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النشرة الوبائية السعودية

تصدرها وزارة الصحة

الوكالة المساعدة للطب الوقائي وبرنامج الوبائيات الحقلي

المجلد الثالث – العدد الثاني – ابريل ، مايو ، يونيو ١٩٩٦م

Aseptic Meningitis, Riyadh City 1996

There has been an unusual increase in the number of cases of aseptic meningitis (ASM) in Riyadh city recently. Cases of ASM increased 10-fold from a mean of 3.8 cases per month (between June and December 1995) to more than 32 cases per month between January and July 1996. Enteroviruses; including Echoviruses 30, 27, and 33 were isolated from 10 patients. The Field Epidemiology Training Program initiated a study to describe the geographic distribution of the outbreak of ASM in Riyadh City, and to identify risk factors for spread of the disease.

Of 285 cases of meningitis admitted to the five governmental hospitals during the period between June 1995 and July 1996 (Figure 1), the provisional diagnosis for 184 (65%) was ASM (or viral meningitis) and for 45 (15%) it was partially-treated meningitis (PTM). Bacterial meningitis (BM) with a bacterial pathogen or antigen identified in the cerebrospinal fluid (CSF) accounted for 56 (20%) meningitis cases. Cases of BM showed two small peaks during November 1995 and March 1996. Both peaks were due to *Hemophilus influenzae* type B.

ASM cases were characterized by fever (97%), vomiting (69%), headache (47%), sore throat (40%) and neck rigidity (40%). The average duration of fever was three days. CSF leukocyte count ranged from one to 1950 per mm^3 (average 160 per mm^3). CSF glucose ranged from 2.5 to 4.0 mmol/l (average 3.6 mmol/l). CSF protein ranged from 0.15 to 0.45 gm/l (average 0.39gm/l). The CSF picture for PTM was similar to that of ASM. Physicians prescribed antibiotic treatment for 153 (83%) ASM patients. Antibiotics included ampicillin, penicillin, gentamicin, ceftriaxone, cefotaxime, ceftazidime, and cefuroxime in different combinations. Antibiotics were given for 1 to 15 days (average 8 days).

ASM appeared simultaneously in the southwest and east of Riyadh city (Figure 2). About half of the cases (51.2%) of ASM were in children less than 3 years of age whereas more than half (57.9%) of the cases of BM occurred in children less than one year of age. Fifteen families had more than one person with ASM.

Twenty out of 35 cases (57%) had sewage overflow around their houses compared with 13 controls (19 %) (Odds ratio [OR] = 5.8; 95% confidence interval

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Aseptic meningitis in Riyadh City

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[95% CI]= 2.2-16.1). Families with cases of ASM evacuate their sewage-holding tank 5.0 times per year whereas control families did this 2.1 times per year ($p<0.005$, *t*-test). In the two weeks preceding a child's illness, at least one of the family members suffered from fever; 48% of cases vs. 16% of controls (OR 4.5; 95% CI 1.6-12.8), headache (37% of cases vs. 4% of controls; OR 13.2; 95% CI 3.1- 65.8), or vomiting (20% of cases vs. 1% of controls; OR 17.3; 95% CI 1.9-397). Fifteen families with a child with ASM visited a family with a sick child within two weeks preceding their child's illness compared with five control families (OR 9.8; 95% CI 2.8-36).

—Reported by: Dr. Ali Baomer, Dr. Hassan E. El Bushra, Dr. Nasser Al-Hamdan (Field Epidemiology Training Program), Dr. Abdel Rahman Al-Mazrou, and Dr. Fahad Al-Zamil (Department of Pediatrics, King Saud University).

Editorial Note: Echovirus 30 and other enteroviruses produce asymptomatic infections in 50-80% of infected children, or produce a benign, self-limited illness with fever, headache, vomiting, photophobia, and sore throat lasting about 3 days (1). Convulsions are rarely noted in infants. Antibiotic treatment is ineffective in ASM from enteroviruses, and management is mainly supportive. Hearing tests and C.T. scans are usually not indicated.

Person-to-person transmission probably explains the long duration of the outbreak of ASM in Riyadh City, which continued for more than six months. Cases were more likely to have been exposed to other cases of ASM or to unreported mild cases of enteroviral infections in children that did not need to be taken or admitted to hospitals, or asymptomatic infected persons. Young children often serve as the vehicles for spread within communities. Once infection occurs within a family, susceptible family members are rapidly infected.

