Saudi Epidemiology Bulletin
Department of Preventive Medicine and Field Epidemiology Training Program
Ministry of Health / Riyadh / April-June 1995 / Volume 2, Number 2
ISSN 1319-3965

النشرة الوبائية السعودية

تصدرها وزارة الصحة

الوكالة المساعدة للطب الوقائي وبرنامج الوبائيات الحقلي

المجلد الثاني – العدد الثاني - أبريل – مايو – يونيو ١٩٩٥م

Unintentional carbon monoxide poisoning inside a motor-vehicle

After performing Hajj, 1415, a family of 3 men and 6 women, aged between 21 and 70, returned home to Al Quwayiyah, Riyadh Region in a 1991 Toyota Landcruiser. For the entire trip, two men sat in the front seat, one man and three women sat in the middle seat, and three women sat on the floor in the back where the seat had been removed. The air conditioner was off and all windows closed. After five hours of driving, they stopped to sleep in the desert. One woman in the back had developed a mild headache, but it had resolved when she woke up.

After driving for one hour in the morning, the group stopped for gasoline. The driver left the engine running, the windows closed and the air conditioner off. All 3 men left the car for more than 20 minutes to buy food. All six women stayed in the car. The woman in the back who had suffered from a headache the previous day was apparently asleep on the floor. She did not eat. After driving for 45 minutes, a second woman sitting on the floor in the back, fainted. They stopped and revived the woman who had fainted. The third woman in the back felt dizzy and unsteady on her feet. They checked on the first woman, whom they thought was merely asleep, and could not revive her. They took her 3 km to the nearest hospital where she was pronounced dead. The woman who fainted was admitted to the ICU for observation. The other passengers were not admitted. The five surviving women said that after leaving the gasoline station they had headaches and nausea, while the men developed only mild headaches.

The woman who died was 35 years old. She had no prior history of chronic illness and until the headaches began had not complained of any symptoms on the journey. None of the passengers smoke.

The death and symptoms in the other travelers suggest carbon monoxide (CO) poisoning. However, CO poisoning wasn't originally suspected at the hospital and

(Continued on page 3)

Index

Outbreak of acute hemorrhagic conjunctivitis, in male schools, Makkah city, Saudi Arabia, 1994

On 26 October 1994, the Makkah Health Directorate notified the Ministry of Health of 638 cases of acute hemorrhagic conjunctivitis (AHC) among male school students. A team from the Field Epidemiology Training Program, Ministry of Health, went to Makkah to work with school health authorities and the Makkah Health Directorate to determine the extent of the outbreak and to identify the controllable risk factors.

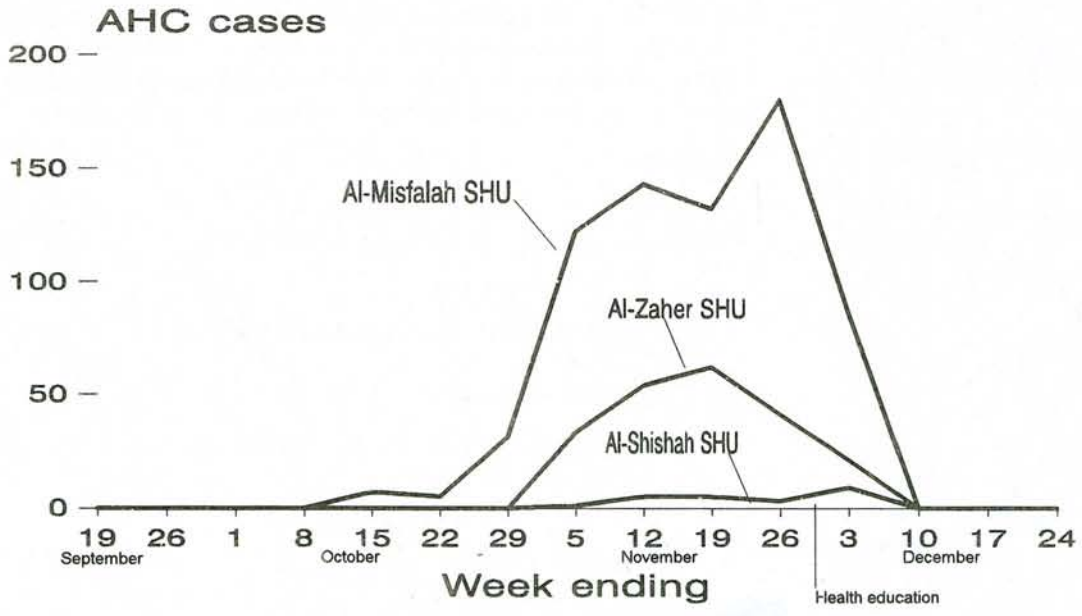
All four Makkah school health units (SHU) were asked to report any student with acute onset of a painful red eye and excessive tearing with one of the following: subconjunctival hemorrhage or petechiae, periorbital odema or preauricular lymphadenitis. The team also reviewed SHU log books for all previous physician diagnosed AHC from the beginning of the school term. It examined 18 new acute cases of AHC. In two schools exposures of AHC case students were compared to unaffected students selected at random from the same classroom.

