



Kingdom of Bahrain
Ministry of Health
Public Health Directorate

Communicable Diseases *Bulletin*

The Emergence of Severe Acute Respiratory Syndrome (SARS): Rethinking our Preparedness and Response System

According to the epidemiological transition theory, the disease pattern in the kingdom of Bahrain is dominated by the third stage man-made chronic diseases. These include mainly cardiovascular diseases, cancer, diabetes mellitus and injuries. Together these diseases now form the major force of morbidity and mortality. On the other hand, great achievement has been recorded in eliminating some of vaccine - preventable infectious diseases, such as poliomyelitis, diphtheria, tetanus and pertusis.

This pattern is now characterizing many countries in the developing world, and in some developed countries, the transition has gone a stage further with significant decline in cardiovascular diseases, especially the Ischaemic Heart Disease.

Unfortunately, this has conveyed a false sense that infectious diseases has receded for good, and hence caused complacency in health care systems.

Infectious diseases has not waited so long before re-emerging as a major threat to public health, and this time with severe fatalities and without a

promising preventive or therapeutic interventions in the foreseen future. The past two decades, witnessed the emergence of Human Immune Deficiency Virus (HIV), Legionnaires' disease, and some of viral hemorrhagic fevers (e.g. Ebola and Rift valley fever).

It also witnessed the reemergence of Tuberculosis and Malaria where drug- resistant strains of T.B. bacteria and malaria parasites became widely recorded.

Now the SARS virus emerged taking us on surprise and causing chaos and confusion among scientists, politicians and the public. Some scientists said that it combines structural features of two previously known viruses, while others said that it used to cause disease in animals only. But, the truth is that human species is never totally Immuned against unknown infectious diseases or those one day known to be infectious to non-human species.

This situation sends us a strong message for rethinking of our public health services in general, but surveillance and epidemic preparedness system in particular. Only through this committed and careful rethinking toward strengthening of public health capacities and deployment of sufficient resources, can we prepare ourselves to a safe and pleasant future.

Editorial Board:

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Dr. Mariam Al Shetti
Members
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Acknowledgment:

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Reported Incidence of Selected Communicable Diseases 4th Quarter (Oct-Dec), 1999-2002

