Saudi Epidemiology Bulletin

Department of Preventive Medicine and Field Epidemiology Training Program

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النشرة الوبائية السعودية

تصدرها وزارة الصحة

الوكالة المساعدة للطب الوقائي وبرنامج الوبائيات الحقلي

المجلد الأول – العدد الخامس – جمادى أول ١٤١٥هـ

Plague reports in India

Two outbreaks of plague were reported in Maharashá and Gujarat states in the western India in September 1994. In Marharasha state, the first case of bubonic plague was detected in Beed district on Aug. 26. In neighboring Gujarat state, the first case of pneumonic plague was diagnosed in Surat on Sept. 19. Subsequently, cases of pneumonic plague were detected in five other states and in Delhi. Intensive surveillance had detected 4,780 suspected cases by Oct. 4. Of these, 147 were confirmed and 56 died. By Oct. 9, the cumulative number of suspected cases reached 6,291. Only 3% of suspected cases have been confirmed serologically and a smaller number have been confirmed bacteriologically.[1]

Editorial note: In the first half of the 20th century, India was burdened with the largest share of reported plague in the world, with an estimated total of 10 million deaths. In the 1950s, two-thirds of the world plague cases reported to the World Health Organization were from India; the number gradually decreased until cases ceased to occur in India in 1967.[2] More plague was experienced in Vietnam in the 1960s, with as many as 10,000 deaths a year. In 1992, the most recent year with complete date, human plague was reported from nine countries: Brazil, China, Madagascar, Mongolia, Myanmar, Peru, the United States, Vietnam and Zaire.[3]

Fleas transmit plague between wild rodents and thus maintain plague in a sylvatic cycle of transmission in enzootic foci in Asia, Africa, North America and South America. Sporadic human plague cases may occur in association with plague epizootics in wild rodents. Plague may break out of this pattern and produce epidemics under two conditions: first, when plague epizootics affect domestic rats in close association with human habitation, and second, by person-to-person spread of pneumonic plague.

The most common clinical form is acute regional lymphadenitis, also known as bubonic plague, which may lead to complications of septicemic or pneumonic plague. Mortality is high in untreated cases (60%-100%), but antibiotic treatment administered early in the course of the disease markedly reduces fatalities to 10%-15%.

Prevention of human plague rests on surveillance to detect sporadic cases of pneumonic plague before human-to-human spread begins and to detect outbreaks associated with domestic rats. Surveillance measures include rapid notification of suspect cases, confirmation, isolation and treatment. The drug of choice for plague treatment is streptomycin, 2 grams per day for 10 days. To prevent secondary spread

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Hepatitis E in urban and rural Saudi Arabia

A newly developed EIA (Abbott) for antibodies to hepatitis E virus (anti-HEV) was used to compare HEV exposure in Riyadh and Gizan.[1] Riyadh is an urban area with modern piped water and sewage disposal, whereas Gizan is rural, with a variety of water and sewage disposal systems ranging from primitive to modern.

Among 630 Gizan residents, anti-HEV prevalence was 14.9%, compared with 8.4% among 788 Riyadh residents (prevalence rate [PR]=1.8, 95% confidence interval [CI] 1.3-2.4). Among 1- to 12-year-old children, anti-HEV prevalence was 5.5% in Gizan and 1.2% in 243 Riyadh (PR=4.5, 95% CI 1.2-16.3). Among adults (13 years and older), differences between 465 Gizan residents (prevalence=18.5%) and 545 Riyadh residents (prevalence=11.5%) was less extreme (PR=1.6, 95% CI 1.2-2.1).

In both areas, prevalence was higher in males than in females (Gizan: 17.9% and 11.5%, PR=1.7, 95% CI 1.2-2.5; Riyadh 10.7% and 5.7%, PR=1.9, 95% CI 1.1-3.1). All subjects with anti-HEV lacked anti-HAV IgM and anti-HBc IgM.

