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 الثالث - شوال ١٤١٤هـ

## A Hajj message from MOH

Each year, the Kingdom of Saudi Arabia is honored to have millions of Muslims perform pilgrimage to Makkah, the Holy Mosque and the holy places at Mina, Arafat and Muzdalifa, and visit Madinah. Pilgrims come from many countries with their differing habits and lifestyles. Highly infectious diseases, such as meningitis and diarrheal diseases, are endemic in some of these countries. This massive influx of people from around the world occurs in a short period of time and in relatively small and well-defined areas -- conditions that can facilitate the spread of infectious diseases. For these reasons the Ministry of Health (MOH) is directing facilities and manpower during Hajj to provide preventive and curative services so that both residents and pilgrims are protected from imported diseases.

In the MOH, the preventive activities for Hajj continue all year, but they are especially active in the two months before Hajj and during Umrah seasons (especially during Ramadan). Also, the MOH is evaluating the effectiveness of the preventive measures it is taking. In this issue of the Saudi Epidemiology Bulletin you will read about some of the preventive measures taken and the evaluation of vaccination status for meningococcal meningitis in Makkah.

For Hajj the MOH is sending a team of more than 250 doctors, public health specialists, health inspectors, other technical personnel and administrators to support the preventive activities of the Makkah health directorate. They are divided into teams for outbreak investigation and environmental sanitation to work both in the hospitals and health centers and in the field at the sites of worship. Some trainees from the Field Epidemiology Training Program are also participating with these teams.

Health education is concentrated particularly on diseases and health problems common during Hajj, especially heat stroke, overcrowding, environmental sanitation and diarrhea. Pamphlets, posters and tapes are distributed to pilgrims in many languages. These measures are designed so that pilgrims can complete their religious duties and return home in good health, as well as protecting the Kingdom from any possible appearances of imported disease.

We wish you a peaceful, healthy Hajj season for 1414 Hejira.

– Dr. Yagob Al-Mazrou
Assistant Deputy Minister for Preventive Medicine

## Inside . . .

# Controlling meningitis in Makkah

An outbreak of meningococcal meningitis (MCM) appeared in the holy city of Makkah during Ramadan 1412 Hejira (February-March 1992). As a prompt action to protect people, the Ministry of Health (MOH) started a mass vaccination campaign among both residents and pilgrims coming for Umrah.

The vaccination was for *Neisseria meningitidis* groups A and C with polysaccharide vaccine. The vaccination campaign continued in the subsequent months to ensure the highest possible coverage. To determine the coverage rate in Makkah for this vaccine before the Hajj season of 1413 Hejira, we conducted a study during the second half of Shaaban 1413 (February 1993).

A random population sample from Makkah was selected using the cluster sampling technique. All the houses were selected randomly and a standard interview was completed for all households. Of the 902 people interviewed, 476 (52.8%) were male. The majority were Saudi (70.9%), followed by Pakistani (13%), Egyptian (8.5%) and Yemeni (7.4%).

The study showed that 72.6% of the people interviewed had been vaccinated against MCM between Ramadan 1412 and Ramadan 1413. After adding those who had been vaccinated in the preceding two years (12% and 1.3% respectively) and discarding repetition of vaccination in the three years, the calculated vaccination coverage rate for MCM in Makkah in Ramadan 1413 was 85.9%.

Most of the participants (57.2%) received their vaccinations in primary health care centers or government hospitals (Figure 1). Fifty-three percent of the participants believed that the vaccine was protective for one or two years, while 30.8% believed that protection was lifelong.

Those who knew about the outbreak but didn't go for vaccination numbered 26.8%. The reasons they gave for failing to get vaccinated are found in Table 1.

*Reported by Dr. Nasser Al-Hamdan and Dr. Muneer Mawlawi (Field Epidemiology Training Program)*

**Editorial note:** For both adults and children, MCM vaccine is administered subcutaneously as a single 0.5 ml dose. Good antibody levels are achieved within 10-14 days after vaccination. The serogroup A polysaccharide induces antibody in some children as young as 3 months of age, although a response comparable to that seen in adults is not achieved until 4 or 5 years of age; the serogroup C component does not induce a good antibody response before age 18-24 months (1). Vaccination for MCM is beneficial for international travel; in certain high-risk groups (e.g., contacts of patients and medical personnel); and in aborting communitywide outbreaks such as this one. Some of the pilgrims were coming from sub-Saharan Africa (the "meningitis belt") and the Indian subcontinent. Both places are endemic for MCM, which is associated with crowding in small areas. A successful immunization program requires both an effective vaccine and an effective system to deliver it. The MCM vaccination campaign was effective and, according to Ministry of Health statistics, no single case of MCM was reported in Makkah during the 1413H Hajj season. The role of primary health care centers and governmental hospitals in achieving good coverage is clear. Because the epidemic meningococcal disease peaks in the late winter to early spring, the Ministry of Health needs to continue strict vaccination programs because the pilgrimage period is shifting to cooler weather.

