cause a further steady increase in cancer cases. The estimated increase in number is from 10 million in 2000 to about 15 million in 2015 and at least one third of them are preventable.

Ministerial Decree # 4/2001 issued for MANDATORY notification of all cancer cases to Oman National Cancer Registry.

Realizing the growing burden of non-communicable or lifestyle related diseases in Oman and in efforts to establish a surveillance system for cancer, the Oman National Cancer Registry was established in 1985 as a hospital-

(Continued on page 6)

suggested to solve any problem that might arise during the process of screening.

Program objectives

The 3 main objectives of this program are:

1. Early detection of disease cases and subsequently early intervention aiming at reduction of disease related complications.
2. Enhancing community awareness about current health challenges.
3. Promoting and helping people attain health through health education that accompanies the program.

Strategies

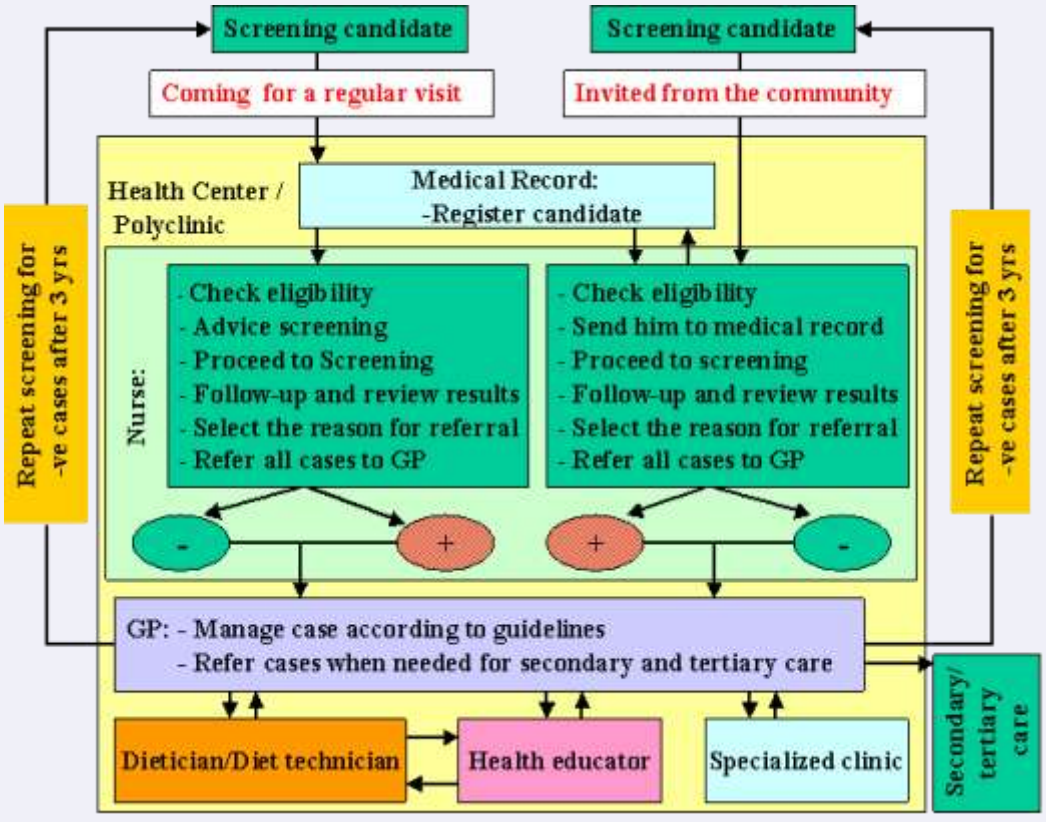
- Risk surveillance; in which all risk and disease free subjects will continue to be screened every third year. In addition, clients' health risks but not disease diagnosis will be monitored and some will be re-screened again even before the next due cycle of screening.
- Risk communication; in which all clients will be informed about all their associated risks and diagnosis. In addition, negative screenee "normal" will be also informed of their screening results.
- Risk assessment; in which all clients will undergo evaluation of their WHO/ISH 10-year fatal and non-fatal cardiovascular and stroke risk score in addition to documentation of other personal risk factors.
- Disease and risk management; in which all diagnosed cases will be managed according to the guidelines. Other risk factors will be managed based on the recommendations described in detail in the screening guidelines.

Procedures

- Clients will be invited from the community by various advertisement means or redirected from other OPD visits.
- Clients will be advised to come in a fasting state for at least 8 hours but non-fasting, walk-in, patients can be entertained in favour of not losing any client.

"The main objective of screening is—early detection of disease and subsequently early intervention aiming at reduction of disease related complications."

Figure 1: flow chart of the screening process



- The process of screening (see figure 1) will involve two possible attendance scenarios – One, when clients attend following advertisements. The other scenario is when clients present for other OPD visits and are found to be eligible for screening.
- The nurse will brief the client about the program, ask him about personal and family medical history, and check his/her anthropometric measurements and blood pressure. Then, she will obtain a venous blood sample and urine sample for laboratory testing.
- Depending on the availability of the results on the day of screening, the client may be asked to come for follow-up of his/her results on another day.
- On follow-up, the nurse will discuss his/her results. If all test results are found to be within normal limits, the nurse refers the case to the general practitioner for health education and advice to come for rescreening after 3 years.
- If any of the referral criteria are found in the client, the nurse will refer the case to the well-being team, which is lead by the GP for further management.

