

النشرة الوبائية السعودية

تصدرها وزارة الصحة

الوكالة المساعدة للطب الوقائي وبرنامج الوبائيات الحقلية
المجلد السادس - العدد الثاني - ابريل - يونية 1999م

Drowning deaths in a desert area following unusually heavy rains

In desert areas, surface water for recreation is scarce, but when it is available, local residents find it very attractive. When a newspaper reported a problem with drowning deaths in the Jizan region, southwestern Saudi Arabia (KSA), we began an investigation to determine the extent of and factors contributing to drowning deaths (DDs). A case-control study was conducted. Odds ratio (OR) was used to identify risk factors contributing to drowning, 95% confidence intervals (95%CI) were calculated and a *P*-value of 0.05 was considered statistically significant. During a 6-month period, from May to October, 1998, 38 DDs occurred in Jizan, including 24 (3.7 per 100,000) among documented persons (those having identification papers) and 14 among undocumented persons (those having no known relatives or companions and coming from a population of unknown size).

DDs occurred throughout the 6-month period but peaked in August. The 38 DDs can be described as 21 incidents involving from 1 to 5 persons. These incidents clustered on 17 days at 6 intermittent watercourses (Figure 1). Moreover, 21 DDs occurred on pairs or triplets of consecutive days.

Interviews with the family members and companions of the victims of 24 DDs (12 incidents) indicated that the drowning occurred after the flow from flash floods had stopped or greatly diminished. DDs in undocumented persons were most likely to occur on a Friday (5 of 9 incidents) than on other days of the week. In contrast, DDs in documented persons had a broader peak, from Friday through Sunday. Out of 12 DDs in undocumented persons, eight (61.5%) occurred on the same day as DDs among documented persons and four occurred on different days (33.3%). The greatest number of deaths (41%) occurred on August 16, with a mean rainfall of 95 mm. All 24 DDs in documented persons occurred during daylight hours. Most of those who drowned, 20 (83%) lived in various rural areas while four (17%) lived in urban areas of two cities in the region. The distance

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Drowning deaths in a desert area following unusually heavy rains

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from the home village to the scene of the drowning incident was less than 700 m in 14 cases (58.3%) and more than 2 km in 10 cases (41.7%). The median age of the victims was 16 (range 8 to 55) and only two were female. Age/sex-specific mortality rates were highest, 14 (6.8%) among children more than 5 years of age. The highest drowning rate, 13 (12.5%) was for males more than 5 years of age.

Seventeen (70.8%) of the victims drowned with their relatives or immediate family members present and seven (29.2%) drowned alone. Twenty-one DDs occurred during recreational activities. These included 10 victims who were either swimming or wading and who fell into a hidden excavation in the watercourse and 11 were their would-be rescuers. In the other incident, a child fell into a small reservoir created by an earthen irrigation dam. He was on the dam when the earth below gave way. His two brothers also drowned trying to rescue him. This was the first visit to the wadi for seven victims (35%) and the first time alone for three victims (15%). Two (10%) had not been to a wadi for a long time, and eight (40%) went only during yearly floods. People who go to the wadis during floods frequently have a higher risk than others, (OR = 6.2, $P < 0.05$).

—Reported by: Mr. Mohammed O. Al-Sayed, Dr. Robert E. Fontaine, and Dr. Nasser A. Al-Hamdan (the Saudi Arabian Field Epidemiology Training Program)

Editorial note: In KSA, rainwater is generally scarce; therefore, wherever it becomes available many people are unaware of its damaging effects. The present study has revealed that at least 38 deaths due to flash floods were recorded in the Jizan region within a 6-month period. The majority of the deaths occurred in the villages and small towns along the base of the foothills. Drowning rates are highest in rural areas (1). In our study, males

constituted over 92 % of the fatalities. The pattern of deaths may be attributable to the sociocultural lifestyle in KSA, where males are independently involved in most of the outdoor recreational activities. Therefore, risk factors include sex; boys under 20 years of age are 3 times more likely to drown than girls (2, 3). Half of the documented victims were under 15 years of age. Most of the documented DDs happened during the school vacation.

Drowning is an important and potentially preventable cause of death in this desert area. Deaths from drown-

ing should not be this high in a desert area where the height of rainfall even in the peak month of August, is below 100 mm. For example, the incidences of drowning in New Jersey, a coastal state in the United States, is approximately half the national incidence of 2.5 fatalities per 100,000 people per year (1).