—Reported by Ilham T.M. Qattan, M.Sc., Jeddah

Editorial note: The age-specific anti-HEV prevalence rates have three principal components: the yearly incidence (exposure) rates throughout the lifetime of the population, the differences in incidence rates by age, and the accumulation of seropositive individuals over total years of life. If we assume that the first two factors have been constant and that anti-HEV persists for several years, an average annual incidence rate may be computed from the seroprevalence rate and the mean age of the population. Under these assumptions, the average annual incidence rate for HEV is 81 per 10,000 persons per year for Gizan children and 17 per 10,000 for Riyadh children. Since the duration of anti-HEV is not established, similar estimates in adults would be inaccurate.[2]

The estimated incidence rates in children provide an estimate of current risk in HEV transmission. In a population of 100,000 Gizan children, 810 would have new HEV infections each year. However, a proportion of these infections in children may be subclinical and therefore go unrecognized.

Hepatitis resulting from HEV infection should be detected through routine reporting. Patients with acute clinical hepatitis should be reported. Tests for hepatitis A (anti-HAV IgM) and hepatitis B (anti-HBV core IgM) are available. Patients with negative results to these two tests should be reported as non-A non-B hepatitis. If additional testing for anti-hepatitis C is negative, HEV infection may be suspected. A seroprevalence study of HEV in Saudi Arabia done at the Riyadh Military Hospital among blood donors showed a prevalence rate of 7.1%.[3]

Hepatitis E was first recognized in epidemics and sporadic cases related to contaminated water supplies and low socio-economic status.[4] The higher exposure rate of Gizan children compared with children in Riyadh is consistent with this pattern. However, higher prevalence in males suggests that other factors are operating. Improvement in water supplies, sewage disposal and hygiene should be effective in lowering HEV incidence.

References

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3. Ritter A, Flacke H, Vornwald A et al. A seroprevalence study of hepatitis E in Europe and the Middle East. Viral hepatitis and liver disease 1994: 1432-4.

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Plague in India

(Continued from page 1)

of pneumonic plague, persons occupying the same house or a closed space or with face-to-face contact with pneumonic plague patients should be provided as chemoprophylaxis tetracycline, 2 grams daily. Plague outbreaks associated with domestic rats (urban plague) may be controlled with insecticide to kill fleas, followed by rat control.[4] Because wild rodent reservoirs of sylvatic plague are widespread and diverse, control of sylvatic plague is not practical.

The World Health Organization advises travelers arriving from potentially infected areas that any illness presenting within seven days of leaving the area should be brought to the attention of a physician for diagnosis. If plague is suspected, contacts need to be notified and, if necessary, receive prophylaxis or treatment.

In addition, Saudi Arabia has taken several measures to prevent extension of the epidemic into the Kingdom. Initially, persons arriving from India were given a medical examination and placed under surveillance for six days. Those who developed symptoms compatible with plague were placed in isolation. When the outbreak extended from Surat to other areas of India, travel to and from India was restricted. All health facilities were prepared to meet the demand for diagnosis and treatment of plague. International health regulations to keep ships and ports free of rodents and ectoparasites were applied to ships arriving from India.

(Infectious Disease Department – FETP, MOH)

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1. World Health Organization. Plague. Weekly Epidemiologic Record. 1994:40.

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3. World Health Organization. Human plague in 1992. Weekly Epidemiologic Record 1994;2:8-10.

4. Plague. In: Benenson AS (ed.). Control of communicable diseases in man, 15th edition. Washington: American Public Health Association 1990:324-9.

Brucellosis in an extended family in Riyadh

In April 1994 the epidemiologist of Al-Morsalat selected primary health care center in Riyadh noticed increasing numbers of brucellosis reports, including three patients with the same telephone number. Interviews with these three patients revealed that a total of eight relatives living in six different houses in Riyadh city had become ill with brucellosis over a three-week period (Figure 1). Their physicians suspected brucellosis, and each patient had a *Brucella* agglutination titer of ≥320.

Among 44 persons in six families, 13 persons visited farms during the 5 to 60 days before onset of brucellosis. Eight of the 13 developed brucellosis (relative risk [RR]=undefined; p-value>0.001 [Fisher's exact test]).