From September 19 to December 24, 1994, 940 AHC cases were identified involving 126 (58%) Makkah boys' schools. The initial cases were noted at the Al-Misfalah SHU among Burmese residents of the Goz Al-Nakasah neighborhood during the week ending October 15. No new cases appeared after December 10. (Figure 1). The most heavily affected schools (attack rate [AR] >1000) served Burmese immigrants in Goz Al-Nakasah, while Goz Al-Nakasah schools not serving Burmese had AR under 10/1000. In the first selected school (AR 531/1000), all students were from Goz Al-Nakasah. AHC was associated with sharing personal items (e.g. eyeglasses, tissues, towels, clothes, pillows) with another affected person at home, or at a relative's house (odds ratio [OR] = 4.2; 95%) confidence interval [CI] 1.4- 13), or at school with an affected student (OR = 5.6; 95% CI 2.1-15). The other school (AR 90/1000) had a student body which included Burmese and other nationalities. AHC was associated with living in Goz Al-Nakasah (OR=7.4, 95% CI=2.8-20). Among the Goz Al-Nakasah students, AHC was associated with sharing personal items with an affected person at home (OR= 6.5, 95% CI= 1.3-35) but not at school (OR=1.6, 95% CI 0.4-7.5). Students with AHC who did not live in Goz Al-Nakasah did not have other AHC cases at home. Among them AHC was associated with sharing personal items with other AHC cases at school (OR=inf. $p<0.0001$).

From the AHC cases at these two schools, the team selected 40 cooperative families to assess risk factors at home. In these homes there were 334 persons with an AR=560/1000. The median age was

(Continued on page 3)

Figure 1: Acute hemorrhagic conjunctivitis (AHC) by school health unit (SHU), Makkah city, September 19 to December 24, 1994



Carbon monoxide poisoning

(Continued from page 1)

arterial blood gases and carboxyhemoglobin were not evaluated.

When the team inspected the car, they found two holes in the floor for the bolts that should attach the back seat to the floor. Both holes were covered by a bed sheet. The woman who had first become unconscious and subsequently died had been sitting directly over the one hole and the woman who fainted had been sitting over the other hole. The hole under the dead woman was directly above the exhaust pipe of the car that had a 10cm crack immediately opposite the hole. In addition, the rubber seal on the rear door was broken. The test of the exhaust showed that the CO level was 6.4%, which exceeds the normal upper levels (4.6%).

- -Reported by Mr. Ali Mohammed Al-Shahrani and Dr. Mohammed Saeed Al-Qahtani, Field Epidemiology Training Program

Editorial note: CO is an odorless and invisible gas with an affinity for hemoglobin over 240 times that of O_2. CO exposure results in elevated carboxyhemoglobin concentration in the blood and a decreased capacity to transport O_2 to tissue. The resultant anoxia of vital tissues (brain and heart) is responsible for life-threatening manifestations. Mild manifestations include headache, nausea, dimness of vision and fainting. Severe manifestations include coma, convulsions, myocardial ischemia (ECG changes), and death.

