

## النشرة الوبائية السعودية

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## Profile of Diabetic Omani Pilgrims to Makkah

The annual pilgrimage to Makkah (Mecca), *Hajj*, is stressful, especially for diabetics, elderly, and others with chronic illnesses. For the past three years an average of five diabetic Omani *Hajjees* (DOH) developed serious complications and could not complete their religious pilgrimage. To identify diabetic complications and to assess the needs of the Omani diabetics during *Hajj* (DOH), the Field Epidemiology Training Program established a special diabetes clinic for Omani *Hajjees* in Mina. We ascertained socio-demographic characteristics and knowledge about complications of diabetes from all DOH attending the clinic. We tested their random blood sugar (RBS).

Of 10,800 Omanis who performed *Hajj* in 1996, 169 *Hajjees* with diabetes mellitus visited the clinic (Table). Of DOH, (98%) were medically examined in Oman before their departure for *Hajj*. Four percent were insulin dependent (IDDM), 7% practiced dietary control, and 89% required oral hypoglycemic agents. All *Hajjees* with IDDM and 96% on oral hypoglycemics brought their medicines with them, 2.4% of DOH had RBS <75 mg/dL, 14% 75-110 mg/dL, and 49% were hyperglycemic (RBS > 200 mg/dL). About half of the DOH (48%) knew the clinical presentation of hyperglycemia, a forth (24%) about symptoms of hypoglycemia. Only 9.5% were trained to test themselves for blood sugar. DOH moved between Holy places (four journeys; five to 15 Km long) on foot (40%), by car or bus (31%), or both (29%). Only one DOH wore protective shoes, 70% did not have identification wristbands that showed their diabetic status and treatment regimen. Four per cent suffered from heat exhaustion, 3% had

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# Measles and Rubella Outbreak During Hajj, Security Forces, Makkah, 1996

In April 1997 (Dhul Qu'edah 1417 H), the Preventive Medicine Department (PMD) of the Makkah Health Directorate received a report of four cases of measles among police cadets from the Security Forces Hospital (SFH) in Makkah. PMD asked the Field Epidemiology Training Program team to investigate the extent and reasons for clustering of the cases.

We defined an outbreak associated case of measles as a febrile illness ( $>38.3^{\circ}\text{C}$ ) with generalized maculopapular rash of three or more days duration, cough, coryza, or conjunctivitis occurring between 29 March and 9 April 1997 (20 Dhul Qu'edah to 2 Dhul Hija 1417 H).

We defined a case of rubella as mild fever, with a diffuse maculopapular rash and post auricular, occipital and posterior cervical lymphadenopathy with or without headache, malaise, mild coryza, and conjunctivitis occurring between 29 March and 9 April 1997 (20 Dhul Qu'edah to 2 Dhul Hija 1417 H).

From the SFH medical records five cases of measles and four cases of rubella were identified. The infection was serologically confirmed in all cases of rubella (IgM index of 1,000 or greater) and in one case of measles (IgM positive); the other four cases of measles were clinically diagnosed and showed Koplick's spots. The affected cases for both measles and rubella

range from 20 to 31 years. Measles appeared first in one cadet, who had arrived from eastern province (EP) 2 days earlier. Rubella appeared first in one cadet stationed in the EP followed by three cadets stationed in the southern region (SR)(Figure 1). All cadets infected with rubella from SR had direct contact with the case from the EP. All cases of measles and rubella were discharged with no complications.

For Hajj, 500 cadets lived together in a large building 2400 sq. m. in Arafat. This area has 24 fans, numerous windows, and two main gates. The cadets sleep on bunk beds spaced half meter apart. Although cases with measles did not sleep in adjacent beds, they were in close contact at meal times and during training or leisure time. A total of 600 contact cadets were vaccinated against measles and rubella with MMR vaccine. Cadets, who were certain that they acquired natural measles or rubella infections were not vaccinated.

*Reported by: Dr. Sami Al-Salman, Dr. Sulaiman Al-Faiifi, Dr. Hassan E. El Bushra, Dr. Nasser Al-Hamdan, Saudi Arabian Field Epidemiology Training Program. Dr. Saud Abu Al-Hassan, Security Forces Hospital.*

**Editorial Note:** In 1995, a total of 41 cases of rubella occurred among security forces from Riyadh City that

worked during Hajj. Following the appearance of two cases of rubella in two policemen about six weeks before Hajj season (1). The public health surveillance in Madina, a Hajj-associated area detected many cases of measles among policemen following the Hajj season of 1995.