Figure 1 Viral Hepatitis type A

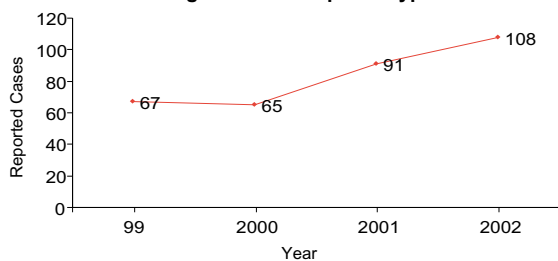


Figure 2 Viral Hepatitis type B

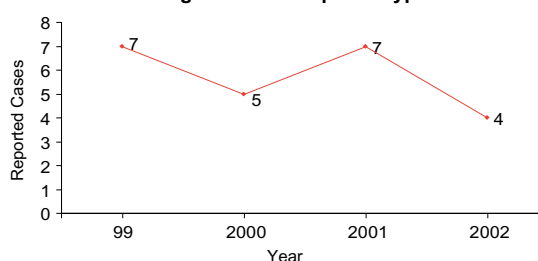


Figure 3 Pulmonary TB

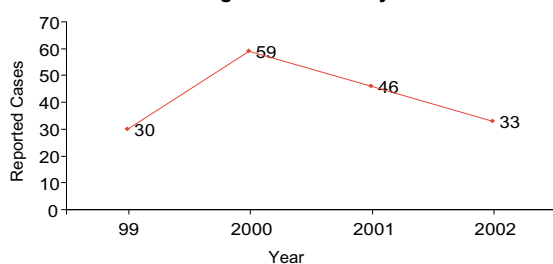


Figure 4 Extra-Pulmonary TB

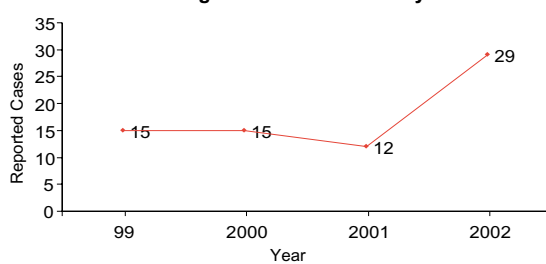


Figure 5 Measles

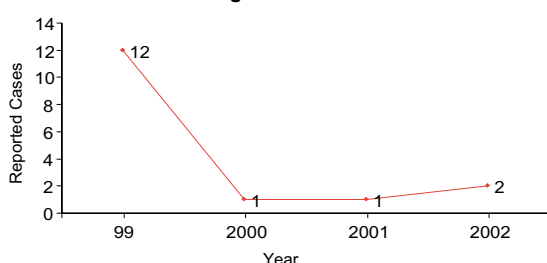
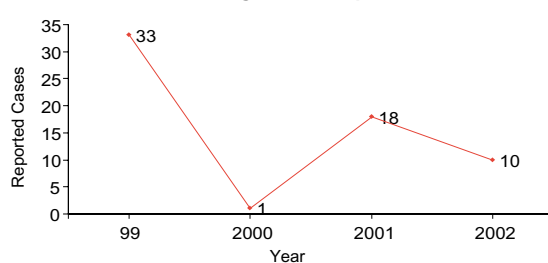


Figure 6 Mumps



Reported Incidence of Selected Communicable Diseases 1st Quarter (Jan-Mar), 1999-2003