The nearly simultaneous presentation of headache in all nine persons confined in a closed vehicle with a faulty exhaust system and with fainting, dizziness and unconsciousness in three of them, suggests that this outbreak was due to CO poisoning. The most severe manifestations and earlier onset corresponds to the closest and most direct exposure to exhaust gasses (the two women sitting over the holes). While the car was in motion, airflow probably forced the exhaust gases away from the holes. Parking the car at the gasoline station probably allowed more exhaust gases to enter.

Exposure to CO, and thereafter CO poisoning, increased generally with the growth of the use of the new products of the modern world. CO exposure comes from three sources:[1] 1) CO in the surrounding environment produced mainly by the automobile, from domestic charcoal burning and space heaters, 2) occupational exposure and 3) cigarette, cigar and pipe smoke in confined places.

In the United States, the unintentional deaths due to CO poisoning result mainly from exposure to motor-vehicle exhaust and occurs more often during the cold months of the year.[2] In Saudi Arabia, CO poisoning is not reportable, but emergency rooms in the hospitals often receive cases in winter due to exposure to burning charcoal smoke in closed places.

This report should alert physicians, especially in the health centers and hospitals serving towns adjacent to highways. They should keep CO poisoning in mind if they receive patients with headache, fainting, dizziness, dim vision or unconsciousness while riding in cars. 100% O_2 therapy should be started immediately, if CO poisoning is suspected.[3] People need to be warned to maintain correctly the exhaust systems of their vehicles.

References:

1. Kurt TL. Chemical asphyxiants. In: Rom E, editor. Environmental and Occupational Medicine. Boston: Little, Brown and Company 1983.
2. CDC. Unintentional deaths from carbon monoxide poisoning--Michigan, 1987-1989. MMWR 1992; 41(47).
3. Goldfrank LR, Lewin NA, Kirstein RH, Weisman RS, Flomenbaum NE. Carbon monoxide. In: Goldfrank LR, Flomenbaum NE, Lewin NA, Weisman RS, Howland MA. Goldfrank's toxicologic emergencies. Norwalk: Appleton & Lang 1990: 751-756.

Acute hemorrhagic conjunctivitis

(Continued from page 2)

11 years and the sex ratio was 1:1 for both AHC cases and unaffected persons. The 34 households with multiple AHC cases were more likely to share beds and towels among family members than households with only a single case (OR= inf., P<0.001). In the 34 households with multiple AHC cases, secondary cases were more likely to share towels (OR=24, 95%CI 6.3-93), tissue (OR=7.6, 95%CI 1.8-34), and beds (OR=7.0,95%CI 2.8-18) than unaffected family members. In 14 families using eye drops to treat AHC, 42 out of 47 family members contracted AHC after treating another family member with eye drops compared with 16 of 29 family members who did not give eye drops to an AHC case (OR=9.3, 95% CI=2.4, 36).

New AHC cases fell to zero three weeks after a two day health education effort in Goz Al-Nakasah mosques and school science classes. This effort stressed the mode of transmission and not sharing personal items.

-- Reported by Mr. Ali Mohammed Al-Shahrani and Dr. Abdul Aziz bin Saeed, Field Epidemiology Training Program, Ministry of Health, General Directorate for Health Affairs, General Directorate for Boys' Schools, Makkah.

Editorial note: Although AHC was apparently widespread in Makkah schools, the investigation indicated that AHC transmission was highly localized to Burmese in Goz Al-Nakasah. AHC transmission in schools was probably secondary to transmission at home. AHC spread in these homes was principally due to sharing of personal items. Home medication with eyedrops added to transmission of AHC by increasing hand contact of unaffected person to the eyes of AHC cases. The

(Continued on page 4)