Screening tool

A special registration form has been made to record history, details of the anthropometric measurements, clinical and laboratory findings. This will mainly operate in places where computerization is absent. An electronic module of this form has been developed and its now operating in several computerized health centers. The module automatically detects age-eligible clients and pop up a message to the medical practitioner to advise them to go for screening. Following completion of screening a client, the message will disappear for the following three years till the next screening is due.

Measurements and investigations

The program now involves testing the client's weight, height and waist circumference. Both the body mass index (BMI) and waist circumference are used to evaluate the physical built as a risk to ones health. The blood pressure is also measured from both upper limbs using the standard technique. The highest reading among the two is then used to guide the management. The venous blood sample is tested for plasma glucose, serum creatinine and serum total cholesterol. The serum creatinine is used for further evaluation of renal function using Cockcroft-Gault equation. This is done to estimate the glomerular filtration rate (eGFR). The urine sample is examined for presence of persistent proteinuria and hematuria.

Management of positive cases

The national NCD screening guidelines provide a standard for management of positive cases. It defines roles of different members of the well-being team in managing different cases as well as when to refer cases to higher levels of medical care. It does not only involve management of disease diagnosis but also involves managing the pre-disease state.

The service providers

A team that ideally includes:

- IV certified Nurse
- General Practitioner
- Health Educator
- Dietician

In addition, roles for 'exercise instructor' and 'quit smoking advisor' have been incorporated but specialized staff are not yet available.

Results of six months of piloting

Results obtained from feedback reports of the pilot project that lasted for six months (July-December 2006) and enrolled 1,988 subjects showed alarming figures of undiagnosed disease cases. It involved one health institution from each of the six wilayat of Muscat governorate, Sumail polyclinic from Dakhliyah and Sohar extended health center from North Batinah region.

According to these feedback reports, the participation rate of females was higher than that of males (Table 1). Female attendance was 61% and overall reported follow-up rate in the second visit was 80%. Although advertisement campaigns for screening was limited to posters and some public presentations, on average only 20.8% of their annual target was achieved

"Results from the pilot project (July-December 2006) that enrolled 1,988 subjects showed alarming figures of undiagnosed disease cases."

"The most alarming finding was that overweight and obesity were present in almost 2/3 of this age group (Table 4)."

Table 1: Participation rates in first visit of screening

Participation	No.	%
Males	774	38.9
Females	1,214	61.1
Total	1,988	100.0

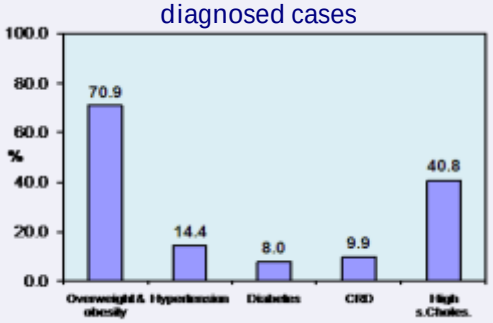
in six months.

These reports also estimated that 1,409 (70.9%) clients were having either overweight or obesity. Around 287 (14.4%) were referred because of hypertension, 159 (8.0%) because of diabetes and 197 (9.9%) because of low eGFR (cut-off point used ≤ 60 ml/min/1.73 m²). In addition, around 811 (40.8%) clients were found to have high total cholesterol of more than 5.2 mmol/l (see table 2 and figure 2). In actual fact, there were more "new diagnosis" than the number of subjects screened which clearly support that most chronic diseases are in fact syndromes or combinations of many risks and diseases.

Table 2: Cases discovered

Condition	Cases discovered
Overweight & obesity	1,409
Hypertension	287
Diabetes	159
CRD	197
High total S. Cholesterol	811

Figure 2: Proportion of newly diagnosed cases



Following institution of the electronic module of the screening registration form, a new format of reporting was suggested to provide better presentation of screening results. For more careful analysis of the old reported data, photocopies of the original registration forms were requested and subjected for further analysis. A total of 1,542 copies have been received. However, some variables were missing in some forms and this preliminary analysis have looked into each variable separately rather than dropping out the incomplete forms. The finding obtained from the preliminary analysis of the registration forms did not differ significantly from the estimates reported in the feedback reports. The following tables and figure summarize the results obtained from analysis of these screening registration forms.

Table 3: Different modes of presentation to screening

Mode of invitation	No	%
From community	898	58.2
In-hospital	471	30.5
Unknown	173	11.2
Total	1,542	100.0

Eight hundred and ninety eight (58%) of clients have come voluntarily for screening. That means they have come directly from the community to receive this service. Around 471 (30.5%) were internally referred from other clinics. Some forms were missing any information about mode of presentation (see table 3).

The most alarming finding was that overweight and obesity were present in almost 2/3 of this age group (see table 4). Obesity

Table 4: Prevalence of overweight and obesity among screened population

BMI	Male	%	Female	%	Total	%
< 18.5	15	2.5	34	3.7	49	3.2
≥18.5 & <25	146	24.3	270	29.0	416	27.2
≥ 25 & <30	246	40.9	358	38.5	604	39.4
≥ 30 & <35	139	23.1	184	19.8	323	21.1
≥ 35 & <40	41	6.8	68	7.3	109	7.1
> 40	14	2.3	17	1.8	31	2.0
Total	601	100	931	100	1,532	100

alone was present in 32.2%. In the new module of screening however, waist circumference has been adopted for better assessment of central obesity. Therefore, future reports will tell us more about central adiposity as a risk factor for cardiovascular diseases.

Around 9.7% of clients who were tested for blood glucose, their fasting or random blood sugar was in the range of diabetes (see table 5). In addition, 1/3 of this group was having impaired fasting or abnormal random tests and is at increased risk of developing diabetes in a few years in absence of intervention.