Barriers or warning signs need to be placed around excavations and small irrigation dams before the rainy season. Education in prevention is the most effective method for reducing the incidences of drowning (4, 5). In-

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Figure 1: Number of drowning deaths (DDs) during floods in the Jizan region, May - Oct., 1998

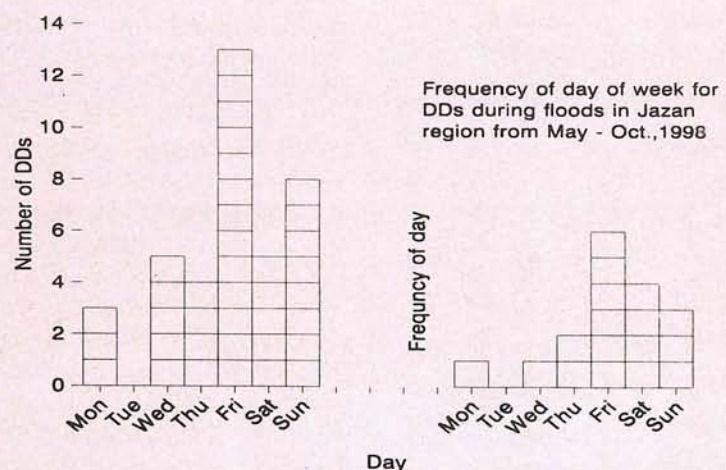


Figure 2: Drowning deaths occurred at a site similar to the one pictured. Note the vehicle in the background, and the earthen dam in the foreground.



Mayonnaise strikes again, and again, and again, salmonellosis from three consecutive meals in one restaurant

Between September 18 and 22, 1998, 162 gastroenteritis patients suddenly appeared at three general hospitals in southern Saudi Arabia. All reported eating food from one restaurant on September 17 or 18. We began a case-control study to identify the food or drink served that was responsible for the outbreak.

A case was defined as any person who ate from the restaurant on September 17 or 18 and developed diarrhea within the outbreak period. Diarrhea illness was defined as three or more loose stools per 24 hours. The controls were all the well companions of case-patients who had shared the restaurant food. Using a structured questionnaire, we interviewed 107 case-patients and 48 control-companions about consuming food or drinking items from the restaurant. We identified 107 cases-patients, 52 (48.6%) were male and 55 (51.4%) were female. The median age was 18 years (range 1-75 years).

All case-patients reported suffering from diarrhea (100%), abdominal pain (99.1%), vomiting (58.9%), fever (98.1%) and nausea (73.8%). The onset of illness occurred over a 46-hour period after food consumption; the median incubation period was 18 hours (range 8-46 hours) (Figure 1).

A total of 104 case-patients (97%) were more likely than control-companions, 5 (10.6%) to have eaten the mixed salad plate that contained 6 salads (Odds ratio [OR] = 291.2; 95% confidence interval [CI] = 57.4 - 1802) at any of 3 consecutive meals on September 17 and 18. Case-patients, 94 (88.4%) were more likely than control-companions, 5 (10.4%) to have eaten either of the 2 salads with mayonnaise (OR = 68; 95% CI = 21 - 251). After stratification by salads with mayonnaise, other salads did not show an elevated OR (weighted OR = 1.04, 95% CI = 0.04 - 10.2). *Salmonella* group D non-typhi was isolated from 81 cases of a total of 126 examined cases. Five isolations of *Salmonella* recovered from patients were serotype *enteritidis*. Mayonnaise

was prepared in the restaurant by blending 5 egg yolks with 1.5 L of oil. Mayonnaise was added to the salads as the salad plates were assembled over a 3-hour period; the mayonnaise was at room temperature the whole time. Eggs had been stored at room temperature for > 3 days.