Figure 7 Viral Hepatitis type A

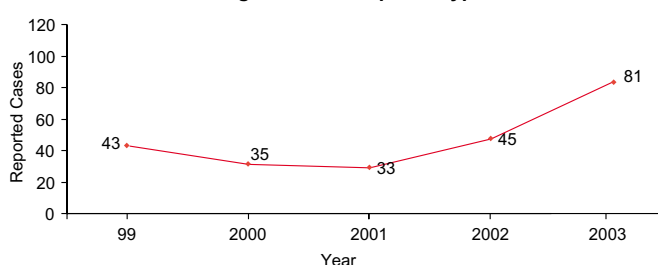


Figure 8 Viral Hepatitis type B

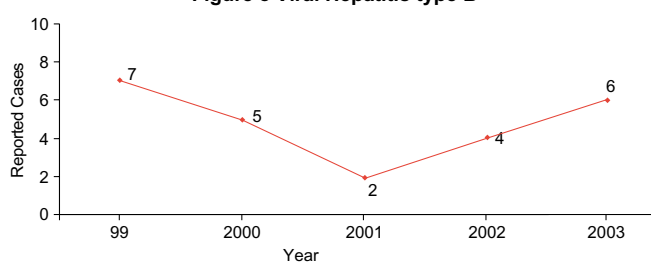


Figure 9 Pulmonary TB

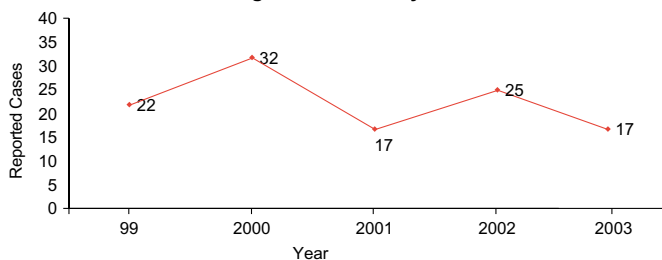


Figure 10 Extra-Pulmonary TB

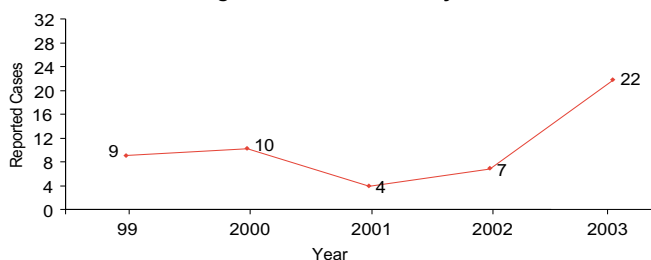


Figure 11 Measles

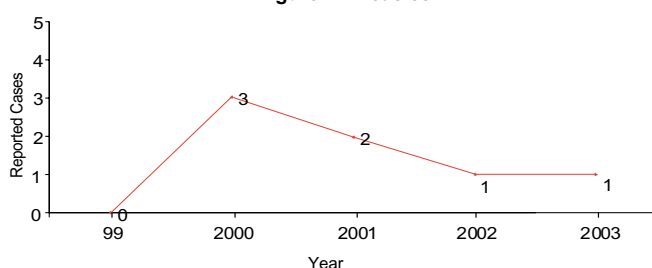
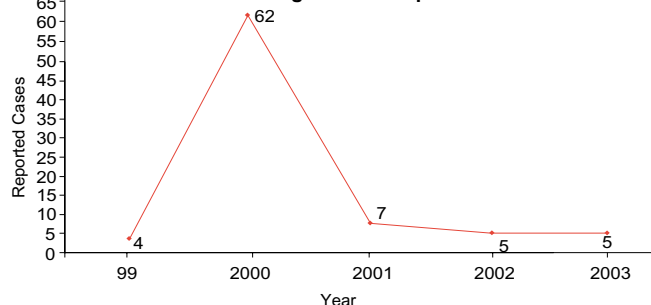


Figure 12 Mumps



COMMUNICABLE DISEASES IN BAHRAIN

Typhoid fever

In 2002, 34 cases of typhoid fever were reported, yielding an incidence rate of 5 cases per 100,000 population. This represents a -17 % decrease in the total for 2002 compared with 41 cases in 2001 (Table 1). Of the 34 cases, 12 were imported

Of the total , 10 cases (29.4 %) were in the 0-14 years age group (Table 3).

Paratyphoid fever

In 2002, 3 cases of paratyphoid fever were reported (Table 1). This represents a 50% increase when compared with the 2001 total of 2 cases. All cases were imported.

Shigellosis

In 2002, 187 cases of shigellosis were reported, for a rate of 27.8 cases per 100,000 population (Table 2). This represents a 58.5% increase from the total in 2001. *Sh. flexneri* was the predominant species and accounted for 62.5 % of the total cases, followed by *Sh. sonnei* 27.8 %. *Sh. boydi* and *Sh. dysenteriae* accounted for 5.8 % and 4 % respectively.

Salmonellosis

A total of 903 cases of salmonellosis were reported in 2002, a 294% increase from the 2001 total of 229 cases. The incidence rate of salmonellosis was 134 per 100,000 population. An outbreak of salmonellosis had occurred in June where, 618 patients were affected.

Age and sex distribution was not available for all cases. The laboratory testing recovered salmonella enteritides organism from over a hundred cases. Two of the tested food handlers were found to be positive. The same micro-organism was detected from the egg slicer.

Measles

A total of 8 cases were reported, 5 of which were in the 1-4 years age range and 2 were adults. Of the total, 3 were not vaccinated.

Meningitis

Of 37 cases of meningitis that were reported in 2002, 32 were due to aseptic meningitis, 3 due to streptococcus, 2 due to *E. coli* and *Citrobacter*. Specimens of CSF, sera, throat swab and stool from 28 cases were forwarded to the WHO Center for Virus Reference and Research in Lyon, France. The results were confirmed in 13 cases to be due to echovirus type 11 (4 cases), echovirus type 6 (4) echovirus type 25 (2), non polio enterovirus (2), echovirus type 16 (1) and in 15 cases there was no proved infection. The age group and sex distribution for the cases is shown in tables 4 and 5.