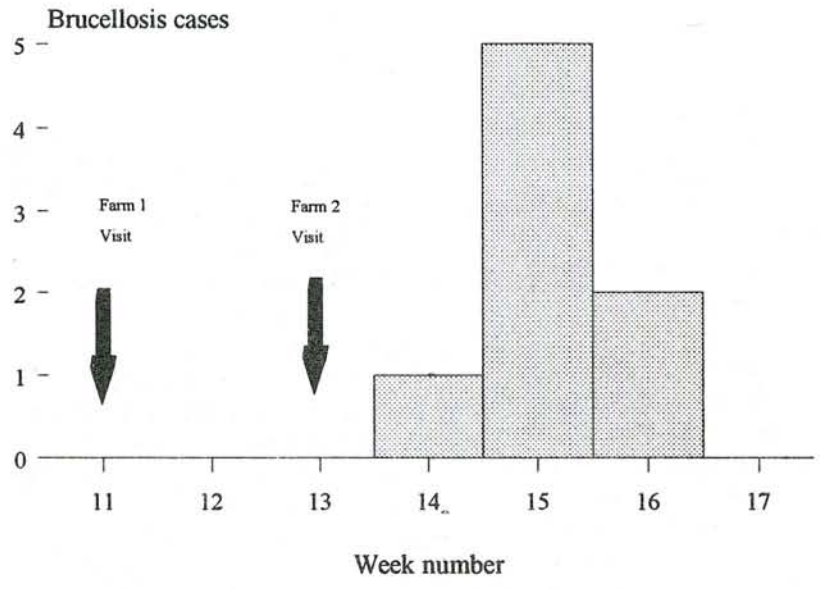
On March 17, 1994, all 13 had visited farm 1. They were served laban prepared from fresh milk from another farm and barbecued meat. There were no sheep or livestock at farm 1. Among these 13 people, brucellosis was not associated with laban (RR = 2.1; 95% confidence interval [CI] 0.4-10.95) and all 13 ate barbecued meat (RR=undefined, p-value= NS). Brucellosis was also not associated with keeping animals on other farms outside the city (RR=0.75; 95% CI 0.25-2.22). One of the visitors at farm 1 invited everyone to visit another farm (farm 2) two weeks later.

Eight persons from that group of 13 visited farm 2; all 8 developed brucellosis from 1 to 3 weeks after the visit. The 5 persons who went to farm 1 but did not visit farm 2 remained well (RR=infinity, p-value< 0.001). There were sick sheep at farm 2. The eight visitors spent more than eight hours with the animals, feeding them and handling them. While at farm 2, the 8 persons consumed only food and drink purchased at a Riyadh grocery store.

The owners of farm 2 had purchased their animals from the main sheep market in Riyadh two months before the outbreak. One animal had had an abortion one month before the people visited farm 2. Three other animals were sick. We were unable to get a veterinarian to examine these animals because the farm's owners told us that they sent these animals to the farm of another relative who had livestock and could care for them.

—Reported by Nashma Saleh Al-Shiban (Field Epidemiology Training Program)

Figure 1: Brucellosis in six families by week of onset
March-April 1994, Riyadh City



Editorial note: It appears likely that eight hours of exposure to sick animals at farm 2 led to the infection. The animals in that farm were kept in close confinement, which can facilitate the spread of infection among animals. As long as sick animals are kept in small areas and their urine or their abortion products are spread on the straw, the environment will remain infected for a long time.[1] When people enter these confined areas, they will either breathe the dust that contains the *Brucella* organism or become infected through lesions on their bodies. The mode of transmission could be either skin contact or airborne. However, it is unlikely that all eight people had skin lesions, so airborne transmission is most likely. In this outbreak there was no strong association with drinking laban; laban is sour and its pH is acidic, while *Brucella* need an alkaline pH (6.0-6.8) to grow.[1] The barbecue meat showed no association at all; all 13 people ate it, but only eight became infected. It is crucial to impress on livestock owners and caretakers the importance of regular veterinary checkups of their herds to identify brucellosis and to eliminate it. Such identification of the disease can control its spread both to other animals and to humans.

References

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Tetanus toxoids and wound management

Tetanus toxoid and antitoxin preparations

- Tetanus and diphtheria toxoids adsorbed (Td).
- Tetanus immune globulin (TIG).
- Diphtheria and tetanus toxoids and pertussis vaccine adsorbed (DTP).
- Diphtheria and tetanus toxoids adsorbed (DT) (dose of diphtheria toxoid is higher than that in Td; dose of tetanus toxoid is the same).
- Tetanus toxoid adsorbed (T).