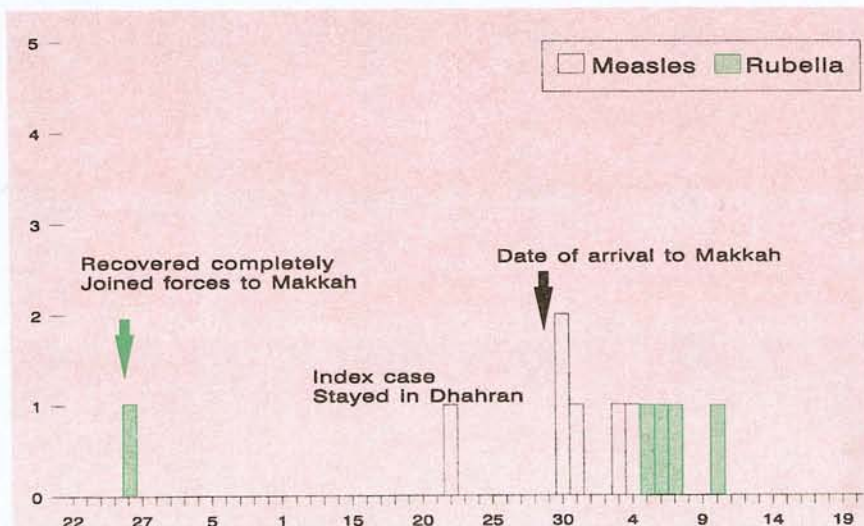
Military barracks, colleges and universities are the most frequently reported setting of transmission of measles for persons 18 years of age or older.

In countries with long history of measles and rubella control through extensive vaccinations, serologic evidence of immunity, documentation of two doses with live vaccine after the first birthday, or measles vaccination documented by a physician are required for entrance into colleges (2). The Edmoston-Zagreb strain, used in Saudi Arabia since 1992, has been reported in the literature to be more immaudi Arabia vaccination of children with MMR at age of 18 month was made compulsory only in unogenic than the Schwartz vaccine, which was used in Saudi Arabia between 1974 and 1992 (2). In S1991. However vaccination coverage rates varies between urban and rural areas, and has barely exceeded 80%. Moreover, the MMR is 95% efficacious at best conditions (secondary vaccination failure).

Unlike natural infections, live attenuated vaccines do not confer lifelong immunity; and in absence of exposure to the wild viruses, immunity wanes over the years (2).

There are serosurveys that document the rate for measles susceptibility among the security forces recruits. Currently there is no well-defined policy for ascertaining the vaccination status of newly recruited security

forces in Saudi Arabia. Although it could be cost-effective in some situations, serological screening is not routinely recommended (3). In absence of such a comprehensive vaccination program, intensified surveillance of measles and rubella among security



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# Conditions for travelers for Pilgrimage to Makkah (Hajj)

The Ministry of Health has issued requirements for Hajj Season, as follows:

## Yellow fever

**Vaccination:** All travelers arriving from countries known to be infected with yellow fever [(as shown in the WHO weekly Epidemiological Record (WER))] must present a valid yellow fever vaccination certificate in accordance with the International Health Regulations. In the absence of such certificate, the person will be vaccinated upon arrival and placed under strict surveillance for 6 days from the day of vaccination or the last date of potential exposure to infection - whichever is earlier. Health offices at entry points will be responsible for notifying the appropriate Director-General of Health Affairs, in the region about the place of residence of the visitor.

**Disinfection:** Airplanes and other means of transportation arriving from areas infected with yellow fever are requested to submit a certificate indicating disinfection in line with the International Health Regulations.

## Meningococcal meningitis

All arrivals for the purpose of Umra or Hajj or for seasonal work are requested to produce a certificate of vaccination against meningococcal meningitis issued not more than 3 years and not less than 10 days before arrival in Saudi Arabia. The responsible authorities in the country from where the visitor comes must ensure that vaccination has been carried out as follows:

- adults and children over the age of 2 years must be given 1 dose of the polyvalent (A,C,Y, 135) vaccine.
  - children between 3 months and 2 years of age must be given 2 doses of univalent A vaccine with a 3-month interval between the 2 doses.
- Arrivals from countries in the African meningitis belt: It must be ensured that all visitors from these countries have been vaccinated in their coun-

tries, not more than 3 years and not less than 10 days before arrival. This should be documented on the vaccination certificate. Visitors from these countries will be checked at entry points to ensure that they are vaccinated. If the authenticity of the vaccination certificate is felt to be questionable, revaccination is to be carried out. Suspect cases shall be isolated and preventive measures will be taken in respect of their direct contacts.