Table 5: Prevalence of pre-diabetes and diabetes

Glycemic state	No.	%
Normoglycemia	882	58.4
Pre-diabetes	482	31.9
Diabetes	146	9.7
Total	1,510	100

Note: diagnosis is based on venous plasma glucose (fasting & random)

The prevalence of chronic renal impairment poses the greatest challenge to the health services in the near future. As it was initially estimated in the feedback reports, moderate and severe renal impairment (eGFR < 60 ml/min/1.73 m²) was present in 9.9%. Another 33.3% were having mild degree of renal impairment (eGFR ≥ 60 & < 90).

Table 6: Prevalence of chronic renal impairment based on eGFR

eGFR	Male	%	Female	%	Total	%
< 30	2	0.3	5	0.6	7	0.5
≥ 30 & <60	40	6.8	99	11.1	139	9.4
≥ 60 & <90	192	32.5	302	33.8	494	33.3
≥ 90	356	60.3	488	54.6	844	56.9
Total	590	100	894	100	1,484	100

Challenges

Apart from the challenges that are facing the implementation of this program in all primary health institutions in the country, there are challenges posed by the increasing burden on the medical services to deal with the newly diagnosed cases. The current constraints that are still facing the implementation include:

- Improving the attendance rate at screening sessions.
- Capacity building of the current members of the well-being team, especially dieticians and health educators.
- Improving supportive environment at PHC institutions such as laboratory services to meet the standard suggested in the screening guideline.
- Re-orienting PHC to take care of pre-disease and risk management to prevent occurrence of disease.
- Acceleration of computer system upgrades to relief the burden of manual reporting of screening data.
- Funding the program to improve and maintain highest quality standards.

On the other hand, data projects that there will be an increase in the number of chronic disease cases that will require treatment. This will ultimately necessitate the following:

- Better management of newly diagnosed cases without compromising for the management of already diagnosed cases.
- Adjusting the medical manpower to meet the new demands.
- Adjusting the supportive environment at PHC to meet the new demands of laboratory tests and need for more availability of some drugs.
- Provision of qualified staffs that are oriented to prevention of chronic diseases and management of risk factors.

"Around 9.7% of clients who were tested for blood glucose, their fasting or random blood sugar was in the range of diabetes."

The Oman National Cancer Registry—*Every Case Counts…*

(*Continued from page 1)*

based registry in the tertiary referral hospital which was the Al-Nahda hospital at that time.. Later, the registry aimed to register all cancers in Omanis even when patients went to other hospitals within or outside Oman. Hence, with the establishment of the Non-Communicable Diseases Section in the Ministry of Health in 1996, the registry was shifted under it and functions since then as a population-based registry. Today, the Department of Non-communicable Diseases is responsible for the functioning of the Oman National Cancer Registry.

To further strengthen the registry, cancer was the first non-communicable disease whose reporting was made mandatory with the issuing of a decree by H. E. The Minister of Health in 2001. Every physician who diagnoses cancer clinically or by laboratory investigation has to compulsorily report it to the ONCR.

The registry collects information about cancers in all Omanis from the MOH hospitals in all the regions of Oman. The sources of data for the registry also include Sultan Qaboos University Hospital (SQUH), Royal Oman Police Hospital, Armed Forces Hospital, The Diwan Hospital, Treatment Abroad Committee and Tawam Hospital in UAE. More recently, a liaison has also been established with some major private hospitals in Oman.

The ONCR analyses data annually and publishes an annual report. Since 2005, these reports have been made available on the Ministry of Health website:

www.moh.gov.om.

"To further strengthen the registry, cancer was the first non-communicable disease whose reporting was made mandatory with the issuing of a decree by H. E. The Minister of Health in 2001."

Incidence of cancer in Oman: 2006

Table 1
Distribution of Cancer Cases
Among Omanis by Gender, 2006

Gender	Frequency (%)
Male	410 (48.40)
Female	437 (51.59)
Total	847 (100.0)