All adults lacking a complete primary series of diphtheria and tetanus toxoids should complete the series with Td. A primary series for adults is three doses of preparations containing tetanus and diphtheria toxoids, with the first two doses given at least 4 weeks apart and the third dose given 6-12 months after the second. All adults for whom > 10 years have elapsed since completion of their primary series or since their last booster dose should receive a booster dose of Td. Thereafter, a booster dose of Td should be administered every 10 years. Doses need not be repeated if the primary schedule for the series or booster doses is delayed.

Complete and appropriately timed vaccination is nearly 100% effective in preventing tetanus. Td is the preferred preparation for active tetanus immunization of adults because a large proportion of them also lack protective levels of circulating antitoxin against diphtheria.

Wound management

For wound management the need for active immunization, with or without passive immunization, depends on the condition of the wound and the patient's vaccination history. Table 1 represents a summary of the indications for active and passive immunization.

Evidence indicates that complete primary vaccination with tetanus toxoid provides long-lasting protection (>10 years among most recipients). Consequently, after complete primary tetanus vaccination, boosters are recommended at 10-year intervals. For clean and minor wounds occurring during the 10-year interval, no additional booster is recommended. For other wounds, a booster is appropriate if the patient has not received tetanus toxoid within the preceding 5 years. Antitoxin antibodies develop rapidly in persons who have previously received at least two doses of tetanus toxoid.

Persons who have not completed a full primary series of injections or whose vaccination status is unknown or uncertain may require tetanus toxoid and passive immunization at the time of wound cleaning and debridement. Ascertaining the interval since the most recent toxoid dose is not sufficient. A careful attempt should be made to determine whether a patient has previously completed primary vaccination and, if not, how many doses have been given. Persons with unknown or uncertain previous vaccination histories should be considered to have had no previous tetanus toxoid doses.

In managing the wounds of adults, Td is the preferred preparation for active tetanus immunization. This toxoid preparation is also used to enhance protection against diphtheria, because a large proportion of adults are susceptible. Thus, if advantage is taken of visits for care of acute health problems, such as for wound management, some patients who otherwise would remain susceptible can be protected against both diseases. Primary vaccination should ultimately be completed for persons documented to have received fewer than the recommended number of doses, including doses given as part of wound management.

If passive immunization is needed, human tetanus immune globulin (TIG) is the product of choice. The currently recommended prophylactic dose of TIG for wounds of average severity is 250 units IM. When T or Td and TIG are given concurrently, separate syringes and separate sites should be used. Most experts consider the use of adsorbed toxoid mandatory in this situation.

Table 1: Use of tetanus toxoid in wound management

History of Adsorbed Tetanus Toxoid	Clean, minor wounds		All other wounds*	
	Td ^	TIG	Td ^	TIG
Unknown or fewer than three doses	Yes	No	Yes	Yes
Three or more doses($)	No(@)	No	No (&)	No

* Such as, but not limited to, wounds contaminated with dirt, feces, soil, saliva, etc.; puncture wounds; avulsions and wounds resulting from missiles, crushing, burns, and frostbite.

^ For children younger than 7 years; DPT (DT, if pertussis vaccine is contraindicated) is preferred to tetanus toxoid alone. For persons 7 years or older, Td is preferred to tetanus toxoid alone.

$ If only three doses of fluid toxoid have been received, then a fourth dose of toxoid, preferably an adsorbed toxoid, should be given.

@ Yes, if more than 10 years since last dose.

& Yes, if more than five years since last dose.

Source: MMWR 1987; 36:477-481.

Toxoid side effects and adverse reactions

Local reactions (usually erythema and induration, with or without tenderness) can occur after Td is administered. Fever and other systemic symptoms are less common.

Arthus-type hypersensitivity reactions starting 2-8 hours after an injection and often associated with fever and malaise may occur, particularly among persons who have received multiple boosters of tetanus toxoid adsorbed (T).

Rarely, severe systemic reactions, such

as generalized urticaria, anaphylaxis, or neurologic complications, have been reported after administration of tetanus and diphtheria toxoids. Peripheral neuropathy has been reported rarely after administration of T, although a causal relationship has not been established.

Toxoid precautions and contraindications

Although no evidence suggests that diphtheria and tetanus toxoids are teratogenic, waiting until the second trimester of pregnancy to administer Td is a reasonable precaution.