Chemoprophylaxis will be administered to all visitors from these countries to lower the carrier rate among them.

## Diphtheria

Visitors arriving for Hajj or Umra from the countries of the former USSR are requested to present a certificate for diphtheria vaccination.

They will also be given 1 dose of benzathine penicillin as follows:

- 600,000 units for persons weighing less than 30 kg.
- 1,200,000 units for adults and children weighing more than 30kg.
- Those allergic to penicillin should, instead be given erythromycin, as follows:
  - adults: 1 g daily (divided equally into 4 doses) for 1 week.
  - children: 40 mg per kg body weight, daily (divided equally into 4 doses) for 1 week.

All vaccine certificates should be issued either in Arabic, English or French, in addition, a copy in the official language of the country of origin may be enclosed.

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## Profile of diabetic Omani Pilgrims, 1996

(Continued from page 1)  
cut wounds, 1.2% had pneumonia, and 2% developed diabetic coma.

—Reported by: Dr. Ali Baomer, Dr. H.E. El-Bushra, Dr. Nasser A. Al-Hamdan Saudi Arabian Field Epidemiology Training Program, Ministry of Health

**Editorial note:** An estimated 100,000-150,000 diabetics perform Hajj every year. During the period between 1992 and 1995, diabetic coma accounted for 0.7-2.1% of all deaths that occur during Hajj [1]. Di-

abetes mellitus is a known risk factor for other illnesses that require hospitalization e.g., chest infections.

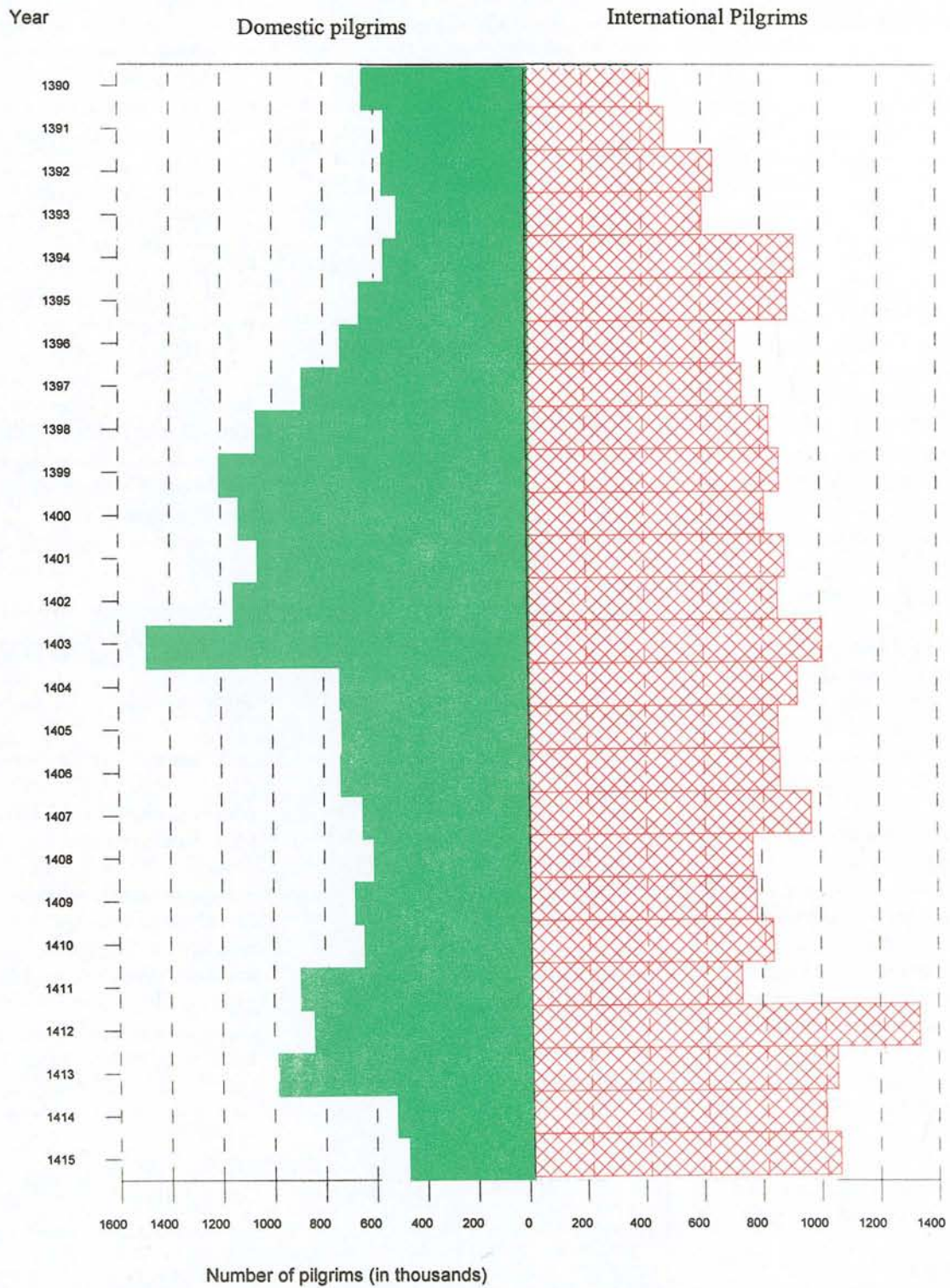
Although only 2% of DOH were hypoglycemic, this should be seriously considered because the consequences of hypoglycemia, worsened by physical exhaustion during Hajj, could be profound including coma and seizures. Hypoglycemia affects motor and cognitive functions; a diabetic person with hypoglycemia may even forget to treat hypoglycemia with carbohydrates [2]. It is relatively difficult