Frequent evacuations of sewage-holding tanks among cases and the presence of sewage overflow around houses suggests that polluted peridomiciliary environment contributed to the occurrence of ASM. Fecal shedding of enteroviruses are resistant to chlorine treatment, and have been found to last for 3 to 4 weeks, and occasionally for as long as three months(2).

Other than hand washing and improvement of personal hygiene, there are no effective control measures to halt person-to-person transmission of non-polio enteroviral infections(3). However alerting doctors on emerging outbreaks of ASM and their causative agents would reduce unnecessary prescription of antibiotics and duration of hospitalization. In absence of appropriate diagnostic facilities, doctors tend to assume that meningitis is of bacterial etiology.

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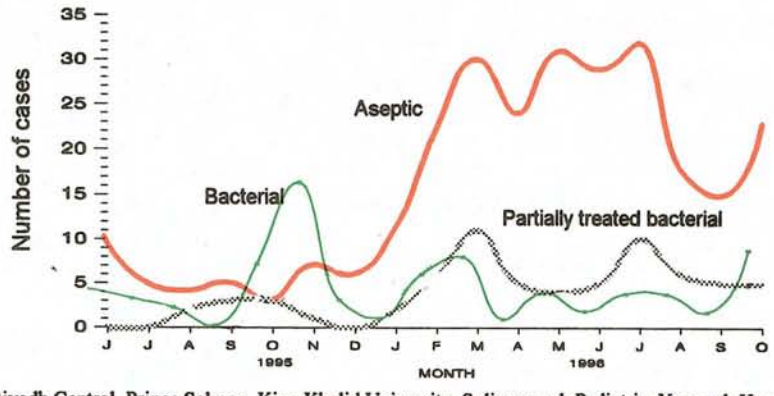
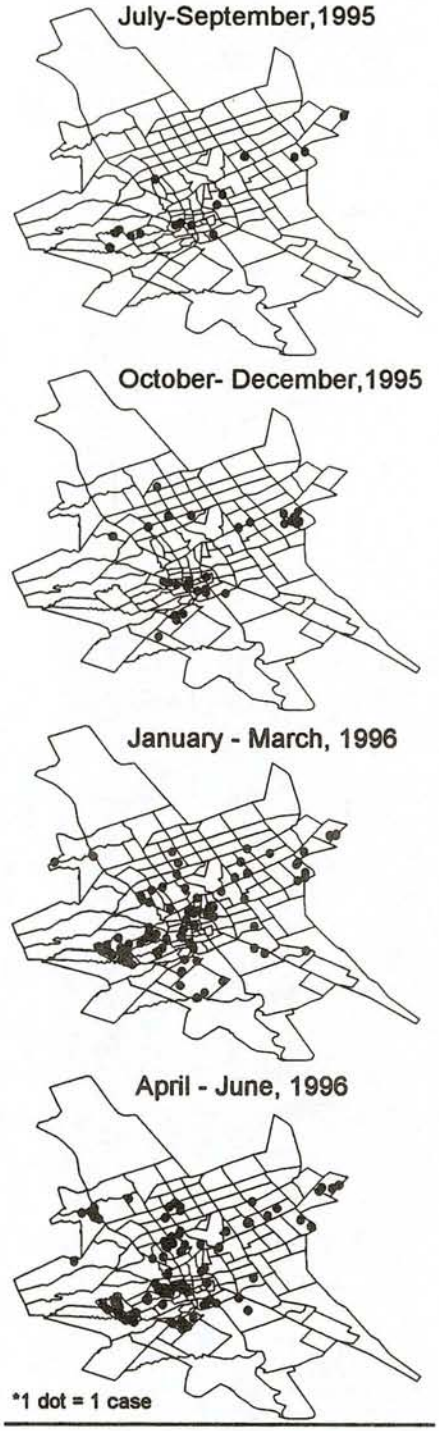
3. Melnick JL. Enteroviruses. In: Evans AS. Viral Infections of Humans, Epidemiology and Control. New York: Plenum Medical Book Company, 1989;191-263.

Figure 1. Cases of meningitis diagnosed in five hospitals.* Riyadh City, June,1995 to October,1996



*Riyadh Central, Prince Salman, King Khalid University, Sulimaneyah Pediatric, Yammah Hospitals

Figure 2. Geographic distribution of aseptic meningitis by months, Riyadh city, 1995-1996.*



Scabies Outbreak: Riyadh Region, 1416 Hijjra

During the last three months of the year 1416 Hijjra, there was a noticeable increase in the reported number of scabies cases in Riyadh including 248 scabies cases (a 10 fold increase) from the Riyadh Medical Complex (RMC) during Dul-Qadda (11/1416).