—Reported by: Ahmed A. Al-Rasheedi, Dr. Mohammed A. Al-Mazroa, and Dr. Robert E. Fontaine (the Saudi Arabian Field Epidemiology Training Program)

Editorial note: *Salmonella* spp., a common cause of food poisoning, is usually found in poultry, uncooked egg products, and meat. Food items containing raw eggs, homemade ice cream, and homemade mayonnaise have all been implicated in many food poisoning outbreaks (1, 2). This common-source outbreak of salmonel-

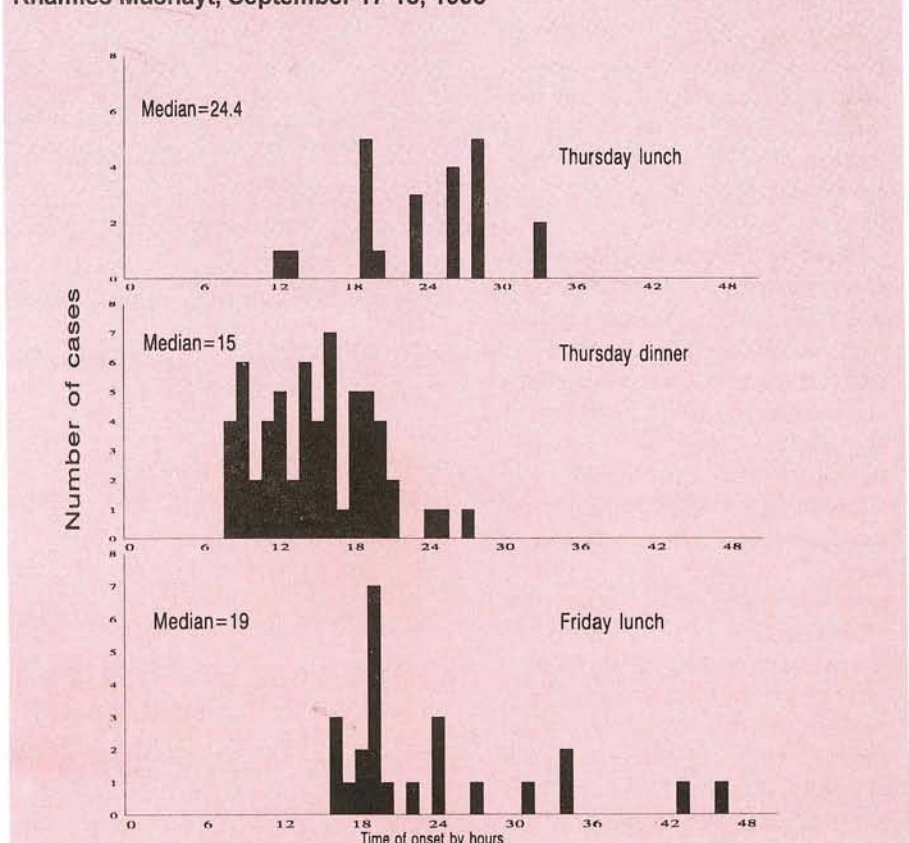
losis resulted from restaurant-prepared mayonnaise served at three consecutive meals. The high attack rate, as well as the relatively short incubation period, indicate high contamination of the mayonnaise by *Salmonella*. Temperature abuse of both eggs and mayonnaise probably resulted in heavy contamination and high infectivity.

The findings of this study demonstrated that this restaurant-made mayonnaise was most probably prepared from infected eggs. The serotype (*enteritidis*) suggests that the organism originated in eggs.

In 1993, *Salmonella* serotype *enteritidis* phage Type 4 was identified from intact eggs produced in Saudi Arabia (3). *Salmonella enterica* serotype *enteritidis* is transmitted via the chicken's ovarian canal to the yolk; ingestion of 1,000 to 100,000 *S. enteritidis* PT4 will produce the illness (4). Although health and municipal

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Figure 1: Gastroenteritis cases by hour of onset after eating at a restaurant, Khamies Mushayt, September 17-18, 1998



Reports from the regions

Measles reported from peripheral hospitals, Riyadh region, 1997 -

Measles is a pramyxoviral disease (morbilliviruses) which is very highly communicable. The mode of transmission is droplet, direct contact with nasal or throat secretions of the patient or, at times, through articles freshly soiled with the nasal or throat secretions. A very high degree of herd immunity (94%) is required to interrupt its spread in the community. Immunity acquired after contacting the disease is lifelong.

The incubation period is about 10 days, varying from 7 to 18 days. The period of communicability extends from slightly before the prodrome to 4 days after the appearance of the rash, though it is minimal after the second day of rash. The vaccine virus is non-communicable. Passive immunity vertically transmitted to the infant lasts for 6-9 months.