Tuberculosis

Pulmonary Tuberculosis

A total of 128 cases of pulmonary tuberculosis were reported in 2002, a 16.5% increase from 110 cases reported in 2001. The case rate among Bahrainis was highest (64.9/100,000 population)

for elderly persons in the 65 years and above age group (Table 6). The case rate among non-Bahrainis was highest (68.9 /100,000 population) for persons in the same age group.

There was no case of pulmonary tuberculosis in the 0-14 years age group.

Extra-Pulmonary Tuberculosis

In 2002, 66 cases of extra-pulmonary T.B were reported. Of the total, 42 (63.6%) were non-Bahrainis. Among the latter group 22 were Indians. There were 3 cases in the 0-4 years age group (Table 6). The vast majority (71.4%) of non Bahraini cases occurred among persons in the 25-34 years age group.

Leprosy

During 2002, 6 cases of leprosy were reported. All of them were non-Bahraini in the 28-38 years age range.

Malaria

A total of 45 cases of malaria were reported to Communicable Diseases Unit during the year 2002, a 16.6 % decrease from the 2001 total of 54 cases. Of the total, 30 (66%) were due to *P.vivax*, and 15 (33%) due to *P. falciparum*. All of the cases were imported.

Table 1: Reported incidence of communicable diseases - Bahrain 1995 - 2002

Diseases	1995	1996	1997	1998	1999	2000	2001	2002	Change of 2002 figures from that of 2001	% Change
Typhoid Fever	71	36	17	24	35	21	41	34	-7	-17.07
Paratyphoid Fever	9	5	11	8	6	3	2	3	1	50.00
Salmonellosis	277	215	246	277	319	257	229	903	674	294.32
Shigellosis	156	214	224	191	162	190	118	187	69	58.47
Amoebiasis	74	30	35	48	29	13	4	10	6	150.00
Viral Hepatitis	174	183	201	197	205	161	241	244	3	1.24
Type A	129	145	168	163	184	143	179	206	27	15.08
Type B	40	35	30	34	19	18	21	18	-3	-14.29
Type C									0	0.00
Type Non A Non B	5	3	3	0	2	0	41	20	-21	-51.22
Food Poison (Inf. & Intox)	53	23	37	62	58	58	121	123	2	1.65
Poliomyelitis	0	0	0	0	0	0	0	0	0	0.00
Acute Flaccid Paralysis	2	2	2	4	4	2	7	3	-4	-57.14
Streptococcal Sore Throat	287	271	316	221	150	146	183	190	7	3.83
Diphtheria*	0	0	0	0	0	0	0	0	0	0.00
Whooping Cough**	0	0	0	0	0	0	0	0	0	0.00
Meningococcal Infection	0	0	2	4	1	1	3	0	-3	-100.00
Other Meningitis	300	218	34	37	48	59	40	37	-3	-7.50
Pulmonary TB	98	121	110	172	98	160	110	128	18	16.4
Non-Pulmonary TB	53	35	44	44	46	54	49	66	17	34.7
Chickenpox	3450	3355	3162	2973	1385	1998	1684	2469	785	46.62
Mumps	68	61	48	34	44	167	31	31	0	0.00
Influenza	6897	7240	7028	5939	2073	2477	2274	2629	355	15.61
Measles	3	74	4	4	38	6	5	8	3	60.00
Rubella	10	8	11	5	2	2	2	2	0	0.00
Syphilis	59	98	133	117	105	220	149	248	99	66.44
Gonococcal Infection	430	307	434	307	193	235	238	417	179	75.21
Leprosy	5	11	6	5	6	2	7	6	-1	-14.29
Neonatal Tetanus***	0	0	0	0	0	0	0	0	0	0.00
Non-Neonatal Tetanus	0	0	0	0	0	0	0	0	0	0.00
Malaria (P.vivax)****	161	146	140	110	65	53	46	30	-16	-34.78
Malaria (P.falciparum)****	31	26	22	19	14	5	8	15	7	87.50

No cases of Cholera, Brucellosis, Anthrax, Plague, Relapsing fever and Typhus fever were reported in the years 1993 - 2002.