(Continued on page 5)

Table. Characteristics of Diabetic Omani Hajjis, 1996.

	Male	Female
Number	109	60
Median age (interquartile range )	56(45-55 )	53(52-65 )
Median age at diagnosis of DM ( range )	52(23-76 )	46(29-69 )
Body mass index > 30	15%	30%
Illiterate	48%	85%
Hypertension, heart disease or both	26%	32%

### Total Number of Pilgrims, Domestic and International, (in thousands) to Makkah, 1390-1415 Hijra (1970-1995 G)



\* Source: Annual Report, Ministry of Health and Hajj Research Center, Umm Al Qura University

## Profile of Diabetic Omani Pilgrims, 1996

(continued from page 3)

for diabetics *Hajjees* to adhere to their dietary regimen before *Hajj*, and they may alter their foods or miss some meals altogether. Hypoglycemia can occur during sleep without warning symptoms. It is disturbing that only one fourth of DOH recognized symptoms of hypoglycemia, and 70% did not wear identification wrist bands, recommended by Hajj health authorities, that show their diabetic status and regimen for treatment in case of emergencies.

In Gulf countries, about one tenth of the population suffer from diabetes mellitus (DM) and or impaired glucose tolerance (IGT), DM is emerging as the most common non-communicable disease in these countries. In Oman DM constituted 9% of the adult hospital admissions, and is associated with 12% of the adult hospital occupancies [3]. Nevertheless, there is deficiency of studies about DM and *Hajj*, a gap in literature that invites more work to identify risk factors for complications among diabetic *Hajjees*, and appropriate interventions. A special health education program and special services for diabetics during *Hajj* are needed. *Hajjees* should learn about symptoms and signs of hypoglycemia, put on protective shoes, and put on identifying wristbands.

### References:

1. Health Services in *Hajj* Season. Annual Reports (1992-1995). Ministry of Health, Kingdom of Saudi Arabia.
2. The DCCT Research Group, Bethesda, Maryland. Epidemiology of severe hypoglycemia in the diabetes control and complications trial. *JAMA* 1991; 450-459.
3. Ministry of Health Sultanate of Oman and World Health Organization Regional Office for the Eastern Mediterranean. Manual for Management of Diabetes Mellitus in Primary Health Care (45 pages). 1996.

### Erratum

In volume 3, issue number 4, page 29, the topic "Malaria outbreak in Gellwa", the table: the correct total attack rate for surveillance and census are 14% and 63% consecutively.

## Measles and Rubella Outbreak

(Continued from page 2)

forces, would remain the only effective measure to control spread of measles and rubella during *Hajj*.