A new development: Hepatitis A vaccine

In 1979, hepatitis A virus (HAV) was successfully grown in marmosets (small South American primates) and propagated in other cell cultures, thus enabling the beginning of vaccine development. An inactivated vaccine against HAV (HAVRIX) manufactured by SmithKline Beecham has been licensed in several European, Asian and African countries. Recently, it has been approved by the Food and Drug Administration (FDA) of the United States of America. Another inactivated HAV vaccine, produced by Merck Sharp and Dohme, is expected to be commercially available in the near future. Live attenuated hepatitis A vaccines (LAHAV) are still under development; two are now licensed in China. LAHAV are expected to be superior to inactivated HAV vaccines because with a smaller dose, they confer more durable protection without the need for injection

According to information provided by the manufacturer, HAVRIX contains inactivated HAV absorbed onto the surface of aluminum particles and suspended in a sterile solution. The vaccine is given intramuscularly in the deltoid. By 15 days post vaccination, 80-98% of adults develop specific antibodies against HAV, rising to 96% after one month. A booster dose is to be administered 6 to 12 months after the initial injection to prolong protection. The vaccine was shown to be safe and effective in extensive worldwide clinical trials. To-date, these vaccines have been protective for at least three years, and extrapolation models suggest that the vaccine should be protective for a minimum of 10 years.

The vaccine is well tolerated. It does not cause any symptoms of the hepatitis or a significant increase in serum liver enzyme concentration. The most common adverse effects noted in clinical trials were injection-site soreness that may last for 1 or 2 days and headache. Rare adverse effects, not observed in clinical trials conducted so far, may follow expanded commercial use of the vaccine. The vaccine is contraindicated in people with known hypersensitivity to any of its component.

The inactivated vaccine is recommended for people living in endemic areas, travelers to these areas, some military personnel, and certain high risk individuals such as some hospital and laboratory personnel, sewage workers and dietary personnel. Most hospital employees are not at risk and may not need to be vaccinated. Health workers dealing with very young children should be vaccinated against HAV if they were still susceptible to infection. Nosocomial outbreaks of HAV involving health care workers have been linked to HAV-infected infants with diarrhea in neonatal intensive care units.

Because the patterns of disease reflect standards of hygiene and sanitation, considerable variations exist in different populations. Seroprevalence studies indicate that more than 80% of people living in developing countries have evidence of HA infection by age of 20 years. Case-fatality rate due to hepatitis A (HA) is 3 to 7 per 1000. In regions with high endemicity, it would be ideal to administer HA vaccine within a program of infant and childhood vaccinations, possibly combined with the regular vaccination schedule. Whether HAV vaccine could be used for post-exposure prophylaxis or to control outbreaks remain unresolved issues.

HAV vaccine has not yet been added to the vaccination program of the Saudi Ministry of Health. However, some private health care providers may provide it in order to form a better decision on the benefits of using HAV in the general population in Saudi Arabia, we encourage all clinicians to report HA cases, to seek laboratory confirmation of hepatitis and report unspecified hepatitis if laboratory testing is not available.

The ultimate goal of HAV vaccine should be the complete interruption of transmission of HA. The epidemiology of HAV in humans, which is caused by one virus that infects only humans, suggests that eradication of the disease in the future is an achievable goal.

Reported by the Field Epidemiology Training Program.

Bibliography:

Brewer MA, Edwards KM, Decker MD. Who should receive hepatitis A vaccine? Pediatr Infect Dis J, 1995.14: 258-260.

Jilg W, Deinhardt, Hilleman MR. Hepatitis A vaccine. In: Plotkin SA and Mortimer Jr EA (eds.). Vaccines. Philadelphia, WB Saunders

Acute hemorrhagic conjunctivitis

(Continued from page 3)

contribution of other hand-to-eye contact and other skin-to-skin contact could not be assessed. Fomites and hand-eye contact have been postulated as the major mode of transmission.[1,2] Although the rapid decline in new cases following focused health education suggested that health education may have been important in stopping this outbreak, the high AR in Goz Al-Nakasah attained by the time of the health education suggests that a decrease in the pool of susceptible persons also contributed to the decline in case reports.

AHC is an epidemic infection caused by entrovirus 70 or a variant of coxsackivirus A24. It has an abrupt onset after a short (6-48 hours) incubation. Asymptomatic infection has not been described. Combined with a high infectivity, these factors typically produce explosive AHC outbreaks.