* No cases of Diphtheria reported since 1982

** No cases of Whooping Cough reported since 1989

*** No cases of neonatal tetanus reported since 1985

**** All imported cases - no indigenous transmission since 1979

Table 2: Reported communicable diseases incidence rates - Bahrain 1995 - 2002

Diseases	1995	1996	1997	1998	1999	2000	2001	2002
Typhoid Fever	12.3	6.0	2.7	3.7	5.3	3.0	6.3	5.1
Paratyphoid Fever	1.6	0.8	1.8	1.2	0.9	0.4	0.3	0.4
Salmonellosis	48.0	35.9	39.7	43.1	47.9	37.2	35.0	134.4
Shigellosis	27.0	35.7	36.1	29.7	24.3	27.5	18.0	27.8
Amoebiasis	12.8	5.0	5.6	7.5	4.4	1.9	0.6	1.5
Viral Hepatitis	30.1	30.6	32.4	30.6	30.8	23.3	36.8	36.3
Type A	22.3	24.2	27.1	25.4	27.6	20.7	27.3	30.6
Type B	6.9	5.8	4.8	5.3	2.9	2.6	3.2	2.7
Type C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Type Non A Non B	0.9	0.5	0.5	0.0	0.3	0.0	6.3	3.0
Food Poison (Inf. & Intox)	9.2	3.8	6.0	9.6	8.7	8.4	18.5	18.3
Poliomyelitis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acute Flaccid Paralysis	0.3	0.3	0.3	0.6	0.6	0.3	1.1	0.4
Streptococcal Sore Throat	49.7	45.3	50.9	34.4	22.5	21.1	28.0	28.3
Diphtheria*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Whooping Cough**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Meningococcal Infection	0.0	0.0	0.3	0.6	0.2	0.1	0.5	0.0
Other Meningitis	51.9	36.4	5.5	5.8	7.2	8.5	6.1	5.5
Pulmonary TB	17.0	20.2	17.7	26.8	14.7	23.2	16.8	19
Non-Pulmonary TB	9.2	5.8	7.1	6.8	6.9	7.8	7.5	9.8
Chickenpox	597.2	560.5	509.7	462.4	207.8	289.2	257.2	367.3
Mumps	11.8	10.2	7.7	5.3	6.6	24.2	4.7	4.6
Influenza	1194	1209	1133	923.7	311.1	358.6	347.4	391.1
Measles	0.5	12.4	0.6	0.6	5.7	0.9	0.8	1.2
Rubella	1.7	1.3	1.8	0.8	0.3	0.3	0.3	0.3
Syphilis	10.2	16.4	21.4	18.2	15.8	31.8	22.8	36.9
Gonococcal Infection	74.4	51.3	70.0	47.7	29.0	34.0	36.4	62.0
Leprosy	0.9	1.8	1.0	0.8	0.9	0.3	1.1	0.9
Neonatal Tetanus***	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-Neonatal Tetanus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaria (P.vivax)****	27.9	24.4	22.6	17.1	9.8	7.7	7.0	4.5
Malaria (P.falciparum)****	5.4	4.3	3.5	3.0	2.1	0.7	1.2	2.2

No cases of Cholera, Brucellosis, Anthrax, Plague, Relapsing fever and Typhus fever were reported in the years 1993 - 2002.

* No cases of Diphtheria reported since 1982

** No cases of Whooping Cough reported since 1989

*** No cases of neonatal tetanus reported since 1985

**** All imported cases - no indigenous transmission since 1979

Table 3: Selected communicable diseases by age group and rate per 100,000 population, Bahrain 2002