A history of a neurologic reaction or a severe hypersensitivity reaction (e.g., generalized urticaria or anaphylaxis) after a previous dose is a contraindication to diphtheria and tetanus toxoids. Local side effects alone do not preclude continued use. If a prior systemic reaction suggests allergic hypersensitivity, appropriate skin testing to document immediate hypersensitivity may be useful before T vaccination is discontinued. Mild, nonspecific skin-test reactivity to T toxoid is common. Most vaccinees develop a delayed but inconsequential cutaneous hypersensitivity to the toxoid.

Persons experiencing severe Arthus-type hypersensitivity reactions to a dose of T usually have very high serum tetanus antitoxin levels and should not be given even emergency booster doses of Td more frequently than every 10 years.

If a contraindication to using preparations containing T exists in a person who has not completed a primary immunizing course of T and other than a clean minor wound is sustained, only passive immunization should be given using TIG.

Although a minor illness, such as a mild upper respiratory infection, should not be cause for postponing vaccination, a severe febrile illness is reason to defer routine vaccination.

— Reported by Dr. Abdulaziz A.A. Bin Saeed (Field Epidemiology Training Program)

References

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Surveillance

Acute flaccid paralysis

Under the polio eradication initiative, every case of acute flaccid paralysis (AFP), including Guillain-Barre Syndrome, in patients under 15 should be reported immediately to the regional health authorities and the Ministry of Health. These AFP cases will be handled as suspected cases of polio until proven otherwise. Stool specimens should be collected and submitted for virus isolation and a serum sample taken for serology. Reporting of every case of AFP will ensure investigation of all possible polio cases. The eradication effort depends on AFP surveillance data as a basis for actions taken, as an assessment of progress toward the eradication of poliomyelitis, as identification of high-risk areas and as a guide for immunization strategies. Immediate actions triggered by an AFP report target immunization activities at the catchment area of the case, where all children under 5 should receive two doses of oral polio vaccine (OPV) regardless of their previous immunization state. Because the eradication initiative depends on finding every case of polio, it is better to report AFP that is not polio than to risk missing a case that could be polio.

A consistent demonstrable downward trend of poliomyelitis has been seen in the Kingdom between 1977 and 1994, and very low levels have been sustained in the last seven years. However, from 1989 to 1992, low numbers of reported AFP indicated that the surveillance system required improved sensitivity. Accordingly, several new activities were introduced in 1993 to strengthen AFP surveillance. During 1993, AFP reports increased to 43, 10 times more than 1992, using an expected AFP baseline rate of 1/100,000. About 72% of the expected numbers of cases were reported. Continuous improvement has been noted during the first nine months of 1994, during which 58 cases were reported (80% of the expected figure).

The most important activities introduced in the last two years are:

- Formulation of the National Technical Committee for the Poliomyelitis Eradication Program from members working in the

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	1993 (all)	1994 (Jan-Sept)
No. AFP cases reported	43	58
AFP/100,000 < 15 yrs.	0.5	1
AFP cases detected within 1 week of symptoms	80%	84%
AFP cases notified within 24 hours	18%	49%
Control measures within 48 hours	43%	82%
2 stool specimens collected from each case	94%	86%
5 stool specimens collected from each of 5 contacts	70%	77%
% stool specimens received within 3 days	80%	80%
Specimens arriving at lab in acceptable condition	100%	100%
Results returned within 28 days of receiving specimens	80%	80%
Follow-up of cases for 60 days	100%	100%

(INFECTIOUS DISEASE DEPARTMENT – M.O.H.)

Measles in a school population

In March 1994, the Morsalat selected primary health care center (SPHCC) in Riyadh received a report from a private clinic of five Indian children with measles. All attended the Indian Embassy School. A check of three other SPHCCs in Riyadh city revealed 10 additional measles cases in Indian children. The Indian Embassy School doctor reported that he had seen about 20 cases of measles among the students over the preceding two weeks. We began an investigation to determine the extent of the outbreak and to examine the effect of measles vaccine policy.