### References:

1. Al-sharif NH, Turkistani A, Al-Hamdan N. Rubella outbreak among police cadets training forces during Hajj 1415 H. *Saudi epidemiology Bulletin*; 2 (4): 6-7.
2. Clements CJ, Strassburg M, Cutts FT, Torel C. The epidemiology of measles. *Wld Statist Quart* 1992; 45:285-291.
3. Markwitz LE and Katz S. Measles Vaccine. In: Plotkin SA and Moritimer EA (eds). *Vaccines*. W.B. Saunders Company, Philadelphia 229-276, 1994.

## Objectives of Hajj

Allah Almighty wanted Islam ummah to be unified in its faith and in the performance of its religious ceremonies and rites, having one conviction as a Shar'ia and a method as it was sent down from Allah via the tongue of His Apostle and the seal of His Prophets, and taking the obligation of following and observing a unified way of conduct and demeanour, completing the ordinances and abstaining from the prohibitions. In pilgrimage the picture of unity is revealed in the most complete of demonstrations. Muslims gather in one place with the purpose of performing one pillar of Islam, after being unified by the strong bonds of creed and brought together by the feelings of entity and identification with these bonds and hence all the differences of nationality, color, tongue and circumstances have been dissolved among them. In this one place, the Muslims witness numerous benefits, worldly benefits and religious benefits as Allah said "*That they may witness the benefits (provided) for them and celebrate the name of God, through the days appointed over the cattle which he has provided for them (for sacrifice)*" (*Surat-ul-Haj, verse 28*). This word "benefits" is a collective noun. Some of these benefits are witnessed by the pilgrim himself, and some of them are felt by him deep in

## Conditions for travel to Makkah

(Continued from page 3)

### Epidemiological Surveillance

Tight control is exercised at entry points in respect of pilgrims and Umra visitors, and thorough surveillance shall be made in respect of visitors coming from countries infected with diseases subject to the International Health Regulations, in addition to isolation of suspect cases and surveillance of their contacts.

### Foods

Food carried by visitors and pilgrims are banned from the country. Special rules apply for foods imported for commercial purposes.

—Reported by: *Infectious diseases department, Ministry of Health.*

**Footnote:** The publication in the WER is to inform visitors of the full requirements for entry into the country; it does not mean an endorsement by WHO of all measures stipulated. Saudi Arabia is enforcing these measures in accordance with the *International Health Regulations (1969)*, *Third annotated edition*, Part VIII, article 84 which states "Migrants, nomads, seasonal workers or persons taking part in periodic mass congregations, and any ship, in particular small boats for international coastal traffic, aircraft, train, road vehicle or other means of transport carrying them, may be subjected to additional health measures conforming with the laws and regulations of each State concerned, and with any agreement concluded between any States."

him and he feels the reality and manifestation of this unity in Ihram (entrance into consecrated state), in Miqat (the appointed time and place of Ihram) in Tawaf (the procession around th Ka'aba) in Sa'e (cermony of running seven times between Safa and Marwa) in going out of Mina, on the stop in Arafat, in the throwing of Jamarat (stones), and in every stage and step of the performance of Haj and its religious rituals. Another important benefit, is what the Muslim will find saved and provided for him

(Continued on page 7)

## Surveillance and Strict Control Measures Reduce Surgical Site Infection (SSI), Al-Yamamah Hospital, Riyadh, 1996

The reported crude nosocomial infection rate in Al-Yamama Hospital (YH), Riyadh (280 beds, 3 operation rooms) in the first half of 1995 was less than 1.8 per 100 surgeries. There were complaints about increased surgical site infections (SSI) rate; SSI rate has never been calculated. We calculated the SSI rate and studied the impact of intensified surveillance and institution of strict control measures in controlling SSI in the YH during the period between October, 1995 and March, 1996.

A SSI was defined as having purulent discharge and fever ( $>38.5^{\circ}\text{C}$ ) 3 days or more after surgery or a bacterial pathogen was isolated from the surgical wound. We reviewed the medical records of all patients who had major surgical operations in YH during the period between October, 1995 and March, 1996.