Age Groups (Years)	Population Estimates 2002	Typhoid Fever		Paratyphoid fever		Shigellosis		Salmonellosis		Measles	
		Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	cases	Rate
0 — 4	62,302	6	9.6	0	0	62	99.5	177	284.1	5	8
5 — 14	124,802	4	3.2	1	0.8	70	56.1	56	44.9	1	0.8
15 — 24	113,190	10	8.8	0	0	17	15	31	27.4	1	0.9
25 — 34	146,571	9	6.1	1	0.7	15	10.2	52	35.5	1	0.7
35—44	124,824	3	2.4	0	0	9	7.2	34	27.2	0	0
45—54	61,111	1	1.6	0	0	3	4.9	11	18.0	0	0
55—64	22,455	0	0	0	0	4	17.8	9	40.1	0	0
65+	16,870	1	5.9	1	5.9	7	41.5	6	35.6	0	0
Total	672125	34	5.1	3	0.4	187	27.8	376	55.9	8	1.2

Table (4) : Annual Distribution of Meningitis (Bacterial) By age group, sex, nationality during 2002

Age Group	Bahraini		Non-Bahraini		TOTAL
	Male	Female	Male	Female	
0 - < 1		1	1		2
1 - 4					0
5 - 14	2				2
15 - 24					0
25 - 34	1				1
35 - 44					0
45 - 54					0
55 - 64					0
65+					0
Total	3	1	1	0	5
Imported					0
Indigenous	3	1	1	0	5

Table (5) : Annual Distribution of Meningitis (Viral) By age group, sex, nationality during 2002

Age Group	Bahraini		Non-Bahraini		TOTAL
	Male	Female	Male	Female	
0 - < 1	3	4	1	1	9
1 - 4		1			1
5 - 14	14	2	1	2	19
15 - 24	1				1
25 - 34		1			1
35 - 44					0
45 - 54	1				1
55 - 64					0
65+					0
Total	19	8	2	3	32
Imported					0
Indigenous	19	8	2	3	32

Table 6: Reported number, and rate per 100,000 population of Pulmonary and Extra-Pulmonary Tuberculosis cases by age group, and nationality - Bahrain 2002

Age Group in Years	Population Estimates	Population Estimates		Pulmonary T.B				Extra-Pulmonary T.B.			
		Bahraini	Non-Bahraini	Bahraini		Non-Bahraini		Bahraini		Non-Bahraini	
				No.	Rate	No.	Rate	No.	Rate	No.	Rate
0 - 4	62,302	49,783	12,519	0	0	0	0	2	4	1	8
5 - 14	124,802	102,907	21,895	0	0	0	0	1	1	2	9.1
15 - 24	113,190	85,096	28,094	3	3.5	17	60.5	4	4.7	5	17.8
25 - 34	146,571	60,617	85,954	6	9.9	42	48.9	4	6.6	22	25.6
34 - 44	124,824	55,726	69,098	5	9	29	42	4	7.2	8	11.6
45 - 54	61,111	31,343	29,768	4	12.8	9	30.2	3	9.6	4	13.4
55 - 64	22,455	17,051	5404	1	5.9	1	18.5	0	0	0	0
65+	16,870	15,418	1452	10	64.9	1	68.9	6	38.9	0	0
Total	672125	417941	254184	29	6.9	99	38.9	24	7	42	5

HISTORY OF TUBERCULOSIS IN BAHRAIN

According to medical records, tuberculosis (TB) has been prevalent in Bahrain since the early 1900's. The main diseases that were prevalent in the 1920's and 1930's were malaria, trachoma and pulmonary tuberculosis.

In 1940, the South Naim Clinic Hospital was used for isolating TB cases. In 1946, a Public Health and Welfare Committee was set up and comprised of the heads of hospital, education and municipality. Its main functions were to study communicable diseases that were a public health problem, sanitation, and maternal and infant welfare.

In 1949, a 6 room block was built for male TB patients west of the psychiatric hospital. A block of 18 beds for female TB patients was built west of the male isolation hospital.

A floor was added to the male TB block in 1951 to provide 13 rooms. Patients with advanced T.B were sent to Miraj Sanatorium in India.

In 1952, Dr. Holm, Head of WHO's Tuberculosis Unit surveyed Bahrain for TB control and proposed the following :

- 1) A chest clinic
- 2) A TB Hospital of 50 beds and
- 3) mass BCG vaccination.

In 1952, Dr. Crowden was appointed as the medical officer for general medicine and TB in Bahrain.