Fig. 1
The sources of data for the cancer registry

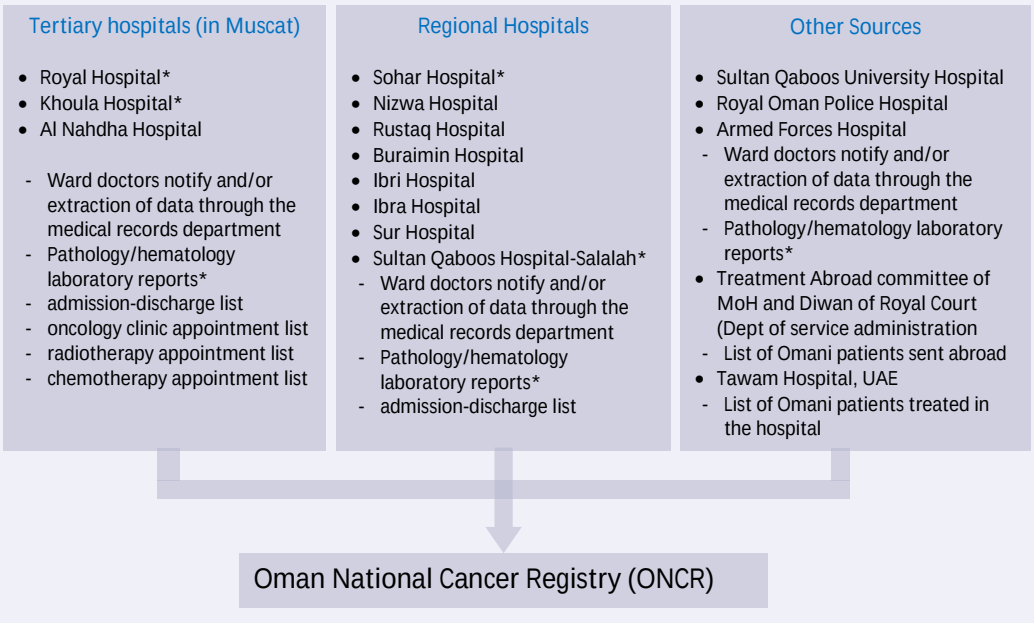


Table 2:
Ten Most Common Cancers among Omani Males and Females, 2006

Males		Females	
Topography	Frequency (%)	Topography	Frequency (%)
Stomach	40 (9.8)	Breast	94 (21.5)
Non-Hodgkin Lymphoma	40 (9.8)	Thyroid	38 (8.7)
Leukemia	37 (9.0)	Cervix	27 (6.2)
Trachea, bronchus, lung	28 (6.8)	Stomach	26 (5.9)
Bladder	27 (6.6)	Ovary	22 (5.0)
Prostate	27 (6.6)	Non-Hodgkin Lymphoma	22 (5.0)
Colon	21 (5.1)	Leukemia	19 (4.3)
Hodgkin disease	19 (4.6)	Bladder	15 (3.4)
Liver	17 (4.1)	Skin	14 (3.2)
Skin	17 (4.1)	Colon	13 (3.0)

There were a total of 847 cases among Omani males and females, with an almost equal distribution among them (table 1).

As shown in table 2 the most common cancer among men is stomach cancer and non-Hodgkin lymphoma followed by leukemia. This pattern of cancer in the sultanate, where stomach cancer ranks very high in the proportion of cancers in males has been seen to occur almost every year. In women the commonest cancer is breast cancer followed by thyroid cancer which again is the pattern every year. In other Gulf countries trachea, bronchus and lung cancer and liver cancer rank among the commonest in males. However in females all Gulf countries report breast cancer as the commonest cancer in females.

An initial evaluation of the registry in 2001 by a senior member of the International Agency for Research on Cancer (IARC) led to the inclusion of Oman's data in Cancer Incidence in Five Continents, Volume VIII, a publication if IARC. Oman thus became the second gulf country after Kuwait to have its data included in the IARC publication. Further, this achievement was again repeated when the IX edition of the same publication accepted Oman's data again and a new online version of Cancer Incidence in five continents was released in 2007.

This publication is the reference for cancer incidence in many populations. In addition to detailed information on cancer incidence, it provides information some demographic characteristics, coding and registration practices of each registry and incidence rates by population and site of cancer. It can be viewed online at the following URL http://www-dep.iarc.fr

Table 3
Regional distribution of incident cases (per 100,000) of cancer in Oman, 2006

Region	Frequency	Incidence
Al Wusta	5	28.5
Ad Dakhliyah	69	27.9
Adh Dhahirah	88	56.3
Dhofar	102	63.6
Musandam	7	32.7
Muscat	216	52.4
North Al Batinah	127	34.4
North Ash Sharqiyah	50	38.9
South Al Batinah	85	38.0
South Ash Sharqiyah	61	41.2
Unknown	37	
Total	847	

"Oman thus became the second gulf country after Kuwait to have its data included in the International Agency for Research on Cancer (IARC) publication."

Guidelines for insulin therapy for type 2 diabetes mellitus in primary health care

Dr Mohammed Nabil Barakat
Non-Communicable Disease Section

Introduction

Type 2 diabetes mellitus (DM) is a progressive disease characterized by progressive deterioration of beta cell function. With the rising incidence of the type 2 DM, especially in younger age individuals who we will live longer with their disease, more patients will develop severe insulin deficiency and ultimately ending with DM which needs insulin for control. Since a majority of type 2 DM patients are currently seen at the primary level, primary care physicians soon will find themselves overwhelmed with patients requiring insulin. Hence, guidelines for insulin use in type 2 DM patients in primary care were thought to be the need of the hour.

During a meeting of the National Diabetes Control Committee, it was decided that guidelines for insulin use in primary health care would be prepared by the Department of Non-communicable Disease Surveillance and Control based on the available evidence. The guidelines would incorporate the types of insulin that were available at the primary level in Oman which were:

- Short-acting regular,
- Intermediate-acting Neutral Protamine Hagedorn (NPH),
- Premixed human insulin (70% NPH and 30% regular)

A brief of the guidelines which includes indications, initiation and adjustment of insulin regimens are given below:

Indication of insulin therapy in out-patients with type 2 diabetes:

1. Newly diagnosed type 2 diabetes with one or more of the following

"Since a majority of type 2 DM patients are currently seen at the primary level, primary care physicians soon will find themselves overwhelmed with patients requiring insulin."

Website of International Agency for Research on Cancer: http://www-dep.iarc.fr

- Weight loss
- Extreme hyperglycemia (fasting plasma glucose > 14 mmol/l or random plasma glucose > 17 mmol/l)
- HbA1c >10%
- Ketonuria
- Severe dehydration with or without hyperosmolarity

2. Type 2 diabetes who did not achieve target glycemic control by optimal oral hypoglycemic drugs combinations for the last 3-6 weeks (table 1)
3. Inability to tolerate or contraindications to oral hypoglycemic drugs
4. High dose glucocorticoid therapy (cases of bronchial asthma or collagenic diseases, etc)
5. Post myocardial infarction
6. Pregnancy (to be referred to combined diabetes& obstetric clinic)

Table 1
Targets for glycemic control in type 2 DM

Indicator	Target
A1c(%)	< 7
Fasting / preprandial	4-7 mmol/l
2-h post prandial	< 10 mmol/l