In contrast to pre-existing SSI surveillance, medical record review revealed 37 (9.1%) SSI among 405 surgeries; caused by 7 different bacterial pathogens, predominantly *Staphylococcus aureus*. SSI rates were higher for elective surgery (12.3%, 14 out of 114) than for emergency surgery (7.9%) ( $p < 0.05$ ). The mean (+ SD) duration of hospitalization in days

was longer for patients with SSI in comparison to those with clean surgery (11 vs. 8;  $p < 0.05$ , t-test), and 5 (62.5%) out of 8 patients, re-admitted to the hospital, had SSI ( $p < 0.05$ , Fisher's exact test). SSI rates did not differ by operation rooms, surgeons, or having gestational diabetes. Deviations from correct aseptic surgical practices were identified. These included observing that masks did not always cover the nose, change to scrub suit was not 100%, and scrub suits were worn to emergency rooms and wards. The SSI problem was discussed with the Infection Control Committee and the surgical staff in the hospital; and a circular was passed to all doctors and nurses to remind them about strict corrective measures, and a SSI surveillance system was activated. The improved surveillance detected only one (1.1%) SSI out of 99 surgeries made in the five weeks following institution corrective measures that emphasized wearing masks and gowning.

Reported by Dr. Faida M. Abu Al-Jadayel; Dr. Hassan E. El Bushra; Dr. Mohammed A. Al-Ghreimil and Dr. Abdulla Takroni, Al-Yamama Hospital and Field Epidemiology

Training Program, Riyadh, Saudi Arabia.

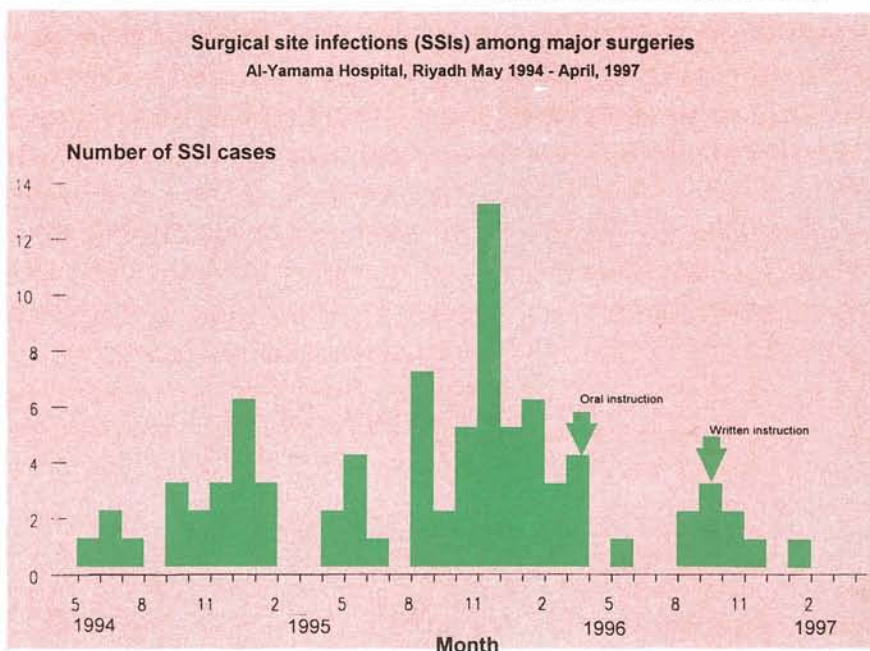
### Editorial Note:

SSI, formerly called surgical wound infections, are the second most site for nosocomial infections, second only to infections of the urinary tract. The data from Al-Yamama hospital indicated that establishing good surveillance and infection control programs helped detect increased SSI rates, brought SSI to the attention of surgical staff, monitored appropriate use of anti-microbial prophylaxis, and reduced cost associated with prolonged hospital stay. SSI programs and feedback to surgeons has lowered the SSI rate by 35% in some other studies (1). This is probably because surgeons identify probable errors in their techniques or because of an "anxiety" factor as surgeons become aware that their patients' outcome are being monitored (1).

Data from Al-Yamama Hospital showed that the SSI rates were higher for elective surgery as compared with emergency surgery. However, even after adjustment for potentially confounding variables, recent studies consistently found that prolonged pre-operative hospital stay is an independent risk factor for SSI. This is attributed to probable alteration of normal flora by antibiotics, acquisition of hospital-acquired multi-resistant pathogens or exposure of the patient to interventions that adversely affect the host resistance. It was found that the ideal for elective operation would be to admit patients to the hospital on the morning or on the day prior to operation (1).