In 1954, an amended plan for TB control was put into operation and a chest clinic was built west of the psychiatric hospital. An X-ray machine was installed and a laboratory began to function. A 16-bed block for male TB patients was added to the isolation hospital.

In 1955, Dr.M.B Hoda, the first TB trained doctor with a Thoracic Diseases Diploma was appointed to supervise the new TB center.

In 1956, the Chest Diseases Hospital of 50 beds was opened by H.H Sheikh Salman Al Khalifa, and was immediately filled. The old TB block was utilized as male isolation

hospital. In the same year, a BCG vaccination trial was conducted in the boys schools. 373 students were given BCG vaccination.

In 1960, an extra wing of 34 beds was added to the male TB sanatorium.

The first Manama dispensary of the 1930's was pulled down and rebuilt for female TB patients in 1961.

Dr. Rashid Fulayfil returned to Bahrain in 1962 after receiving training in tuberculosis and joined the Chest Diseases Hospital as a TB specialist. The female TB sanatorium with 62 beds was completed in 1963. In 1967, female patients were shifted from the isolation hospital to the Chest Diseases Hospital. The total bed capacity gradually rose to 101 beds.

A policy was enforced in 1982, whereby all TB cases among expatriates were repatriated after the initial phase of treatment. In 1983 the Chest Diseases Hospital stopped functioning as the incidence among Bahrainis had decreased to small numbers. Thereafter, all TB patients needing admission were referred to the Pulmonary Unit in the Salmaniya Medical Complex.

Figure 13. Trends of Pulmonary Tuberculosis incidence, 1993-2002

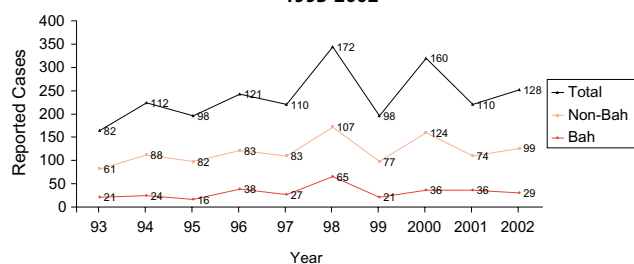
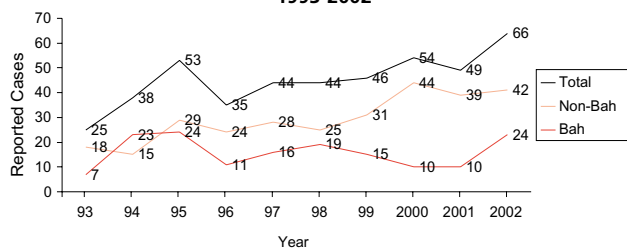


Figure 14. Trends of Extra-Pulmonary TB incidence, 1993-2002



SEXUALLY - TRANSMITTED DISEASES (STDs)

Sexually - Transmitted Diseases (STDs) in Bahrain are under-reported, because many patients prefer to seek treatment from private sector. The reason for this is the stigma attached to these diseases, as well as people thinks that public health sector might lack confidentiality. In 2002, gonorrhoea was the most frequent reported STD, and syphilis came second.

Gonorrhoea

In 2002, 73 cases of gonorrhoea were reported in Bahrain , from the total 7 cases were female.

Rates of reported gonococcal infection in 2002 was 10.9 cases per 100,000.

Syphilis

The number of the cases reported in 2002 is 36, from the total 8 were female.

Other sexually transmitted Diseases: the third most common cause of STD in Bahrain is non-gonococcal urethritis (18 cases), followed by bacterial vaginosis (14 cases) .



A sub-regional meeting for the GCC countries for development of sexual transmitted diseases assessment and control plans was held in Muscat, Oman during 10-13 March 2003. The objectives of the meeting were to review the preventive and care programmes in the

GCC, to assess STD burden, and to develop operational plans for STD surveillance.

The Ministry of Health representatives participated in the meeting and now are preparing a plan of action.