Adapted from Diabetes Manual, Oman, second edition 2003/ ADA criteria

Initiation and adjustment of insulin regimens in DM Type 2 patients

Step 1
- Start with bedtime intermediate acting insulin (NPH) or bed time or morning long acting insulin analog (not available in the ministry of health)
- Initiate with 10 units or calculate the dose using: 0.2 units per kg ideal body weight

Step 2
- Check fasting glucose (fingerpick) usually daily
- Increase dose , typically by 2-4 units every 3 days until fasting levels are in the target range (4-7mmol/l)

Step 3
- If symptoms of hypoglycemia occur or fasting level <4 mmol/l
  then
- Reduce bed time dose by 4 units and recheck blood sugar on a daily basis

Step 4
Check A1c after 2-3 months

<7 %

Step 5
- Continue regimen.
- Check Hb A1c every 6 months

>=7 %

Step 6
- Ask for full glycemic cycle (given on next page)

"Start with bedtime intermediate acting insulin or bed time or morning long acting insulin analog Check fasting glucose daily Increase dose by 2-4 units every 3 days until fasting levels are in the target range."

The Full glycemic cycle

Pre breakfast out of range (>7 mmol/l)	Step 7 Increase* bed time NPH
2- h post breakfast out of range (>10 mmol/l)	Step 8 Add† pre-breakfast short acting if not there or increase* the dose if it is already there
Pre lunch out of range (>7 mmol/l)	Step 9 increase* morning the dose of pre-breakfast short acting insulin
2-h post lunch (>10 mmol/l)	Step 10 Add† or increase* the dose of pre-lunch short acting insulin
Pre dinner (>7 mmol/l)	Step 11 Add† or increase* the dose of pre-breakfast NPH / long acting insulin
2-h post dinner (>10 mmol/l)	Step 12 Add† or increase* the dose of short acting insulin pre dinner time
Bed time (> 8 mmol/l)	Step 13 Increase* the dose of short acting insulin at pre dinner time

† *start with 4 units*

**Use the same dose titration schedule that is adding 2-4 units according to blood sugar or deducting 2-4 units if hypoglycemia happened (refer to steps 2, 3)*

Note: On adding short acting/rapid acting insulin to insulin & oral drugs combination, stop sulfonylureas

"On adding short acting/rapid acting insulin to insulin & oral drugs combination, stop sulfonylureas."

Premixed insulin

It is better to do insulin dose titration using both types of insulin basic (NPH) and short acting insulin. after achieving the glycemic target and if both types were needed at a particular time or times and the dose proportion of basal/short acting insulin were found to fit that of premixed insulin 70/30 or 50/50 then premixed insulin can be used as it will be more convenient for the patient.

Example 1: a patient adjusted on morning NPH 20 units and regular insulin 10 units, can be given a total of 30 units of 70/30 premixed insulin.

Example 2: a patient adjusted on NPH 20 + regular insulin 20 can be given 40 units of premixed insulin 50/50.

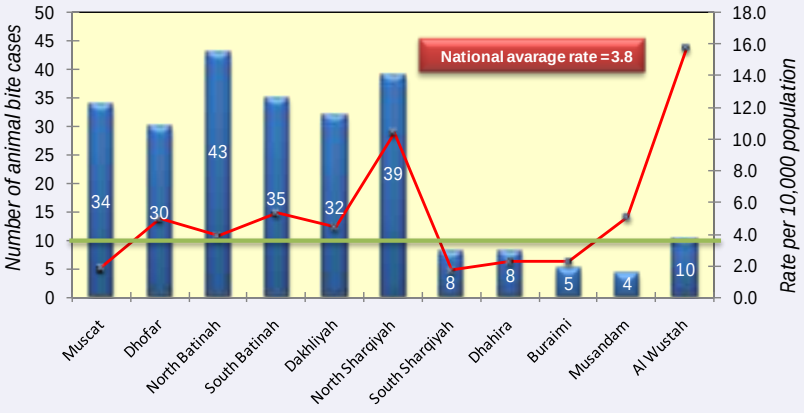
Adapted from…

1. Nathan DM et al, Management of hyperglycemia in type 2 diabetes: A consensus Algorithm for the initiation and Adjustment of Therapy. Diabetes Care 29 (8):1963-1972, 2006
2. Hirsch IB et al, A real –world approach to insulin therapy in primary care practice. Clinical Diabetes 23 (2):78-86, 2005
3. Joslin, diabetes center, clinical guidelines for pharmacological management of type 2 diabetes, 2004