Some published studies questioned the importance of surgical masks as infection control measure. It is worth mentioning that the most important role of surgical masks is to prevent contamination of the mucous membranes of the operating team (1). There are well documented host factors for SSI in clinical and epidemiologic studies. These included ad-

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## Surveillance and SSI

(Continued from page 6)

vanced age, morbid obesity, and the presence of remote infections at other body sites are. Surgical-related factors included surgical site class, prolonged pre-operative stay, shaving by razor (especially at prolonged intervals before surgery), prolonged duration of surgery, and the non-use of appropriate use of prophylactic antibiotics. However, the evidence for diabetes, malnutrition, cancer, and immunosuppression are not as well supported.

### Reference:

Wong ES. Surgical Site Infections. In: Mayhall CG (ed). Hospital Epidemiology and Infection Control. pp 154-175. Williams & Wilkins, Baltimore (1996).

## Objectives of Hajj

(Continued from page 5)

by Allah of the awards for performing this pillar of Islam and for the efforts exerted and difficulties went through, having the sincere intention of doing that for the sake of Allah Almighty. Prophet Muhammad, peace be upon him, said, "... and the accepted Haj has no reward but the Jannah (garden of Eden)" *Sahih Muslim*. The ordinance of Haj will remain, as Allah wanted it, a religious reunion of Muslims in which they meet every year in affirmation of their unity, solidarity, renewal of their interrelation, consideration of their benefits, and above all, strengthening and acknowledging of their faith and their response to the call of the Master of all Worlds and the call of His Messenger. Nevertheless, this ordinance will also remain as a meeting place of religious education, that culture of the human beings and training them for love and sympathy, and calling them for togetherness. For people, to achieve all this, they have been prohibited from litigation, enmity and arguing while they are in the Haj rituals, because such kind of feelings will only lead to division and disintegration. "For Haj are the months well known. If any one undertakes that duty therein, let there be no obscenity nor wickedness, nor

## Mark your calendar . . .

### Inside the Kingdom

**Nov 23-24, 1997** Symposium on "Genetic Diseases in Arab Population - A Wealth of Information". The Organizer, Department of Medical Biochemistry & WHO Collaborating Centre, College of Medicine, King Saud University, P.O. Box 2925, Riyadh 11461, Saudi Arabia. Tel: 966-1-4670831, Fax: 966-1-4672575.

### Outside the Kingdom

**Oct 22-25, 1997:** Third EIA/EMR Meeting, on Epidemiology & Prevention in the EMR, Beirut, Lebanon. Contact: Third IEA/EMR Epidemiology Secretariat, Faculty of Health Sciences, American University, Beirut, Lebanon. Fax: (9611) 351-1706, e-mail: [kkassak@aubedu.lb](mailto:kkassak@aubedu.lb).

**Nov 17-21, 1997:** International Conference on Low Doses of Ionizing Radiation: Biological Effects and Regulatory Control, Seville, Spain. Contact: Joint WHO/IEAE Conference Secretariat, International Atomic Energy Agency IAEA-CN-67, Wagramerstrasse 5, PO Box 100, A-1400 Vienna, Austria. Tel: 43-1-2060 (0), Telex: 43-1-12645, Fax: 43-1-20607, Cable: INATOM VIENNA, e-mail: [IAEO@IAEA1.IAEA.OR.AT](mailto:IAEO@IAEA1.IAEA.OR.AT).

**Nov 24-26, 1997:** Regional Conference, Chronic Non-Communicable Diseases, "Role of Nutrition", State of Bahrain, Ministry of Health, Nutrition Section. Contact: Organizing Committee, Nutrition Section, Public Health Directorate, Bahrain.

Send correspondence, comments, calendar listings or articles to:

Saudi Epidemiology Bulletin  
Editor-in-Chief,  
P.O. Box 6344, Riyadh 11442  
Saudi Arabia.