We defined an outbreak-associated case of measles as a febrile (≥38.3°C) illness with a generalized maculopapular rash ≥ three days and cough, coryza or conjunctivitis occurring between February and April 1994 in Riyadh city. Surveillance data from all four SPHCCs in Riyadh were reviewed. School nurses asked about rash illness in students absent for two consecutive days. A case-control study was conducted among Indian Embassy School students. For each case among the students, we selected 5 control-students at random from the same class. We interviewed parents of both case- and control-students about past measles disease and measles vaccination of the student.

The first case was in a unvaccinated 9-year-old Indian who visited Riyadh for two weeks and returned to India. No measles cases had been reported in Riyadh for the preceding two months. Over the next three months, 101 children developed measles, including 60 Indian School students (attack rate 11/1000). An outbreak of 21 cases followed in the Pakistani Embassy School, and the remaining cases had no direct link to these two outbreaks or to each other.

Only 7 of the Indian students had no history of measles vaccine. Students with documented measles vaccination (17 cases) had a decreased risk of measles when compared with students (36 cases) whose parents gave only an oral history of measles vaccination [odds ratio (OR) = 0.7, 95% confidence interval (CI) 0.4-1]. Documented measles vaccination first given between 6 and 9 months of age was not effective [vaccine efficacy (VE) = 10%, 95% CI 67-100], but it was effective if first given at age 10 months or more (VE = 100%, 95% CI 96-100). Documented MMR either alone or as a booster was not effective in preventing measles.

— Reported by Dr. Salah Al-Awaidy (Field Epidemiology Training Program) and Dr. Etedal A. Bohlega (Morsalat Selected Primary Health Care Center, Riyadh Region)

Editorial note: This investigation demonstrates several points about measles prevention in Saudi Arabia. It shows the importance of having written documentation of measles vaccination for school enrollment as required by Ministry of Health regulations. It demonstrates that more attention needs to be paid to vaccination in expatriate children. In this outbreak measles was first introduced as an imported case from India and then spread among that nationality. Finally, it demonstrates the incomplete effectiveness of measles vaccine given before 10 months of age. The investigation also raises concern about the apparent ineffectiveness of MMR to boost these early measles vaccinations. Implementation of Ministry of Health recommendations regarding written vaccination cards as well as preschool MMR for children enrolled in schools should minimize measles outbreaks among school populations.

AFP surveillance

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poliomyelitis eradication initiative at central and regional levels.

- Appointment in each health region of a polio eradication supervisor, who is responsible for all activities related to poliomyelitis eradication.
- Formulation of polio eradication committees at regional and hospital levels, with the active participation of pediatricians, neurologists and infection-control and laboratory personnel.
- On-the-job training and orientation regarding the poliomyelitis eradication initiative and poliomyelitis surveillance of all polio eradication supervisors and committee members.
- Meetings with pediatricians to encourage their participation in the eradication initiative.
- A letter sent to pediatricians about the steps that should be taken, along with a copy of the World Health Organization poliomyelitis guide for clinicians
- Weekly zero reporting of AFP from all hospitals
- Regular quarterly meetings of the National Technical Committee with regional supervisors to monitor progress and discuss problems

The table on the previous page shows the results of close monitoring of AFP surveillance performance indicators. The data indicate that the polio surveillance system in the Kingdom is functioning properly, though more effort is needed to notify cases within 24 hours and to initiate control measures within 48 hours.

— Reported by the Infectious Diseases Department, Ministry of Health

Letter to the editor

I would like to comment on "Brucellosis in an urban setting" by Nashma Saleh Al-Shiban (Volume 1, No. 4, Saudi Epidemiology Bulletin).

It seems that brucellosis is still endemic in big cities like Riyadh simply because people still keep sick livestock, which are the natural reservoir of *Brucella* species.

I think more intervention should be taken to control the disease, including combined efforts among different government agencies such as the Ministry of Health, the Municipality of Riyadh, the Ministry of Agriculture and the Principality of Riyadh to eradicate sick livestock, vaccinate livestock and educate people about disease complications, mode of transmission and ways of prevention. Prevention is better than cure!

Dr. Salih bin Salih
Riyadh

Cancer Registry training offered

The Ministry of Health is sponsoring a two-day training program on 12-13 Jumada Thani 1415H (15-16 November 1994) at King Abdulaziz Hospital in Jeddah. It is designed to explain the reporting requirements of the National Cancer Registry for malignancies diagnosed on or after 19 Rajab 1415H (1 January 1994). Participants from the Kingdom's hospitals and private clinics will be instructed in identifying cases, assigning a stage to the extent of disease, recording the World Health Organization codes for the primary site and histopathology of the malignancy, and completing the National Cancer Registry registration form.