In response, the Riyadh Health Directorate (RHD) established daily reporting of scabies cases from all Primary Health Care Centers (PHCCs), hospitals, and private clinics. A case of scabies was defined as itching and skin rash in a person who was referred to RMC and was diagnosed as having scabies by the dermatologist in the dermatology clinic in RMC during the first two weeks of Muharam 1/1/1417 to 16/1/1417 Hijjra. Control measures including ensuring the availability of Sulphur and Permithrin cream in hospitals and PHCCs, instruction on application, and health education classes in schools and clinics informing the public that scabies is caused by a mite that is transmitted by direct skin to skin contact were begun.

To assess the relative importance of potential risk factors for transmission, the effect of control measures, and public knowledge of scabies before and after intervention, the Field Epidemiology Training Program conducted a case control study. Newly diagnosed and follow-up case patients were interviewed. Contacts were defined as all household members, including domestic servants who lived with case patients. Three control patients matched by age and district to each scabies case were selected for each case by interviewing successive patients attending the dermatology clinic for reasons other than scabies. Case and control patients were interviewed at the dermatology clinic about personal behavior and household conditions which could be related to scabies transmission.

Within the 15 families with an index case, 28 persons were diagnosed as having scabies. The mean age of the case patients was 15 years. 57% were children under 14 years of age and 68% were students. Female/male ratio was 1.5:1. There were four children aged 0 to four (14.3%), 12 children aged five to 14 (42.8%) and 12 persons 15 years of age and older (42.9%) affected. Of the 65 families 76.5% were Saudis and 23.5% were non-Saudis. The number of persons per square meter was 1.5 in the houses infested with scabies compared to 1.2 persons per square meter in houses without scabies (P=0.01) The mean number of persons per sleeping room in infested houses was 3.79 whereas in noninfested houses it was 2.68 (P<0.01). Household characteristics such as volume of water used per person, the number of baths per week and the usage of water with soap alone or with sponges, how frequently and the method bed linen was washed and dried, use of a washing machine, laundry or by hand, if clothes were dried indoors or outdoors and the number of persons living in the house were not related to the spread of scabies.

For the first infested person in the family the risk of getting scabies increased with the number of close friends and the degree of contact within the neighborhood. The number of friends or degree of contact in the school did not increase the risk.

We compared cases and contacts and cases and controls for sharing clothes, underwear, and accessories and found none to be statistically significant risk factors.

Both cases and controls had little knowledge about the disease before the outbreak (87.% and 80.4% respectively). They learned about scabies during the last month of 1416 Hijjra. Older family members thought it was an animal disease and did not know if it was treatable. Before the outbreak, 12.5% of case patients and 26.1% of control persons thought scabies was an animal disease, while only 4.2% of the case patients and none of the control persons knew that scabies was treatable. The only significant source of information came from health education sessions in the schools. From the sessions in the schools, 37.5% of case patients and 32.6% of control persons learned that scabies was spread by direct contact and 20.8% of case patients and 26.1% of control persons learned that it was a treatable disease.

—Reported by Dr. Fauzia Al-Tassan, Dr. RE Fontaine, Dr. Nasser Al-Hamdan (Field Epidemiology Training Program), and Dr. Nora Al-Nahed (King Saud University Hospital).

Editorial Note: These results are consistent with established facts about scabies transmission. Close physical contact; particularly in bedrooms where there is direct physical contact between infested and non infested persons is probably the most common way scabies is transmitted. It can involve either a sexual partner or skin to skin contact in crowded sleeping quarters. It must be emphasized that non-sexual transmission to other household members, especially infants and children, is common. Any condition that promotes close physical contact within the family or community may result in an increase in incidence. Sharing clothes or linen is of no great importance in transmitting the disease. The life-cycle of the human Sarcoptic mite requires almost constant contact with human skin. Adults and immature mites spend most of their time in burrows in the stratum corneum of the skin. They emerge briefly to start new burrows or to copulate. Two or three eggs are deposited within the burrows each day. Transmission from one person to another is usually accomplished by transfer of an adult mite.