For epidemiological assistance,  
call or fax the FETP at  
01-496-0163  
e-mail: [72054,345@compuserve.com](mailto:72054,345@compuserve.com)

*wrangling in the Haj and whatever good Ye do, (be sure) God knoweth it" Surat-ul-Baqara, verse 197.*

\*A. H. Al-Nafisah. Contemporary Jurisprudence Research Journal. Vol 4, No. 13, 1992

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## Selected notifiable diseases by region, Jan-Mar 1997

	Riyadh	Jeddah	Makkah	Madinah	Taif	Asir	Gizan	Najran	Baha	Eastern	Ahsa	Tabuk	Jouf	Goriat	Shamalia	Hail	Qassim	Hafr al Batin	Bisha	Gofuda	Total
Measles	219	68	15	97	5	123	104	79	3	46	3	0	0	1	0	3	38	12	0	8	824
Mumps	56	97	25	111	5	51	16	12	4	38	5	9	3	1	1	10	18	9	1	13	485
Rubella	19	22	0	12	1	8	1	0	0	4	4	0	0	0	0	0	3	4	0	1	79
Varicella	1979	1699	383	602	279	1376	130	352	234	2218	1061	379	83	30	16	480	489	261	132	149	12329
Brucellosis	87	25	18	40	33	155	32	45	20	17	28	10	10	3	13	134	200	74	67	5	1016
Meningitis, mening.	3	7	0	10	1	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	25
Meningitis, other	26	15	19	9	0	2	15	0	0	2	3	1	0	0	0	2	1	1	1	0	97
Hepatitis A	89	39	76	114	16	96	80	92	23	40	47	71	12	55	2	0	92	85	5	0	1034
Hepatitis B	79	188	68	45	1	38	7	5	51	131	13	8	7	5	1	12	25	4	1	5	694
Hepatitis, unspecified	32	48	28	29	0	34	49	8	0	4	13	19	0	0	1	81	0	0	0	1	347
Typhoid & paratyphoid	13	3	4	2	2	13	0	3	1	8	3	3	0	0	0	6	0	2	12	0	75
Shigellosis	7	31	0	5	0	3	4	52	0	50	2	12	0	0	0	0	12	28	0	48	254
Salmonellosis	94	33	2	4	0	5	7	14	5	160	14	18	0	0	0	0	12	17	0	0	385
Amoebic dysentery	48	878	0	20	31	291	5	29	0	56	5	28	0	0	0	13	49	3	19	110	1585
Syphilis	5	12	5	0	0	1	1	0	0	12	6	0	0	1	0	0	1	1	4	0	49
VD, other	10	105	0	0	0	3	8	0	0	20	21	0	0	8	0	0	0	2	4	0	181

## Comparisons of selected diseases, 1996-1997

	Jan-Mar 1997	Jan-Mar 1996	Change %	Jan-Mar 1997	Jan-Dec 1996		Jan-Mar 1997	Jan-Mar 1996	Change %	Jan-Mar 1997	Jan-Dec 1996
Diphtheria	0	0	0	0	0	Meningitis, other	97	106	-8	97	559
Pertussis	8	1	700	8	56	Hepatitis A	1034	757	37	1034	3796
Tetanus, neonatal	8	4	100	8	25	Hepatitis B	694	694	0	694	3076
Tetanus, other	4	7	-43	4	28	Hepatitis, unspecified	347	343	1	347	1471
Poliomyelitis	1	0	100	1	0	Typhoid & paratyphoid	75	65	15	75	461
Measles	824	650	27	824	2407	Shigellosis	254	284	-11	254	925
Mumps	485	488	-0.6	485	2256	Salmonellosis	385	415	-7	385	2349
Rubella	79	102	-18	79	385	Amoebic dysentery	1585	2103	-25	1585	8184
Varicella	12329	10916	13	12329	47463	Syphilis	49	81	-40	49	294
Brucellosis	1016	1361	-25	1016	5933	VD, other	181	316	-43	181	1118
Meningitis, meningoc.	25	14	11	25	38						

## Diseases of low frequency, Jan-Mar 1997

Pertussis: 8 ( Asir 3, Jeddah 2, Riyadh 1, Makkah 1, Qassim 1)

Rabies: 1 (Jazan 1)

Tetanus, neonatal: 4 (Makkah 3, Taif 1) - Tetanus, other: 3 (Riyadh 1, Jeddah 1, Najran 1)

Acute Flaccid Paralysis: 25 (Jeddah 6, Riyadh and Jazan 5, Taif 2, Madinah 2, Makkah, Asir, Tabuk, Qassim and Shamalia 1) - Poliomyelitis: No cases

Echino Cocciosis: 6 (Eastern 2, Asir 2, Riyadh 1, Hafr al Batin 1)

Purpural sepsis: 2 (Riyadh 2)

Yellow fever, plague, diphtheria, viral encephalitis and transverse myelitis: No cases