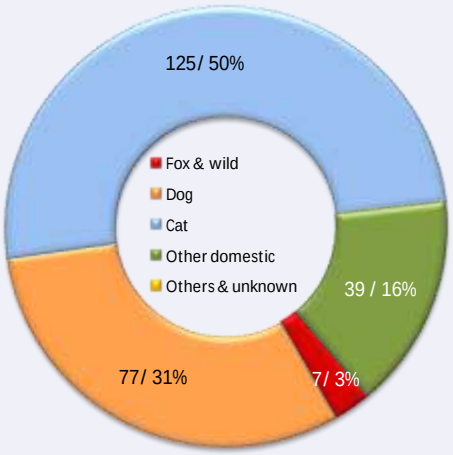
Animal Bite Surveillance Data

First quarter: January to March 2008

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



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



Brief Summary & Observations on

Communicable Disease Surveillance Data: First quarter - January to March 2008

Group A Diseases & Syndromes

- AFP: Four AFP cases were reported from Samail (Dakhliyah), Khaburah (North Batinah), Salalah and Sadha (Dhofar) which were later classified as non-polio-compatible with final diagnosis of Cerebral Ataxia, Fasciatis, Muscular Dystrophy and Guillian Barre Syndrome respectively.
- Fever & Rash illness: Of 173 cases reported 4 were confirmed as measles. 3 were from Suwaiq Wilayat while 1 was from Sohar. This cluster appears to be a continuation of the focal outbreak reported earlier from the same area. One case from Rustaq was classified as clinical (no sample). No rubella or CRS cases were reported in Q1.
- Meningococcal infections: One case of meningococcal meningitis was reported from Sohar Wilayat.
- Hib Meningitis: In Q1 'Zero' cases were reported
- Pulmonary Tuberculosis: Of the reported cases, 15 were sputum positive and 28 were sputum negative.
- Food poisoning: One major episode was reported from Ibri Wilayat involving 43 cases on 01/01/08 in Gulfar camp while other 8 minor episodes from North Batinah, North Sharqiyah and Dakhliyah regions accounted for 30 cases.
- Other diseases (unlisted): One suspect case of Chikungunya was reported from Muscat which was discarded after negative laboratory tests. No cases of travel associated Dengue fever were reported during Q1.

Group B Diseases

- Meningitis: 15 cases of meningitis other than Nm and Hib were reported. Of these 9 were from Sohar.
- Viral Hepatitis: Total 192 cases were reported of which 53.6% were confirmed as serotype A. The outbreaks of hepatitis A were evident in Liwa, Rustaq and Al Kamil Al Wafi Wilayat.
- Pertussis: 18 clinical cases were reported of which none were subjected to confirmation by IgM ELISA.
- Brucellosis: 17 cases were reported from the endemic Dhofar Governorate.
- Leishmaniasis: One sporadic case of Cutanious Leishmaniasis was reported from Al Hamra, Dakhliyah region.
- HIV [AIDS]: 23 new HIV infections were diagnosed and 9 AIDS cases were reported among the HIV positive chronic carriers.

Group C Diseases

- Varicella: In the 1st quarter a total of 18,838 cases of chickenpox (annualized incidence rate = 29.2/1,000 population) were reported from all over the country.
- Mumps: 148 cases of clinical mumps were reported through the passive surveillance system while from sentinel sites 55 cases were reported that were subjected to laboratory confirmation. Of these 20 were IgM positive.

Communicable Disease Surveillance Data: *By Month*

First quarter: January to March 2008

Priority Communicable Diseases	2008				2007			
	January	February	March	Total	Q1 Jan-Mar	Q2 Apr-Jun	Q3 Jul-Sep	Q4 Oct-Dec
Group A Diseases								
Cholera	-	-	-	0	-	-	3	2
Plague	Never reported							
Yellow Fever	Never reported							
Meningococcal Infection	-	-	1	1	-	-	1	2
H. influenzae type b, meningitis *(Hib)*	-	-	-	0	-	-	-	-
Rabies	-	-	-	0	-	-	-	-
Malaria (*Imported Cases*)	33	28	42	103	62	213	245	187
Pulmonary Tuberculosis (*sputum positive*)	5	2	8	15	37	24	37	18
Group A Syndromes								
Acute Flaccid Paralysis [Polio]	2	1	1	4	7	5	3	17
Fever & Rash-Illness	62	32	79	173	175	276	133	160
Clinical Cases	-	-	1	1	4	-	3	-
Measles (*IgM positive*)	3	1	-	4	1	2	1	4
Rubella (*IgM positive*)	-	-	-	0	-	-	-	-
Congenital Rubella Syndrome (*CRS*)	-	-	-	0	-	-	-	-
Severe Acute Respiratory Syndrome *(SARS)*	Never reported							
Acute Haemorrhagic Fever Syndrome	-	-	-	0	-	-	-	-
Food Poisoning (*Infectious origin*)	43	18	19	80	70	124	208	116
Group B Diseases								
Bacterial Meningitis *(other than Hib & Nm)*	-	2	1	3	6	5	5	8
Viral Meningitis	-	-	-	0	1	3	2	2
Other Meningitis (*unspecified*)	3	5	4	12	15	9	3	11
Acute Viral Hepatitis (*Total*)	37	58	97	192	158	215	143	134
Acute Viral Hepatitis A	23	44	36	103	88	136	87	61
Acute Viral Hepatitis B	1	4	4	9	16	14	2	7
Acute Viral Hepatitis C	2	-	-	2	7	7	8	3
Acute Viral Hepatitis D (*amongst B positive*)	-	-	-	0	-	-	-	-
Acute Viral Hepatitis E	-	-	-	0	5	1	-	3
Acute Viral Hepatitis (*unspecified*)	11	10	57	78	42	57	46	60
Typhoid & Paratyphoid Fever	4	2	3	9	11	18	12	13
Clinical Pertussis [IgM positive]	3	9	6	18	23	35	34	19
Trachoma (*active*)	2	3	9	14	36	35	20	6
Brucellosis *(human)*	7	7	3	17	25	24	25	13
Leishmaniasis Cutanious (CL)	1	-	-	1	3	-	1	2
Leishmaniasis Visceral (VL)	-	-	-	0	-	-	-	-
Schistosomiasis (*intestinal*)	-	-	-	0	-	-	-	-
Pulmonary Tuberculosis (*sputum negative*)	2	3	4	9	6	8	10	3
Extra-pulmonary Tuberculosis	13	4	11	28	29	21	33	14
Leprosy	-	-	-	0	-	-	-	-
HIV [AIDS]	5 [2]	4 [4]	14 [3]	23 [9]	15 [11]	10 [9]	10 [8]	7 [2]
Group C Diseases and Syndromes								
Influenza Like Illnesses (*ILI*)	3512	3130	4308	10950	12619	8673	11431	14789
aLRTI & Pneumonia *(childhood)*	1825	1321	1600	4746	5026	4237	2947	6021
Acute 'Watery' Diarrhoea *(childhood)*	3563	3695	3525	10783	11652	8224	6302	8797
Chickenpox	5632	6131	7075	18838	12947	18637	10461	11956
Clinical Mumps [Sentinel sites-IgM positive]	49 [8]	47 [7]	52 [5]	148 [20]	182	173	124 [10]	153 [22]