Education is needed, particularly about how close physical contact spreads the disease. Although the occurrence of these outbreaks is disturbing to health officials and the school community scabies is easily treated and controlled via physicians in the PHCCs. Awareness of the disease must be increased and scabies should

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Gastroenteritis Outbreak on board a Nile Cruise Boat, March 1996

On April 2, 1996, Field Epidemiology Training Program Saudi Arabia learned of a gastroenteritis outbreak among American school teachers from Riyadh, Saudi Arabia who had attended an international American teachers' conference, March 20-23, in Cairo, Egypt, and took cruises on the Nile after the conference. A case of gastroenteritis was defined as diarrhea (more than 3 loose stools for one day or more) in a conference attendee or traveling companion with onset in Egypt or within 3 days of returning to Saudi Arabia.

Information on post conference activities in Egypt was obtained for 152 teachers and their companions. After the conference, 72 took cruise boat A from March 24 to 28 from Luxor to Aswan, and 58 (81%) reported onset of gastroenteritis during or for 3 days after the cruise. In comparison 3 of 36 (8.3%) teachers who engaged in other tourist activities in Egypt after the conference reported gastroenteritis ($p<0.01$, Chi square test, 1df). Four teachers took other Nile cruise boats at the same time and three became ill (AR=75%). Teachers (44) who returned to Saudi Arabia immediately after the conference did not develop gastroenteritis.

Cruise boat A took the teachers from Luxor to Aswan. Passengers shared two-bedded cabins with private bathrooms. All meals were provided on the boat and were served in a common dining room. Main dishes and drinks were placed on each table for passengers to serve themselves. Salads and desserts were sometimes placed on a separate table for passengers to serve themselves. In addition to a punch and bottled water served at the table without ice, passengers could buy carbonated and alcoholic drinks with or without ice. The boat stopped at tourist sites along the Nile but no meals were served on shore. Passengers could however buy snacks and drinks on shore.

Gastroenteritis among passengers on cruise boat A was characterized by diarrhea (100%) lasting 1 to 12 days (median 4) with fever (93 %), abdominal cramps (94%) and vomiting (90%). *Shigella boydii* type 2 was isolated from the stool of two of six passengers who still had diarrhea six days after returning to Saudi Arabia.

A point source outbreak occurred on March 25 and 26 followed by continuing incidence of new cases until March 30 (Figure 1). Among 74 foods served on March 24 and 25, fried fish served on the evening of March 24 was associated with illness developing during the point source outbreak on March 25 and 26 (RR=2.1, 95% CI=1.2-3.5, P=0.002, Chi Square test, Yates correction). Ice added to drinks at any time during the trip was associated with gastroenteritis (Mantel Haentzel weighted RR=1.7, 95% CI 1.4-2.1, $p< 0.01$) and all 14 persons who reported using ice developed gastroenteritis. For gastroenteritis developing during the point source outbreak the association with ice was independent of eating fried fish (Mantel Haentzel weighted RR=1.7, $P<0.01$). Salad items served at any time during the four day cruise were not associated with illness.

Teachers who traveled on three other cruise boats from March 24 to 28 also reported outbreaks of gastroenteritis among other passengers and crew. We assessed possible secondary transmission by counting the passengers who shared a cabin with a case-patient for the continuing phase of the outbreak. During the first 36 hours 56% of people who shared a cabin with a case-person. Rates during the next 36 to 71 hours were 60%, from 72 to 107 hours 50%, from 108 to 143 0%, and from 144 to 180 hours 50%.

—Reported by: Nahed Ali Batarfi, Dr. RE Fontaine, Dr. Nasser Al-Hamdan (Saudi Arabian Field Epidemiology Training Program, Ministry of Health), and Dr. Kambal (Department of Microbiology, King Saud University).

Editorial Note: The comparison between teachers attending different activities after the conference clearly shows that the outbreak of gastroenteritis that affected cruise boat A passengers was specific to an exposure on that boat. The food specific attack rates implicate fish served for the first dinner aboard the boat as the vehicle of transmission for the point source phase of the outbreak. During both the point source phase of the outbreak and the continuing phase, ice was