The typical presentation of an abrupt onset of a red painful eye, often with a foreign body sensation, excessive tearing, subconjunctival hemorrhages or petechiae, swelling of the lids or periorbital tissue and preauricular lymphadenitis, makes AHC easy to distinguish from other forms of conjunctivitis.[2] AHC was first documented in Ghana in 1969[2] and it spread subsequently throughout tropical and subtropical areas of the world.[1] Coastal areas with high humidity and high population density have been major epidemic sites.[1] In Saudi Arabia, other outbreaks (1985, 1988, 1995) occurred in cities on the coast.[3,4]

In this outbreak, AHC began and multiplied in a community of legal and illegal resident aliens with limited access to primary health care clinics (PHCC) and without the means to afford treatment in the private clinics. Accordingly, AHC

(Continued on page 6)

ERRATUM
Vol. 2. no. 1.

Eradicating schistosomiasis

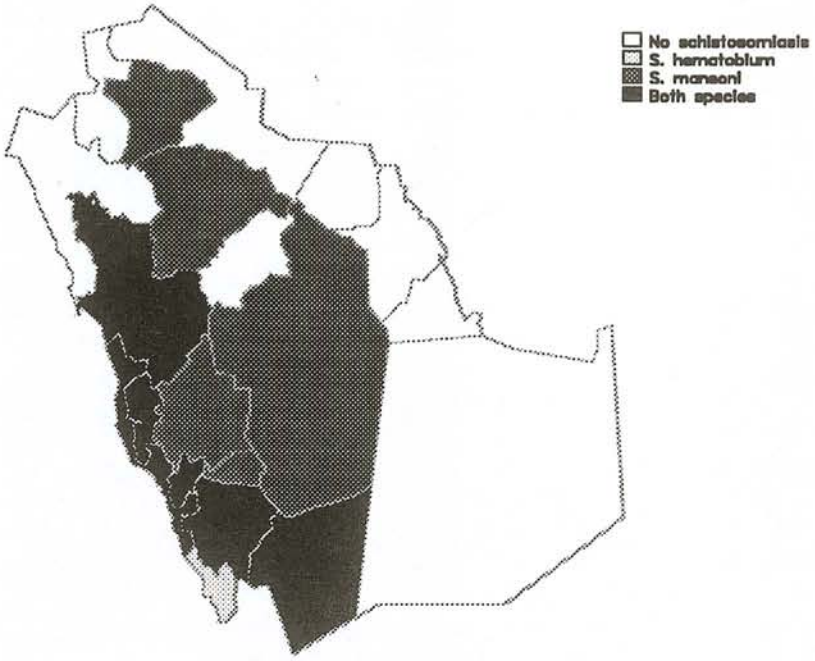


Figure 1: Foci of schistosomiasis infection in Saudi Arabia in 1971

Notice to Contributors

The Saudi Epidemiology Bulletin is published quarterly by the Department of Preventive Medicine and the Field Epidemiology Training Program and is sent free of charge to PHCCs, hospitals and other institutions.

The main purpose of this publication is to provide feedback between the Department of Preventive Medicine and medical staff throughout 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 investigations, applied research, hospital infection and innovative approaches. All medical personnel are invited to 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 more than 500 words. An Arabic translation of the summary is desirable. Provide all figures and maps. Number references sequentially.
- All statements and figures presented are the responsibility of the author and should not have been previously published.
- All articles accepted for publication are subject to editing, including omission or amendment of material.
- The author's name and institute, full postal address, and telephone and fax numbers 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.

Mopping up operations for poliomyelitis

A strategy developed for polio eradication involves mass vaccination with oral polio vaccine (OPV) of all children under 5 (regardless of their immunization status) within a limited area and period of time (3 days).[1,2] This widely disseminates the vaccine virus which competes with transmission of the wild virus. In areas that experience repeated importation of wild virus, this strategy can build herd immunity to a high level producing a barrier to transmission within the high risk area and to subsequent transmission to other areas.