Communicable Disease Surveillance Data: *By Regions*

First quarter: January to March 2008

Priority Communicable Diseases	Total	Muscat	Dhofar	North Batinah	South Batinah	Dakhli-yah	North Sharqi-yah	South Sharqi-yah	Dhahira	Buraimi	Musan-dam	Al Wustah
Group A Diseases												
Cholera	0	-	-	-	-	-	-	-	-	-	-	-
Plague	Never reported											
Yellow Fever	Never reported											
Meningococcal Infection	1	-	-	1	-	-	-	-	-	-	-	-
H. influenzae type b, meningitis *(Hib)*	0	-	-	-	-	-	-	-	-	-	-	-
Rabies	0	-	-	-	-	-	-	-	-	-	-	-
Malaria (*Imported Cases*)	103	45	6	15	9	10	5	3	2	4	-	4
Pulmonary Tuberculosis (*sputum +ve*)	15	4	-	8	-	-	-	-	2	-	1	-
Group A Syndromes												
Acute Flaccid Paralysis [Polio]	4	-	2	1	-	1	-	-	-	-	-	-
Fever & Rash-Illness	173	16	15	39	30	21	7	31	12	-	-	2
Clinical Cases	1	-	-	-	1	-	-	1	-	-	-	-
Measles (*IgM positive*)	4	-	-	4	-	-	-	-	-	-	-	-
Rubella (*IgM positive*)	-	-	-	-	-	-	-	-	-	-	-	-
Congenital Rubella Syndrome (*CRS*)	0	-	-	-	-	-	-	-	-	-	-	-
Severe Acute Respiratory Syndrome *(SARS)*	Never reported											
Acute Haemorrhagic Fever Syndrome	0	-	-	-	-	-	-	-	-	-	-	-
Food Poisoning (*Infectious origin*)	80	5	-	15	-	4	4	-	43	-	-	9
Group B Diseases												
Bacterial Meningitis *(other than Hib & Nm)*	3	1	-	-	-	1	-	1	-	-	-	-
Viral Meningitis	0	-	-	-	-	-	-	-	-	-	-	-
Other Meningitis (*unspecified*)	12	1	1	9	-	-	1	-	-	-	-	-
Acute Viral Hepatitis (*Total*)	192	8	21	49	37	6	6	49	4	7	4	1
Acute Viral Hepatitis A	103	7	-	30	23	3	2	32	-	5	1	-
Acute Viral Hepatitis B	9	-	3	1	-	1	-	4	-	-	-	-
Acute Viral Hepatitis C	2	-	-	-	-	-	-	1	1	-	-	-
Acute Viral Hepatitis D (*amongst B +ve*)	0	-	-	-	-	-	-	-	-	-	-	-
Acute Viral Hepatitis E	0	-	-	-	-	-	-	-	-	-	-	-
Acute Viral Hepatitis (*unspecified*)	78	1	18	18	14	2	4	12	3	2	3	1
Typhoid & Paratyphoid Fever	9	1	2	1	-	1	1	-	2	-	1	-
Clinical Pertussis [IgM positive]	18	5	4	-	4	-	4	1	-	-	-	-
Trachoma (*active*)	14	-	-	-	3	4	7	-	-	-	-	-
Brucellosis *(human)*	17	-	17	-	-	-	-	-	-	-	-	-
Leishmaniasis Cutanious (CL)	1	-	-	-	-	1	-	-	-	-	-	-
Leishmaniasis Visceral (VL)	0	-	-	-	-	-	-	-	-	-	-	-
Schistosomiasis (*intestinal*)	0	-	-	-	-	-	-	-	-	-	-	-
Pulmonary Tuberculosis (*sputum negative*)	9	4	2	1	-	-	-	1	-	-	1	-
Extra-pulmonary Tuberculosis	28	9	10	3	1	1	1	2	1	-	-	-
Leprosy	0	-	-	-	-	-	-	-	-	-	-	-
HIV [AIDS]	23 [9]	5 [2]	1 [2]	9 [4]	-	1 [0]	0 [1]	-	5 [0]	1 [0]	1 [0]	-
Group C Diseases and Syndromes												
Influenza Like Illnesses (*ILI*)	10950	-	258	-	54	-	10574	-	60	-	4	-
aLRTI & Pneumonia *(childhood)*	4746	23	692	1018	1182	778	214	762	7	-	47	23
Acute 'Watery' Diarrhoea *(childhood)*	10783	684	1302	2693	372	3023	3	972	1127	374	233	-
Chickenpox	18838	495	1486	4049	3287	4049	758	1863	1867	491	164	329
Clinical Mumps [IgM positive]	148 [20]	13	30	34 [6]	16 [3]	7 [1]	8 [2]	16 [4]	11 [4]	3	-	1