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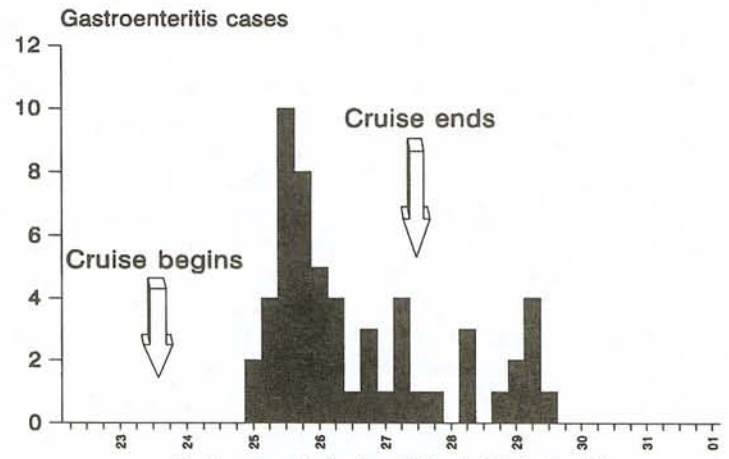
Figure 1.Onset of gastroenteritis among teachers travelling on cruise boat A, Luxor to Aswan, Egypt, March 24 to 28, 1996.



Nile Cruise Outbreak

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clearly implicated as the source of transmission. Evidence for person to person transmission or for transmission from infected persons to salads after the point source outbreak is very weak.

Most outbreaks of shigellosis have been attributed to foodborne (1,2) or waterborne (3) sources. *Shigella* organisms are rarely isolated from water sources therefore identification of a waterborne source is usually based on epidemiologic evidence.

Without an investigation aboard the ship we can only guess how the fish and the ice were responsible for transmission. Since outbreaks also affected all other teachers who took other cruise boats, it is possible that there was a common source for all cruises leaving Luxor. Moreover, ice is an excellent preservative for *Shigella*. It would protect the *Shigella* from competition from other organisms, and it would keep the *Shigella* from exhausting nutrients in the water. Since fish is commonly stored on crushed ice, the Shigella may have been transmitted to the fish via the ice. However, the short incubation period (12 to 36 hours) suggests heavy contamination of the fish. This indicates that there must have been mishandling of the fish after cooking. Other possibilities such as an infected food handler in the kitchen are less likely. Cold foods have been found cause *Shigella* gastroenteritis outbreaks (2), they did not appear to be responsible for transmission in this outbreak.

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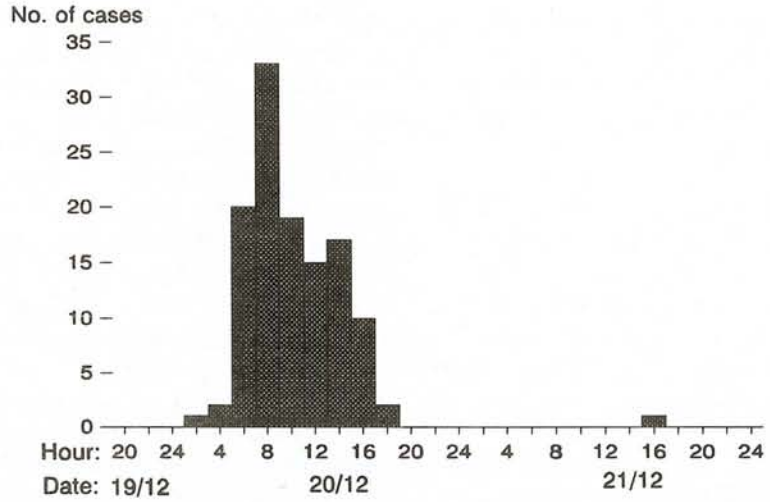
Food poisoning, Abha City, Dhul-Hijja, 1416

Figure. Food Poisoning Outbreak, Abha City, Dhul Hijja, 1416
Date and time of onset of symptoms



On Dhul-Hijja 24, 1416 (May 7, 1996), the Department of Preventive Medicine, Asir requested assistance in investigating an outbreak of gastroenteritis that occurred among customers who bought dinner from a restaurant that specialized in fried chicken in Abha city, Asir region southwest Saudi Arabia. The Field Epidemiology Training Program conducted a retrospective cohort study to determine the extent and the source of the outbreak.

A case of food poisoning was defined as diarrhea and abdominal pain, with fever, nausea or vomiting in a person who had onset of illness within 72 hours of eating a meal prepared at take-away restaurant A, on Dhul-Hijja 24, 1416 (May 7, 1996), and/or *Salmonella* spp. was isolated from stool culture or a rectal swab.

We obtained a list of all patients with food poisoning who were admitted to hospitals in Abha City and neighboring towns. Only cases that met the case definition were included. The socio-demographic characteristics and the results of bacteriologic tests were abstracted from medical records. Patients were interviewed directly or over the phone and were questioned about date and time of eating dinner, symptoms, and food items eaten at dinner from the restaurant. We visited the restaurant to identify procedures including; cooking and storage temperatures, handling and storage of cooked foods, and the number of daily sales of meals on the day of the outbreak.