Poliomyelitis surveillance from 1987 to 1993 revealed that 17 (85%) of all 20 virologically confirmed cases were from 7 regions: Jeddah, Makkah, Jizan, Najran, Al-Shamal (Arar), Al-Goriyat and Al-Jouf.[3] All cases were in children under four years old. Of 13 cases from 1989 to 1993 (years for which data are available), 5 of the 13 cases had less than 3 OPV.

Based on these data a special mass vaccination campaign was planned for April and May of 1995. Training workshops were held in each region to review: the epidemiological situation of poliomyelitis and this special strategy, immunization procedures, record keeping, contraindication of immunization, and communication with the public and the family.

Regional organizing committees consisting of religious and community leaders, school teachers, and members of friends of primary health care committees assisted in the planning. Newspapers, radio and television participated in public education about the importance of the OPV campaign. In addition posters and leaflets were distributed. In each region the Governor administered the first dose.

Vaccination was accomplished in these seven high risk regions during March (first OPV) and April (second OPV), 1995. Each dose of OPV was administered within three days to children below 5 years of age regardless of their previous immunization status. Two person vaccination teams (3650) vaccinated 50 children per day. The total number of staff needed at the field level was 7300 persons. Each team was responsible for enumerating all children under 5 years old in their vaccination area before the vaccination campaign. In the seven regions 536,698 (97%) of the 554,883 in the target population received the two OPV doses. Coverage ranged from 96% in Jeddah and Makkah cities to 99% in Goriat and Al-Shamal regions. Cluster surveys done after the campaign yielded an estimated vaccine coverage of over 95% for each region.

The experience gained from this campaign will benefit the upcoming national immunization days planned in late 1995. The first round of OPV is planned to begin on October 29 and the second round on November 25, 1995. Each round will be given over three days. The target population will be 2,635,890 children under 5 years old from all regions of the Kingdom.

Reported by Infectious Diseases, Department - Ministry of Health, Riyadh

References

1. PAHO, WHO, Polio Eradication Field Guide, March 1987.
2. WHO. National Vaccination Campaign in Global Polio Eradication Programme.
3. EPI Progress Report (1995) of Saudi Arabia.

Acute hemorrhagic conjunctivitis

(Continued from page 4)

was first recognized in SHU's after it had spread widely in the Goz Al-Nakasah focus. Early detection is essential for control of many infectious diseases. It must be combined with treatment to reduce the period of infectivity with education and prophylaxis to contacts to prevent immediate spread to family members, and with epidemiologic investigation to identify controllable methods of transmission in the community. Early detection of all communicable diseases in PHCC is important in control. It should be applied to all community members for the protection of everyone. AHC is reportable weekly to the Ministry of Health.

To prevent AHC, family members and students should not share personal items (clothes, towels, pillows, eyeglasses, tissues, etc.). They should wash their hands immediately after contacting the hands or face of a person with AHC. Fresh water and soap should be used for washing hands and faces. Antibiotic eyedrops should not be used as they have no beneficial effect and increase transmission. All personal items of the infected person should be washed separately with detergent and hot water. AHC cases should be kept out of school for seven days, have a separate bed and towel at home, and if possible, a separate room.

References:

1. Bern C, Pallansch MA, et al. Acute hemorrhagic conjunctivitis due to Enterovirus 70 in American Samoa: serum-neutralizing antibodies and sex-specific protection. Am Journal of Epidemiol 1992; 136: (12) 1502-1506.
2. Sawyer LA, Hershow RC, Pallansch MA., et al. An epidemic of acute hemorrhagic conjunctivitis in American Samoa caused by Coxsackivirus A24 variant. Am Journal of Epidemiol 1989; 130: (6) 1187-1189.
3. Moustafa OA, Saleh LH, Abdel-Wahab KS, el-Gammal M. An outbreak of acute haemorrhagic conjunctivitis caused by Enterovirus 70 in Jeddah during 1985. J Egypt Public Health Assoc. 1989; 64 (1-2): 55-75.
4. Al Faran MF, Tabbara KF, Al-Kassimi HM., Madani MA, Arif MA, Ramia ST. Acute hemorrhagic conjunctivitis: In Enterovirus 70 outbreak in Gizan, Saudi Arabia. Annals of Saudi Medicine 1990; 10 (5): 549-552.