Outbreaks of measles in previously vaccinated children, in age group 5 to 19 years, have been attributed to primary vaccine failures. A study of the overall time trends for 1997 and 1998 and other comparative descriptive variables is presented here.

According to the KSA Ministry of Health, measles is defined as: "History of generalized blotchy rash lasting for 3 or more days with fever and history of one of the following: cough, runny nose, red eyes, or Koplik spots."

Based on this case definition, 225 cases were reported from the peripheral hospitals in the Riyadh region in 1997, and 355 in 1998. Because of the introduction of electronic reporting and recording systems, better reporting should definitely be a factor for the apparent increase in 1998.

For the year 1997, the maximum number of cases were reported in week 20 (24 cases), while in 1998 the peak was in week 37 (23 cases). The peak reporting in 1997 probably represents the maximum incidence in early spring, which is known. The peak in 1998 represents a rise in late summer. As regards the geographical distribution, Wadi Al Dawaser, with only 4 cases in 1997, topped the list in

1998 with 115 cases. Al Majmaah moved from sixth in 1997 (6 cases) to third in 1998 (47 cases). The Afeef area reported 23 cases in 1997 and 73 cases in 1998. Compared to the other regions in KSA from 1997-1998, Riyadh had 1437 cases and outnumbered Asir, Jeddah, and Madinah which had 1182, 948, and 889 respectively.

An analysis of the top three reporting areas in 1998 shows the following: 47% of the cases reported in Wadi Al Dawaser in 1998 were from the age group 5 to 14 years, while 26% were from the 15 to 44 years age group; in total, 73% were aged from 5 to 44 years of age. Among the cases reported from Majmaah, 36% were from the age group 5 to 14 years, 59% aged 15 to 44 years; in total, 85% were aged 5 to 44 years. In Afeef also, the age distribution was the same, 54% from the 5 to 14 years age group, 38% from 15 to 44 years, and in total, 93% from 5 to 44 years.

Taken together, in the three areas

with the apparent outbreaks, the most prevalent age group was the 5 to 14 years group (47%). This coincides with findings in other countries, like the United States, where primary vaccine failure led to similar outbreaks. Such outbreaks should become less with the two-dose vaccine schedule.

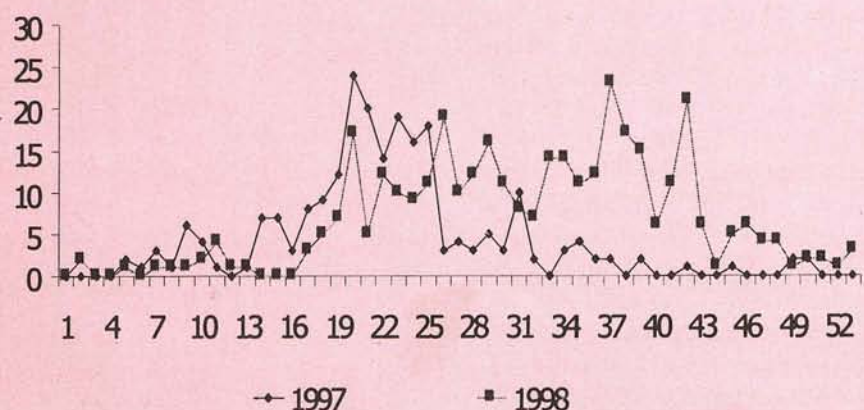
—Reported by: Dr. Saud N. Al-Sahli, Primary Health Care Specialist, General Directorate of Health Affairs, Riyadh region

Editorial note: a nationwide measles vaccination campaign targeting 6-18 years old school children was launched. The first part was conducted in September 1998 and covered intermediate and secondary school children, 1.6 million were vaccinated (96.4% of targeted). The second part is planned to be conducted in January 2000, which would cover all primary and first year of intermediate schools, around 2.3 million children are targeted.

Table 1: Comparison of geographical distribution of measles, peripheral hospitals, Riyadh region, 1997 - 1998

Area	1997	1998
Wadi Al Dawaser	4	115
Afeef	23	73
Al Majmaah	6	47
Others	192	120
Total	225	355

Figure 1: Measles cases reported by international weeks, from peripheral hospitals, Riyadh region, 1997 - 1998



TEPHINET to coordinate activities of Epi training

In June 1997, in Annecy, France, the Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET) was founded and supported under the auspices of World Health Organization (WHO) Division of Emerging and Other Communicable Diseases, and Centers for Disease Control (CDC) and the Fondation Merieux.