Prerequisites for registration are facility in written and oral English and working knowledge of medical terminology and human anatomy. There is no registration fee, and all course materials will be provided to the participants. The course instructor is Dolores K. Michels, CTR, the administrative director of the National Cancer Registry and a member of the faculty, American College of Surgeons, Tumor Registry Procedures.

The course consists of lectures followed by practice exercises. Therefore, registration is limited to 25 participants. To get further information or to register, contact Dr. Assem Al-Radi, King Abdulaziz Hospital, P.O. Box 31467, Jeddah 21497, Saudi Arabia; 02-637-5555 (phone) or 02-637-9811 (fax).

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

Mark your calendar . . .

In the Kingdom

November: "The Epidemiologic Transition and Health in Developing Countries." Sponsored by the Department of Medical Biochemistry and Postgraduate Center (King Saud University), the National Referral and Consulting Unit, and the WHO Collaborating Center for Hemoglobinopathies, Thalassemias and Enzymopathies. Contact: Dr. Mohsen A.F. El-Hazmi, Department of Medical Biochemistry, College of Medicine, King Saud University, P.O. Box 2925, Riyadh 11461, Saudi Arabia, 01-467-0830/01-467-1320 (phone) or 01-467-2575 (fax).

Nov. 8-9: "Health Care of the Elderly in the Community." Sponsored by the Postgraduate Centre, College of Medicine, King Saud University. Contact: Dr. Sulaiman Al Shammari, Chairman of the Organizing Committee, Symposium on Health Care of the Elderly in the Community, Postgraduate Centre, 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).

Nov. 13-15: "Growth Disorders in Children." Sponsored by King Faisal Specialist Hospital and Research Center. Contact: Academic Affairs and Postgraduate Education (MBC-36), King Faisal Specialist Hospital and Research Center, P.O. Box 3544, Riyadh 11211, Saudi Arabia, 01-442-7238 (phone) or 01-442-7237 (fax).

Nov. 29-30: "Second International Conference on AIDS -- Saudi Arabia." Sponsored by the Department of Medicine, King Faisal Specialist Hospital and Research Center, at the Cultural Palace, Diplomatic Quarter, Riyadh Contact: Academic Affairs and Postgraduate Education (MBC-36), King Faisal Specialist Hospital and Research Center, P.O. Box 3544, Riyadh 11211, Saudi Arabia, 01-442-7238 (phone) or 01-442-7237 (fax); or the Department of Medicine (MBC-46), King Faisal Specialist Hospital and Research Center, P.O. Box 3544, Riyadh 11211, Saudi Arabia, 01-442-7771 (phone) or 01-442-7499 (fax).

Outside the Kingdom

Jan. 22-24, 1995: Second International Conference on Dietary Assessment Methods: "Combining Theory and Practice." Held at the Westin Hotel, Copley Place, Boston, Mass., USA, and sponsored by the Harvard School of Public Health. Contact: Conference on Dietary Assessment Methods, Harvard School of Public Health, Office of Continuing Education, 677 Huntington Ave., LL-23, Boston MA 02115-6023 USA, 00-1-617-432-1171 (phone) or 00-1-617-432-1969 (fax).

Feb. 6-March 3: "Advanced Methods in Medical and Veterinary Vector Control." Held at the Research Laboratories, Imperial College, University of London, and sponsored by the Department of Biology, Imperial College, and the Department of Medical Parasitology, London School of Hygiene & Tropical Medicine. Contact: Sally Verkaik, Continuing Education Centre, Room 558, Sherfield Building, Imperial College, London SW7 2AZ, U.K., 00-44-71-594-6881/6882 (phone) or 00-44-71-594-6883 (fax).

March 12-16: The SRP 1995 International Conference on Schistosomiasis, Cairo, Egypt. Contact: Schistosomiasis Research Project, 51 Wezarat El Zeraa St., Agouza, Cairo, Egypt. 00-20-2-348-2011/00-20-2-361-3903 (phone) or 00-20-2-360-1756 (fax).