During the outbreak period 228 persons with food poisoning were admitted into nine hospitals; 200 (88%) males, and 28 (12%) females. The mean ($\pm$ SD) age of patients was 18.8 $\pm$ 9. *Salmonella* spp. was isolated from 124 (84.2%) out of 159 fecal specimens cultured; 91 isolated (73.4%) were found to be *Salmonella enterica* serotype Enteritidis; and three isolates proved to be phage type B14. The median incubation period was 10 hours (range: 3 and 27 hours). The epidemic curve suggested a common source outbreak (Figure).

Among 10 food items eaten, mayonnaise had the highest risk ratio (RR 2.52; 95% CI 1.7 - 3.7) followed by minced garlic (RR 1.2; 95% CI 1.02 - 1.4). Mayonnaise was locally prepared from raw eggs in the restaurant using a regular blender. Lemon-flavored salt was substituted for vinegar. Minced garlic was prepared with same blender immediately after making the mayonnaise. The mayonnaise

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Food Poisoning Outbreak, Abha City

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and minced garlic, were stored as unit servings in little plastic containers at room temperature unrefrigerated for a median of 6 hours before being served for dinner.

—Reported by: Dr. Khalid S. Al-Ahmadi, Dr. Ali S. Al-Zahrani and Dr. Hassan E. El Bushra (Saudi Arabian Field Epidemiology Training Program, Ministry of Health).

Editorial Note: *Salmonella* spp., a common cause of food poisoning, is usually found in poultry, uncooked egg products, raw milk, and meat; in other foods, including fruits, vegetables, and pasteurized milk, cross contamination also occurs. Food items containing raw eggs, e.g., home-made ice-cream, home-made mayonnaise, cookie batter, and hollandaise sauce have been implicated in many food poisoning outbreaks (1). *Salmonella enterica* serotype Enteritidis (*S. enteritidis*) is transmitted via the chicken's ovarian canal to the yolk (2); *S. enteritidis* PT4 has been isolated from the contents of clean unbroken eggs. Ingesting 100,000 to 1,000,000,000 *Salmonella* bacilli will produce illness (3).

The findings of this study demonstrated that this outbreak was due to a restaurant-made mayonnaise, prepared most probably from infected eggs. Minced garlic, which was prepared immediately after and in the same blender used in preparing mayonnaise, was most likely cross-contaminated. The use of commercially prepared mayonnaise has been shown to decrease the risk of food poisoning outbreaks associated with *S. enteritidis* from restaurants (4).

In Riyadh City, most outbreaks of food poisoning have been attributed to *Salmonella* spp. Chicken "*Shawrma*" sandwiches, a popular fast food, in Saudi Arabia have been repeatedly implicated. Mayonnaise is an ingredient in "*Shawrma*" sandwiches. It is recommended that restaurants use pasteurized eggs and follow the standards recommended by the Saudi Arabian Standards Organization when making mayonnaise, or use commercial mayonnaise. Food handlers need to be educated on, and inspected for proper storage and handling of food. There is a growing need for establishing a reference public health laboratory to help characterize causative bacteria by phage typing.

References:

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4.Usera MA, Cano R and Echeita A. Analysis of *salmonella* sp. serotypes isolated in Spain, 1988-1992 Enferm Infec Microbiol Clin 1995;13:138-145 (Abstract).

Scabies in Riyadh, 1416 H

(Continued from page 11)
be suspected, especially in those patients who come repeatedly to the PHCCs with dermatosis who do not respond to treatment or if one or more family members has itching and skin disease. Scabies can be controlled by early recognition and surveillance, asking physicians to diagnose and report scabies cases, and using topical medications such as Sulphur which is applied over the entire body except head and neck for three to five successive nights or Permithrin, applied once nocturnally. The entire household should be treated at the same time. Irelevant, time consuming control such as laundering sheets and clothes should be avoided. Health providers should focus on relevant control measures and also emphasize the importance of treating all family members at the same time.