Announcement

The selection exam, for the current year, for the Diploma in Field Epidemiology will be held on 28/4/1416H (23/9/1995G). Saudi physicians, dentists and holders of B.S. degrees in allied medical sciences are eligible to apply. Applications should be sent to the Training Department, Ministry of Health, at least one month before the exam. Selection is determined by a written exam and interview. Training consists of a classroom course for 3 months, and epidemiology field work for the rest of the period. The physicians who pass the course are eligible for the first part of the Arab Board in Community Medicine. After graduation, physicians and dentists will be posted as epidemiology specialists in the cadre, the others will be promoted one step for each year of training, and can be included in the health personnel cadre.

NOTE

Beginning this issue, Mrs. Amanda Pope is joining us as Editor for the *Saudi Epidemiology Bulletin*. We welcome her and look forward to her participating in developing the bulletin and working with us in the Field Epidemiology Training Program.

-- Dr. Nasser Al-Hamdan,
Editor-in-chief

Mark your calendar . . .

In the Kingdom

April 2-3, 1996: "Symposium on Recent Advances in Medical Microbiology and Infectious Diseases." Sponsored by the College of Medicine, King Saud University. Contact: Dr. Saleh S.A. Al-Hedaithy, Chairman, Organizing Committee, Symposium on Recent Advances in Medical Microbiology and Infectious Diseases, Postgraduate Center, College of Medicine, King Saud University, P.O. Box 2925, Riyadh 11461, Saudi Arabia. (01)467-1551/1554/1556/1564 (phone) or (01)481-1853(fax).

Outside the Kingdom

Sept. 1-4: "Future Prospects of Epidemiology in the Eastern Mediterranean Region." IEA Eastern Mediterranean Regional Meeting, Alexandria, Egypt. Organizers: International Epidemiological Association (EMR) and Epidemiology Dept., High Institute of Public Health. In collaboration with the World Health Organization, United Nations Children's Fund, Field Epidemiology Training Programme (MOH/USAID/CDC), National Epidemiology Committee (Scientific Research Academy), Clinical Epidemiology Unit (Suez Canal University). Contact: IEA/EMR Meeting, Epidemiology Dept., HIPH, Alexandria University, 165, El-Horreya Ave., Hadara, Alexandria, Egypt. (203)421-8436 (fax.).

Sept. 14-15: "The Lancet: The Challenge of Tuberculosis", Washington, D.C., U.S.A. Sponsored by the Lancet. Contact: Phillipa Orme, The Lancet, TB Conference Secretariat, Elsevier Science Publishers, Ltd., The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK. (44)-0-1865-843691 (phone) (44)-0-1865-843791 (fax).

Aug. 27-30, 1996: "Global Health in a Changing Environment", Nagoya, Japan. Sponsored by the XIV International Scientific Meeting of the International Epidemiological Association. Contact: The XIV ISM Secretariat, Department of Preventive Medicine, Nagoya University School of Medicine, 65 Tsurumai-cho, Showa-ku, Nagoya 466, Japan. (81) 52 741-2111 ext. 2074 (phone) (81) 52 7333-6729 (fax).

Erratum
Vol. 2. no. 1.

In the *Saudi Epidemiology Bulletin*, on page 6, the table title: "Reported and estimated cesarean section rates, 1414H," should read Otaigah hospital reported rate 2.9% and Al Yamamah hospital reported rate 8.5%.

Saudi Epidemiology Bulletin

Published by
the Saudi Arabian Ministry of Health,
Department of Preventive Medicine,
Field Epidemiology Training Program
ISSN 1319-3965
Reg. No. 0075/15 on 12/1/1415H

Send comments, calendar listings or articles to: Saudi Epidemiology Bulletin, Department of Preventive Medicine, Ministry of Health, Riyadh 11176, Saudi Arabia.