Sept. 5-8: The 11th International Symposium: Epidemiology in Occupational Health. Held in Noordwijkerhout, The Netherlands (near Amsterdam). Sponsored by the Departments of Epidemiology and Public Health and Air Quality of the Agricultural University -- Wageningen, The Netherlands, and the Department of Public Health, Erasmus University -- Rotterdam, The Netherlands, on behalf of the Scientific Committee on Occupational Epidemiology of the International Committee on Occupational Health (ICOH). Contact: Susan Peelen, MSc, Department of Epidemiology and Public Health, P.O. Box 238, 6700 AE Wageningen, The Netherlands; 00-31-8370-84124 (phone) or 00-31-8370-82782 (fax), susan.peelen@medew.hegl.wau.nl (e-mail).

Selected notifiable diseases by region, April-June 1994

	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	80	58	40	13	12	45	12	1	6	19	5	0	10	0	5	7	15	13	2
Mumps	80	132	18	49	20	101	13	9	9	85	17	6	8	3	16	9	33	36	4
Rubella	43	39	16	2	29	25	1	0	0	15	3	0	6	4	0	3	17	5	4
Varicella	1884	572	125	267	371	1316	156	123	75	3027	1217	19	145	40	155	87	181	1334	40
Brucellosis	184	39	19	71	92	214	27	129	90	30	4	3	65	2	9	141	183	100	88
Meningitis, mening.	2	5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meningitis, other	47	15	1	4	27	5	8	1	0	0	2	0	0	0	0	0	3	5	0
Hepatitis A	59	31	13	44	11	107	11	67	12	46	14	6	47	5	12	11	44	66	2
Hepatitis B	62	268	82	19	19	63	11	4	92	167	42	6	3	0	4	2	9	104	7
Hepatitis, unspecified	41	145	81	21	1	69	50	16	107	31	23	0	0	0	4	58	0	3	1
Typhoid & paratyphoid	33	2	10	7	0	11	7	3	0	41	3	0	6	0	1	1	3	11	13
Shigellosis	18	10	0	4	0	5	10	42	0	43	2	2	0	0	0	0	1	8	0
Salmonellosis	129	59	7	0	0	11	1	10	0	134	8	4	0	0	0	0	4	0	0
Amoebic dysentery	39	65	4	0	134	553	15	1	0	68	2	18	150	1	0	10	4	3	3
Syphilis	4	48	3	0	0	5	0	6	11	44	7	0	0	0	0	0	0	0	4
VD, other	6	32	0	0	0	15	17	4	0	165	47	1	0	0	0	0	0	0	0

Comparisons of selected diseases, 1993-1994

	Apr-Jun 1994	Apr-Jun 1993	Jan-Jun 1994	Jan-Dec 1993
Diphtheria	0	1	0	8
Pertussis	4	18	5	45
Tetanus, neonatal	6	6	12	35*
Tetanus, other	3	3	11	20
Poliomyelitis	0	0	1	2
Measles	343	1143	628	3182
Mumps	648	1094	1238	4033
Rubella	212	325	365	848
Varicella	11134	7565	18034	23011
Brucellosis	1490	2171	2674	6985
Meningitis, mening.	10	14	15	52

	Apr-Jun 1994	Apr-Jun 1993	Jan-Jun 1994	Jan-Dec 1993
Meningitis, other	118	114	210	383
Hepatitis A	608	863	1111	3442
Hepatitis B	964	874	1921	3756
Hepatitis, unspecified	65	599	1265	2194
Typhoid & paratyphoid	152	280	272	882
Shigellosis	145	331	372	965
Salmonellosis	367	318	646	1394
Amoebic dysentery	1070	1139	2047	4070
Syphilis	132	137	273	547
VD, other	287	154	518	916

* updated figure

Diseases of low frequency, April-June 1994

Yellow fever, plague, cholera, diphtheria, poliomyelitis: No cases

Viral encephalitis: 2 (Gizan 1, Tabuk 1)

Neonatal tetanus: 6 (Riyadh 2, Makkah 1, Jeddah 3)

Other tetanus: 3 (Jeddah 1, Makkah 2)

Pertussis: 4 (Eastern 3, Qassim 1)

Rabies: 1 (Riyadh 1)

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