Communicable Disease Surveillance Data: *By Wilayat*

First quarter: January to March 2008

Region / Governorate	Wilayat	AFP	Measles	Rubella	Meningococcal infection	Viral Hepatitis A	Viral Hepatitis B	Malaria	Pertussis	TB Total	TB Sputum positive
Muscat	Muscat									1	1
	Mutrah							13	1	2	
	Bawsher					1		24	1	7	
	Seeb					2		5	1	5	2
	Al Amerat					3		2	2	1	1
	Qurayat					1		1		1	
Dhofar	Salalah	1					3	6	4	7	
	Taqah									2	
	Mirbat									1	
	Thumrait									1	
	Sadha	1									
	Rakhyut										
	Dhalkut										
	Shaleem									1	
	Muqshan										
	Mazyoona										
North Batinah	Sohar		1		1	1		12		3	2
	Suwaiq		3					1		4	2
	Saham							1		4	3
	Shinas					8				1	1
	Liwa					21	1	1			
	Khaburah	1									
South Batinah	Rustaq					22		5	1		
	Barka							3	1	1	
	Musanah										
	Nakhl								2		
	Wadi Maawil										
	Al Awabi					1		1			
Dakhliyah	Nizwa					1		3		1	
	Samail	1				2		1			
	Bahla						1				
	Izki							2			
	Adam							2			
	Al Hamra										
	Manah							2			
	Bidbid										
North Sharqiyah	Ibra					1				1	
	Mudaibi							2	2		
	Bidiyah					1		2			
	AL Qabil							1			
	Dima Wa Al Tayeen										
	Wadi Bani Khalid								2		
South Sharqiyah	Sur					2	1	1	1	3	
	Jalan Bani Bu Ali					8					
	Jalan Bani Bu Hassan					3	1	1			
	Al Kamil Wa Al Wafi					19	1				
	Masirah						1	1			
Dhahira	Ibri							2		1	1
	Yankul										
	Dhank									1	1
Buraimi	Buraimi					5		3		1	
	Mahda										
	Sunaina							1			
Musandam	Khasab					1				1	
	Daba Al Biya									1	1
	Bukha										
	Madha										
Al Wustah	Haima							4			
	Duqum										
	Mahoot										
	Al Jazer										
Total		4	4	0	1	103	9	103	18	52	15

Communicable Disease Surveillance Data: *Age Distribution*

First quarter: January to March 2008

Priority Communicable Diseases	Total	Age groups in years								
		< 1	1-4	5-9	10-14	15-19	20-24	25-34	35-45	45+
Group A Diseases										
Cholera	0	-	-	-	-	-	-	-	-	-
Plague	Never reported									
Yellow Fever	Never reported									
Meningococcal Infection	1	-	-	-	-	-	-	-	1	-
H. influenzae type b, meningitis *(Hib)*	0	-	-	-	-	-	-	-	-	-
Rabies	0	-	-	-	-	-	-	-	-	-
Pulmonary Tuberculosis (sputum positive)	15	-	-	-	1	2	4	3	1	4
Group A Syndromes										
Acute Flaccid Paralysis [Polio]	4	-	1	3	-	-	-	-	-	-
Fever & Rash-Illness	173	50	92	23	-	2	2	2	2	-
Clinical Cases	1	-	1	-	-	-	-	-	-	-
Measles (*IgM positive*)	4	3	-	1	-	-	-	-	-	-
Rubella (*IgM positive*)	0	-	-	-	-	-	-	-	-	-
Congenital Rubella Syndrome (*CRS*)	0	-	-	-	-	-	-	-	-	-
Severe Acute Respiratory Syndrome *(SARS)*	Never reported									
Acute Haemorrhagic Fever Syndrome	0	-	-	-	-	-	-	-	-	-
Food Poisoning (*Infectious origin*)	80	-	1	8	5	-	14	35	13	4
Group B Diseases										
Bacterial Meningitis *(other than Hib & Nm)*	3	1	-	-	-	1	-	-	1	-
Viral Meningitis	0	-	-	-	-	-	-	-	-	-
Other Meningitis (*unspecified*)	12	5	2	2	2	-	1	-	-	-
Acute Viral Hepatitis (*Total*)	192	1	48	62	37	17	4	9	5	9
Acute Viral Hepatitis A	103	1	35	36	21	10	-	-	-	-
Acute Viral Hepatitis B	9	-	-	-	-	1	-	2	1	5
Acute Viral Hepatitis C	2	-	-	-	-	-	-	1	1	-
Acute Viral Hepatitis D (*amongst B positive*)	0	-	-	-	-	-	-	-	-	-
Acute Viral Hepatitis E	0	-	-	-	-	-	-	-	-	-
Acute Viral Hepatitis (*unspecified*)	78	-	13	26	16	6	4	6	3	4
Typhoid & Paratyphoid Fever	9	1	-	-	1	-	1	-	3	3
Clinical Pertussis [IgM positive]	18	12	6	-	-	-	-	-	-	-
Trachoma (*active*)	14	-	-	10	2	1	-	1	-	-
Brucellosis *(human)*	17	-	4	7	4	-	1	1	-	-
Leishmaniasis Cutanious (CL)	1	-	-	-	-	-	-	1	-	-
Leishmaniasis Visceral (VL)	0	-	-	-	-	-	-	-	-	-
Schistosomiasis (*intestinal*)	0	-	-	-	-	-	-	-	-	-
Pulmonary Tuberculosis (*sputum negative*)	9	-	1	-	1	1	1	1	1	3
Extra-pulmonary Tuberculosis	28	-	-	-	-	2	5	7	4	10
Leprosy	0	-	-	-	-	-	-	-	-	-
HIV [AIDS]	23 [9]	-	1 [0]	-	-	1 [0]	6 [2]	8 [1]	2 [3]	5 [3]

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.*

"The wisest mind has something yet to learn."

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Concept, layout & Design
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