For epidemiological assistance, call or fax the FETP at 01-479-0726 or 01-478-1424.

Selected notifiable diseases by region, Jan.-March, 1995

	Riyadh	Jeddah	Makkah	Madinah	Taif	Asir	Gizan	Najran	Al Baha	Eastern	Al Ahsa	Tabuk	Al Jouf	Goriat	Arar	Hail	Qassim	Hafr al-Batin	Bisha
Measles	29	105	44	35	92	38	3	2	12	13	5	8	14	0	0	11	19	0	2
Mumps	48	34	19	30	6	47	5	12	7	39	17	9	2	4	2	6	20	5	5
Rubella	19	9	1	6	7	8	0	2	0	4	3	1	0	0	0	1	5	0	1
Varicella	2020	322	152	340	312	1329	170	107	66	2593	1242	324	59	32	37	228	221	63	131
Brucellosis	112	25	5	63	66	244	61	151	57	13	9	10	50	1	2	237	206	62	92
Meningitis, mening.	8	3	0	3	0	0	0	0	0	0	1	0	0	2	0	0	2	0	1
Meningitis, other	27	3	2	3	4	4	11	0	0	2	4	2	0	0	0	2	2	4	1
Hepatitis A	25	21	48	47	4	133	8	144	3	37	12	17	36	5	9	3	17	14	8
Hepatitis B	57	131	39	28	13	73	9	8	62	155	20	22	1	1	5	0	13	2	16
Hepatitis, unspecified	41	104	42	10	8	89	97	7	56	2	14	2	0	0	3	26	1	1	10
Typhoid & paratyphoid	17	7	3	2	1	8	5	2	0	19	4	4	2	1	1	0	2	1	4
Shigellosis	27	35	0	7	0	2	5	29	1	92	4	23	0	1	0	2	0	0	0
Salmonellosis	76	79	3	2	0	9	3	6	2	303	21	15	0	0	0	0	3	0	13
Amoebic dysentery	21	31	0	2	78	473	25	1	0	54	10	21	105	2	0	0	5	1	3
Syphilis	6	27	3	0	0	2	0	2	0	33	9	0	0	3	0	0	0	0	7
VD, other	13	21	0	0	0	16	20	0	2	21	67	0	0	7	0	0	0	0	1

Comparisons of selected diseases, 1994-1995

	Jan-Mar 1995	Jan-Mar 1994	Jan-Mar 1995	Jan-Dec 1994
Diphtheria	0	0	0	1
Pertussis	7	1	7	14
Tetanus, neonatal	11	6	11	33
Tetanus, other	6	8	6	16
Poliomyelitis	1	1	1	6
Measles	432	285	432	1253
Mumps	317	590	317	2218
Rubella	67	153	67	610
Varicella	9748	6900	9748	31708
Brucellosis	1466	1184	1466	4929
Meningitis, mening.	20	5	20	30

	Jan-Mar 1995	Jan-Mar 1994	Jan-Mar 1995	Jan-Dec 1994
Meningitis, other	71	92	71	377
Hepatitis A	581	503	581	2485
Hepatitis B	655	957	655	3826
Hepatitis, unspecified	513	614	513	2582
Typhoid & paratyphoid	83	120	83	564
Shigellosis	228	227	228	844
Salmonellosis	535	279	535	1723
Amoebic dysentery	832	977	832	4353
Syphilis	92	141	92	511
VD, other	168	231	168	1129

Diseases of low frequency, January-March 1995

Yellow fever, plague, rabies, diptheria: No cases. Poliomyelitis: 1. Pertussis: 7 (Gizan 1, Eastern 2, Asir 4)

Tetanus neonatal 11 (Albaha 1, Gizan 2, Jeddah 6, Makkah 1, Tabuk 1)

Other tetanus: 6 (Gizan 1, Jeddah 2, Riyadh 1, Asir 1, Makkah 1)

Department of Preventive Medicine and Field Epidemiology Training Program
Ministry of Health / P.O. Box 6344
Riyadh 11442, Kingdom of Saudi Arabia