TEPHINET was envisioned as a grass roots organization with the mission of strengthening international public health capacity. The goals of the network are to:

- 1) Improve the response to public health emergencies,
- 2) Support existing programs,
- 3) Develop new programs where needed, and
- 4) Support research activities of member training institutions.

Right now, field epidemiology training lacks the global coordination that TEPHINET can bring. TEPHINET is in the process of becoming incorporated as a cooperative international non-government organization (NGO) with headquarters in Atlanta.

Programs in the network include: Field Epidemiology Training Programs (FETPs) in Australia, Canada, Colombia, Egypt, Germany, Hungary, India, Indonesia, Italy, Ivory Coast, Japan, Jordan, Mexico, Peru, Philippines, Saudi Arabia, Spain, Taiwan, Thailand and USA, Public Health Schools Without Walls from Ghana, Uganda, Zimbabwe and Vietnam, International Organizations; WHO and Caribbean Epidemiology Center, and Regional Programs; European Program for Intervention Epidemiology Training (EPIET), and Epidemiologie et Gestion des programmes de Sante (EPIGEPS). The Saudi Arabian FETP is representing the EMRO Region in the Board of Directors of the Network.

Since the network was founded, its programs have collaborated with WHO and its regional offices to mount rapid responses to emerging public health threats such as an HIV outbreak in the Eastern Mediterranean region and a cholera outbreak in El Salvador earlier this year. More recently, TEPHINET identified four trainees to participate in the joint CDC/WHO sponsored program to provide technical assistance to polio

endemic countries seeking to eradicate polio by the year 2000.

The network has plans to offer an international system of accreditation for field-based epidemiology training programs to ensure quality. It will have a considerable library of training materials and provide assistance in creating

new materials. It will provide up-to-date information about surveillance around the world and will provide multi-national response teams to respond to outbreaks in a timely and culturally appropriate manner.

Home page (<http://asclepius.ic.gc.ca/tephinet>)

Reports from the regions

Typhoid and paratyphoid in Riyadh peripheral hospitals, 1997-98

Typhoid is a systemic bacterial disease characterized by insidious onset of sustained fever, headache, malaise, anorexia, a relative bradycardia, splenomegaly, rose spots on the trunk, nonproductive cough, constipation more commonly than diarrhea in adults, and involvement of the lymphoid tissues. Case fatality of about 10% can be reduced to below 1% by prompt therapy. For paratyphoid, the case fatality is much lower. Relapses occur in approximately 3 to 4% of cases.

The etiologic organisms can be isolated from the blood early in the disease and from urine and feces after the first week. In cases treated with antibiotics, isolation in the bone marrow may still be possible. A fourfold rise in agglutination titer in paired sera appears during the second week in less than 70% of cases of typhoid fever. Because of its limited sensitivity, serology is of little diagnostic value.

According to the Ministry of Health, typhoid is diagnosed when there is "Insidious onset of sustained fever, headache, malaise, anorexia, relative

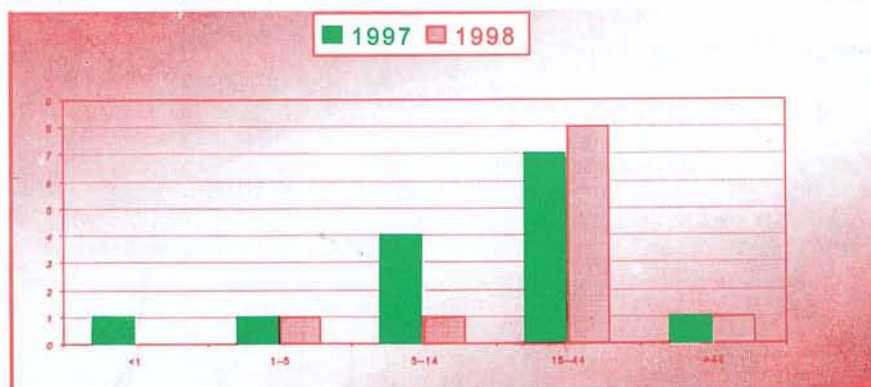
bradycardia, splenomegaly, rose spots on the trunk, involvement of lymphoid tissue."