National Cancer Registry Report, Saudi Arabia, 1994

The 1994 report for the Saudi National Cancer Registry (NCR) has been published. It is the first report of the NCR to give an overview for the epidemiology of cancer in Saudi Arabia. The NCR is a population based registry that was established in 1412 (1992) under the jurisdiction of the Ministry of Health. Basic data abstracted from the report are: The total number of cancer cases reported to NCR in 1994 was 7028. Saudi nationals accounted for 5044 cases (71.8%) and non Saudis for 1977 cases (28.1%). Among Saudi males, cancer cases numbered 2797 and for females the number of cases was 2247 (M:F ratio =1.25:1). The incidence rate in 1994 for the Saudi population was 38.1 per 100,000 population. For all sites the age specific rate increased with age for both males and females. The most common cancer for all Saudi males was liver cancer (10.1%). The most common cancer for all Saudi females was breast cancer (18.8%). For children less than 15 years of age the most common for both sexes was leukema. For more information contact the National Cancer Registry, PO Box 3354, MBC-64, Riyadh 11211, Saudi Arabia.

Erratum

Vol. 3. no.1.

In the *Saudi Epidemiology Bulletin Vol. 3 No. 1,* page 8, in the table "Comparisons of selected diseases, 1995-1996", the years 1995 and 1996 are in reverse order.

Notice to Contributors

The *Saudi Epidemiology Bulletin* is published quarterly by the Department of Preventive Medicine and the Field Epidemiology Training Program.

This publication is to provide feedback between the Department of Preventive Medicine and medical staff in the Kingdom. The scope of the bulletin is public health in general and epidemiology of infectious and non-infectious diseases in particular, with emphasis on surveillance, outbreak investigation, applied research, hospital infection and innovative approaches. All medical personnel may contribute. Papers fulfilling the following requirements will be considered:

- The work should be original
- Follow the Vancouver style (1) in preparing articles, which should be no longer than 500 words. An Arabic translation of the summary is desirable. Number references sequentially.
- The author is responsible for statements and figures which should not have been previously published.
- Articles accepted for publication are subject to editing, including omission or amendment of material.
- Author's name, institute, full postal address, telephone and fax number should be provided.

Reference:

1. International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals. Saudi Med J 1991;12(6): 443-448.

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Inside the Kingdom

Mar 10-12, 1997: Symposium on "Liver Diseases and Transplantation. King Faisal Specialist Hospital and Research Center. Riyadh. Contact: Conference Secretariat, Academic Affairs & Postgraduate Education, MBC 36, King Faisal Specialist Hospital and Research Center . PO Box 3354, Riyadh 11211.

Outside the Kingdom

Feb 18-24, 1997: Global Meeting INCLEN XIV. Penang, Malaysia. Contact: INCLEN INC, 3600 Market Street, Suite 380, Philadelphia, PA 19104-2644 USA.

Feb 26-28, 1997: 8th Asian Conference on Diarrhoeal Illness. Yogyakarta, Indonesia. Contact: Conference Secretariat, Pediatric Dept., Faculty of Medicine, Gadjah Mada University,Jl. Sekip Utara-Yogyakarta 55284, Indonesia. Tel: 62 274 561616 ext 219. Fax: 62274 583745. e-mail: Juffrie @ ins.healthnet.

March 24-27, 1997: Fifth International Conference on Travel Medicine.%the ICTM Conference, Organising & Administrative Office, SYMPORG S.A., Congress Organisers, 7, Avenue Pictet-de-Rochemont, CH -1207 Geneva, Switzerland.

March 25-28, 1997: 3rd International Congress on Lower Genital tract Infections and Neoplasia. UNESCO Paris, France. Contact: Congress Secretariat, BAXON, 69/73, Avenue du General Leclerc BP 304, 92102 Boulgne, France. Tel: 33(0)1 46 20 04 56. Fax: 33(0)1 47 66 74 70.

April 1-4, 1997: 1st International Conference on Improving Use of Medicines. Chang Mai, Thailand. Contact: Conference Secretariat, The College of Public Health, Chulalongkorn University 10th Floor, Institute Building 3, Soi Chulalongkorn 62, Phayathai Road, Pathumwan, Bangkok 10330, Thailand. Tel: (662)218-8187-8. Fax: (662)255-6046.

April 1-3, 1997: 3rd AGCC Primary Health Care Conference and Exhibition. Abu Dhabi, UAE. Contact: Prof. JC Murdoch, Chairman, Department of Family Medicine, FMHS, UAE University, PO Box 7666, Al Ain, UAE. Fax 00 971 3 657134. e-mail fammed @ medic. uaeu.ae.

June 13-14, 1997: 30th Annual SER Conference, Edmonton, Alberta, Canada. Contact SER, 111 Market Place, Suite 840, Baltimore MD, 21202-6709, USA.