Based on this case definition, 11 cases were reported from the peripheral hospitals in the Riyadh region in 1997 and 14 in 1998. For the year 1997, the cases were reported sporadically. Only two weeks had slightly higher than expected incidence, two cases in week 22 and three in week 28. The number of reported cases in these two years was high from the city of Shagra, Wadi Al Dawaser (5 and 4 respectively).

The most common age group was 15 to 44 years, which had 63% of the patients in 1997, and 57% in 1998. In these two years, only one case was reported in the age group below 1 year (Al Aflaj), while two cases were reported from the age group 1 to 5 years (Shagra).

—Reported by: Dr. Saud N. Al-Sahli, Primary Health Care Specialist, General Directorate of Health Affairs, Riyadh region

Figure 1: Age distribution of typhoid and paratyphoid cases in Riyadh peripheral hospitals, 1997 - 1998



المايونيز يظهر مرة أخرى، ١٩٩٨ م

في الفترة من ١٨-٢٢ سبتمبر ١٩٩٨ م ظهرت ١٦٢ حالة تسمم غذائي في ثلاثة مستشفيات جنوب المملكة العربية السعودية، وأفادت جميع تلك الحالات عن تناول وجبات من أحد المطاعم في يومي ١٧ و ١٨ سبتمبر .

تم عمل دراسة مقارنة للتعرف على الطعام أو الشراب المتسبب في هذه الحادثة، وقد عُرفت الحالة المصابة على أنها أي شخص تناول طعام أو شراب من هذا المطعم في ١٧ أو ١٨ سبتمبر ١٩٩٨ وظهرت عليه أعراض التسمم الغذائي. تمت مقابلة ١٠٧ حالة مصابة و ٤٨ حالة ضابطة و سؤالهم عن نوع الطعام الذي تناولوه من المطعم. أظهرت النتائج أن (٩٧ ٪) من الحالات المصابة قد تناولوا طبق السلطة المشكلة (يحتوي على ٦ أنواع من السلطة) مقارنة ب (١٠,٤ ٪) من الحالات الضابطة في أي وجبة من الوجبات الثلاث في ١٧ أو ١٨ سبتمبر ، كما أظهرت النتائج أن (٨٨,٨ ٪) من الحالات المصابة قد تناولوا السلطة المحتوية على المايونيز مقارنة ب (١٠,٤٧ ٪) من الحالات الضابطة

يتم تحضير المايونيز داخل المطعم وذلك بضرب صفار ٥ بيضات مع لتر ونصف من الزيت في الخلاط ثم يضاف إلى السلطة ويوضع خارج الثلاجة لمدة تزيد عن ثلاث ساعات ، تم عزل ميكروب السالمونيلا من نوع انتريتيديس من براز ٥ مرضى. إن هذا التسمم الغذائي هو نتيجة لتناول السلطة المحتوية على المايونيز المصنع داخل المطعم

وهذا ما يثبتته عزل ميكروب السالمونيلا انتريتيديس الموجود عادة داخل البيض المصاب. إن البيض المستخدم لعمل المايونيز 'حفظ في درجة حرارة الغرفة لمدة ثلاثة أيام كما إن إهمال وضع المايونيز في الثلاجة بعد تحضيره أدى إلى تكاثر البكتيريا به بشكل كبير مما نتج عنه زيادة مرضيته. بالرغم من أن هناك تميم من وزارتي الصحة والشؤون البلدية ينص على ضرورة استخدام المايونيز التجاري المبستر إلا أن المطاعم ما زالت تصر على تحضيره. لذا فإن تشديد الرقابة من خلال مفتشي البلدية مطلب ضروري لمنعه.

إعداد :

د. محمد المزروع وأحمد الرشيد
برنامج الباثيات الحقلية

حوادث الغرق في جازان، ١٩٩٨

حدثت تقارير صحفية عن مشاكل الغرق المتكررة في منطقة جازان. من هنا بدأنا بعمل دراسة مقارنة لتحديد مشكلة الوفيات الناجمة عن الغرق وعوامل الخطورة المترافقة معها. خلال فترة ٦ اشهر من شهر مايو إلى شهر أكتوبر من عام ١٩٩٨، حدثت ٣٨ حالة وفاة ناجمة عن الغرق في جازان، منها ٢٤ حالة ضمن أشخاص معروفوا الهوية بمعدل ٣,٧ في كل ١٠٠,٠٠٠ و ١٤ حالة لمجهولي الهوية. وقعت حالات الغرق في ٢١ حادثة وتراوح عدد الضحايا فيها من ١ إلى ٥ أشخاص.

بلغت حالات الغرق اوجها (٤١٪) خلال شهر أغسطس حيث بلغ معدل هطول المطر ٩٥ مليلتر. كانت المسافة من المنزل لـ ١٤ (٥٨,٣٪) من الضحايا اقل من ٧٠٠ متر. كان معدل عمر الضحايا ١٦ سنة بمدى ٨-٥٥ سنة كما أن حالتين فقط حدثت لإناث. كان أعلى معدل للغرق بين الذكور اكثر من ٥ سنوات بمعدل ١٢ (١٢,٥٪). أشارت الدراسة الحالية إلى أن اغلب حوادث الغرق كانت اكثر في المناطق القروية ٢٠ (٨٣٪)، وهذا يتفق مع دراسات سابقة نشرت. تعكس الحوادث هنا نمط الحياة الاجتماعية السعودية حيث تتزايد حالات غرق الذكور بحكم أنهم يمارسون أنشطتهم خارج المنزل. إن حوادث الغرق هنا من الممكن تفاديها وفي هذه المنطقة الصحراوية يجدر أن لا تصل لهذا العدد حيث لا يتعدى معدل هطول الأمطار ١٠٠ مليلتر، بينما معدل الغرق في ولاية نيوجرسي الساحلية لا يتعدى ٢,٤ في كل ١٠٠,٠٠٠. بما أن الكثير على جهل بخطورة الأمطار، لذا يجب وضع حواجز وعلامات تحذيرية حول الحفر الناجمة عن التراكتورات وسدود الري قبل حلول موسم الأمطار كما يجب توزيع معلومات عن خطر الأمطار كما أن إنشاء رصد وبائي مطلب ضروري .

إعداد : محمد السيد

برنامج الباثيات الحقلية

Drowning deaths in desert area

(Continued from page 10)

formation about flood hazards must be disseminated rapidly and widely to groups at increased risk for injury (6). Surveillance of flood-related mortality should be initiated in order to monitor the circumstances of death.

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Mayonnaise again and again

(Continued from page 11)

authorities re-circulated an existing order to all restaurants requiring them to use only commercial, pasteurized mayonnaise, restaurants continue to make their own. Health inspectors should conduct periodic check-ups to assure that the regulation is followed.

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Outside the Kingdom

Nov. 28-Dec. 2, 1999: 48th Annual Meeting, American Society of Tropical Medicine and Hygiene, Washington, DC, USA. Contact: ASTMH, 60 Revere Dr., Suite 500, Northbrook, IL 60062 USA. Phone: (847) 480-9592, Fax: (847) 480-9282, E-mail: ASTMH@ASTMH.org or WWW.ASTMH.ORG.

Oct. 23-25, 2000: 5th IEA Eastern Mediterranean Regional Scientific Meeting, Bahrain. Contact: Conference Sec., PO Box 22118, Bahrain. Phone: (+973)246341, fax (+973)258221, E-mail: faaameen@batelco.com.bh, Web site: <http://zurba.com/conf/iea5>.

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The **Saudi Epidemiology Bulletin** welcomes reports from the regions. Please send your reports to the address shown. Thank you.

WELCOME AND MARHABA
The Field Epidemiology Training Program welcomes a new member to the staff:

Dr. Abdullah M. Al-Rabeah,
Epidemiologist

Saudi Epidemiology Bulletin (SEB) is published quarterly by the Department of Preventive Medicine and the Field Epidemiology Training Program (FETP) of the Ministry of Health.