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Dr. Robert Fontaine, Consultant Epidemiologist, CDC
Dr. Hassan E. El-Bushra, Consultant Epidemiologist
Ms. Sherri Underwood, Editor

Selected notifiable diseases by region, Apr-Jun 1996

	Riyadh	Jeddah	Makkah	Madinah	Taif	Asir	Gizan	Najran	Al Baha	Eastern	Al Ahsa	Tabuk	AlJour	Goriat	Arar	Hail	Qassim	Hafr al Batin	Bisha	Gonfuda	Total
Measles	99	365	47	96	13	25	125	3	1	40	16	8	1	2	0	12	95	17	0	10	975
Mumps	57	233	92	44	11	39	17	14	8	43	8	24	7	12	4	14	32	11	2	1	673
Rubella	8	56	16	5	7	19	2	8	0	15	11	1	0	0	0	2	10	10	0	1	171
Varicella	2667	3041	449	791	898	2136	222	416	110	2863	1207	641	224	70	38	240	396	614	343	42	17408
Brucellosis	218	43	25	71	36	514	70	66	60	48	28	7	11	9	1	281	318	90	95	11	2002
Meningitis, mening.	2	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Meningitis, other	97	17	3	8	0	3	12	2	0	9	6	0	0	1	0	0	4	1	1	1	165
Hepatitis A	74	100	186	155	0	135	54	78	19	66	47	13	4	16	9	9	89	18	56	1	1129
Hepatitis B	75	149	75	27	0	97	24	13	64	87	14	14	2	3	3	10	22	8	8	6	701
Hepatitis, unspecified	81	155	42	27	0	30	72	4	4	4	13	28	0	0	0	37	0	0	0	0	497
Typhoid & paratyphoid	17	7	8	5	0	16	2	5	1	16	5	1	0	1	0	7	0	0	12	0	103
Shigellosis	33	24	0	5	0	24	12	23	1	49	3	38	0	0	0	0	4	56	0	0	272
Salmonellosis	126	71	0	2	0	42	3	9	9	236	11	39	0	1	0	0	6	48	0	2	605
Amoebic dysentery	49	1452	0	7	50	455	10	7	0	36	17	56	0	10	0	0	5	1	29	0	2184
Syphilis	5	22	14	0	0	1	6	3	1	24	7	0	0	0	0	1	0	0	0	0	84
VD, other	6	208	0	0	0	7	13	2	1	20	28	0	0	7	0	0	0	4	2	0	298

Comparisons of selected diseases, 1995-1996

	Apr-Jun 1996	Apr-Jun 1995	Change %	Apr-Jun 1996	Jan-Dec 1995
Diphtheria	0	0	0	0	1
Pertussis	16	13	23	16	33
Tetanus, neonatal	3	5	-40	3	25
Tetanus, other	4	4	0	4	14
Poliomyelitis	0	2	-100	0	3
Measles	975	1010	-3.5	975	2574
Mumps	673	371	81	673	1601
Rubella	171	103	66	171	385
Varicella	17408	12614	38	17408	35244
Brucellosis	2002	1862	7.5	2002	5997
Meningitis, mening.	8	28	-71	8	58

	Apr-Jun 1996	Apr-Jun 1995	Change %	Apr-Jun 1996	Jan-Dec 1995
Meningitis, other	165	79	109	165	261
Hepatitis A	1129	750	51	1129	2697
Hepatitis B	701	688	1.9	701	3031
Hepatitis, unspecified	497	411	21	497	1487
Typhoid & paratyphoid	103	89	15.5	103	335
Shigellosis	272	259	5	272	1223
Salmonellosis	605	754	-20	605	2973
Amoebic dysentery	2184	822	164	2184	5949
Syphilis	84	87	3.4	84	386
VD, other	298	140	113	298	961

Diseases of low frequency, Apr-Jun 1996

Pertussis: 16 (Riyadh 1, Jeddah 2, Najran 1, Madinah 6, Qassim 6)
Tetanus, neonatal: 7 (Makkah 4, Jeddah 1, Tabuk 1, Asir 1)
Tetanus, other: 4 (Riyadh 1, Gizan 1, Makkah 1, Taif 1)
Acute Flaccid Paralysis: 23
Echino Coccosis: 4 (Hafr al Batin 4)
Yellow fever, cholera, plague, diphtheria, poliomyelitis, viral encephalitis, rabies: No cases