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SEB Editors

Selected notifiable diseases by region, April - June 1999

	Riyadh	Makkah	Jeddah	Taif	Madinah	Qassim	Eastern	Hasa	Hafr Al Batin	Asir	Bisha	Tabuk	Hail	Al Shamal	Jizan	Najran	Baha	Al Jouf	Goriat	Gonfuda	Total
Measles	210	62	79	71	104	116	23	1	240	13	25	33	121	68	12	6	1	36	9	0	1230
Mumps	61	66	306	51	58	32	29	6	16	31	13	11	10	4	8	9	10	8	6	2	737
Rubella	18	22	40	5	11	8	2	4	4	3	0	2	3	2	0	0	0	0	1	0	125
Varicella	1279	172	1036	560	467	307	1538	1107	269	689	158	541	87	94	33	348	84	22	29	7	8827
Brucellosis	162	18	31	85	125	447	83	33	86	398	133	15	381	18	22	92	46	60	5	4	2244
Meningitis, mening.	3	1	2	0	8	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	16
Meningitis, other	39	11	14	2	4	9	3	4	3	8	1	5	2	0	8	1	0	2	0	0	116
Hepatitis A	66	43	30	2	61	95	38	6	27	70	54	26	11	2	31	83	1	21	40	3	710
Hepatitis B	108	84	232	2	23	45	183	8	1	60	22	5	2	3	3	6	60	2	1	2	852
Hepatitis C	26	65	138	0	22	4	89	1	1	3	1	1	3	0	0	2	21	0	0	4	381
Hepatitis, unspecified	41	75	30	0	2	0	0	5	0	51	0	14	53	1	33	2	0	0	0	0	307
Typhoid & paratyphoid	5	38	0	0	7	3	23	3	3	13	0	1	25	8	1	2	3	0	0	2	137
Amoebic dysentery	29	0	396	9	1	50	12	6	1	189	12	12	0	0	3	57	0	0	6	0	783
Shigellosis	19	0	8	2	0	1	13	1	24	0	0	12	0	0	0	40	0	0	1	0	121
Salmonellosis	78	16	55	0	3	17	267	22	14	3	0	26	0	0	0	17	13	0	0	0	531
Syphilis	9	0	17	0	0	0	20	1	0	0	2	0	0	0	0	0	0	0	0	0	49
VD, other	10	0	28	0	0	0	12	24	2	5	0	0	0	0	7	0	0	0	2	0	90

Comparisons of selected notifiable diseases, Apr - Jun 1998-1999

DISEASE	Apr-Jun 1999	Apr-Jun 1998	Change %	Jan-Mar 1999	Jan-Dec 1998	DISEASE	Apr-Jun 1999	Apr-Jun 1998	Change %	Jan-Jun 1999	Jan-Dec 1998
Diphtheria	0	0	0	0	0	Meningitis, other	116	128	-9	301	629
Pertussis	3	39	-92	6	85	Hepatitis A	710	1055	-33	1266	3350
Tetanus, neonatal	2	1	100	3	10	Hepatitis B	852	878	-3	1468	3411
Tetanus, other	0	4	-100	0	11	Hepatitis C	381	367	4	745	1420
Poliomyelitis	0	0	0	0	1	Hepatitis, unspec.	307	370	-17	503	1253
Measles	1230	1949	-37	2403	5519	Typhoid/paratyph.	137	75	83	212	280
Mumps	737	1003	-27	1393	3762	Amoebic dysentery	783	786	-0	1791	3821
Rubella	125	123	2	205	361	Shigellosis	121	133	-9	295	628
Varicella	8827	7396	19	15532	22473	Salmonellosis	531	755	-30	900	2383
Brucellosis	2244	2617	-14	3652	7468	Syphilis	49	71	-31	84	243
Meningitis, mening.	16	11	45	21	42	VD, other	90	116	-22	195	401

Diseases of low frequency, April - June 1999

Yellow fever, plague, diphtheria, poliomyelitis, viral encephalitis, rabies, haemolytic ureamic syndrome, puerperal sepsis, transverse myelitis: No cases

Pertussis: 3 (Makkah 1, Hafr Al Batin 1, Asir 1)

Tetanus neonatal: 2 (Makkah 1, Jeddah 1)

Tetanus, other: 1 (Makkah 1)

Guillain-Barre syndrome: 24 (Riyadh 6, Taif 1, Asir 3, Hasa 1, Baha 1, Goriat 1, Qassim 1, Makkah 1, Al Shamal 1, Madinah 4, Jizan 2, Al Jouf 2)

Echinococcosis: 6 (Riyadh 1, Eastern 1, Asir 4)