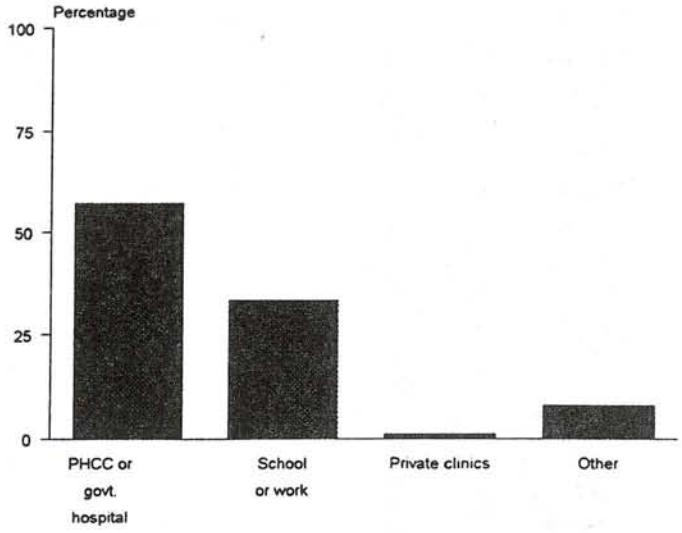


**Figure 1: Most common place of vaccination (Makkah, 1412)**

**Reference**

1. CDC. Meningococcal vaccines: recommendation of the immunization practice advisory committee (ACIP). MMWR 1985; 34:255-9.

| Reason | Number | Percent |
|---|---|---|
| Didn't know about vaccine | 27 | 16.7 |
| No time for vaccination | 14 | 8.6 |
| Vaccine doesn't protect | 9 | 5.6 |
| Vaccine not available | 2 | 1.2 |
| No reason mentioned | 110 | 67.9 |
| **Total** | **162** | **100.0** |

**Table 1: Reasons for not being vaccinated (Makkah, 1412)**

# Ensuring a safer Hajj for pilgrims

Here are some preventive measures required by the Ministry of Health for pilgrims:

A valid international certificate of vaccination against yellow fever is required from all travelers coming from recognized yellow fever zones.

All pilgrims are required to show a valid certificate of vaccination against meningococcal meningitis. The certificate is valid for three years, beginning 10 days after the vaccination. Children aged 3 months to 2 years should receive A vaccine in two doses, one to two months apart. Pilgrims entering the Kingdom within 10 days of vaccination should receive as prophylatic treatment:

Adults: 500 mg ciprofloxacin (one dose) or 300 mg rifampicin twice daily for two days

Children: 10 mg/kg rifampicin (over 1 month of age), 5 mg/kg rifampicin (under 1 month)

Pregnant women: 250 mg ceftriaxone IM

All personnel deputed to work during Hajj must be vaccinated against meningococcal meningitis.

Foodstuffs carried by travelers, including pilgrims, are not permitted into the Kingdom, with the exception of small quantities for use by road travelers. Such items must be kept in clean, easy-to-open containers for inspection by health authorities.

# Preventing vaccine failure

Vaccination failure is a failure in giving a particular vaccine to all or part of the target group and it is measured by vaccination coverage, while on the other hand vaccine failure is a failure in the induction of expected immunogenic response after giving the vaccine and it is measured by seroconversion rate. This means that even 90% coverage does not mean that 90% of the target population are protected. For example, if the measles vaccine coverage is 90% and the seroconversion rate is also 90%, this means that only 81% are protected [vaccine coverage (90%) x vaccine seroconversion (90%) = 81%]. In another way, almost 20% of the target population are not protected and this means that a big pool of susceptibles will be accumulated each year and an outbreak can occur. To remedy this situation, the Ministry of Health has encouraged research in the field of vaccine failure, besides sustaining the effort to assure a high coverage not only for the primary vaccine series but also for booster doses. In 1990, a national cluster survey was conducted to determine vaccination coverage in Saudi children before their first birthday (1). The results are shown in the table below.

In the same period, a study was conducted to evaluate the seroconversion rate after measles vaccine. At that time, Schwarz measles vaccine was given at 9 months. The seroconversion rate was only 85% (2). A vaccination trial was performed using Edmonston-Zagreb (E-Z) measles vaccine and seroconversion rate was 95% after E-Z at 6 months with persistent high measles antibody at 15 months (3). Accordingly, the measles immunization strategy in Saudi Arabia was changed to use E-Z at 6 months with a compulsory second dose given as MMR at 12 months. For poliomyelitis immunization, a national post-vaccination serosurvey was conducted during the same period and seropositivity after the third dose of oral polio vaccines was 79% (type 1), 88% (type 2) and 65% (type 3) (4). At that time, OPV was given at 3, 4 and 5 months. Alternative strategies are under investigation.

The interpretation of the seroconversion results should be taken within the context of the epidemiological pattern of the disease, knowing that the protective antibody levels for some diseases are not known yet.

*Reported by Dr. Mohamed Khalil (Suleimania Children's Hospital, Riyadh)*

| Vaccine | BCG | OPV+DPT (3rd) | Measles |
|---|---|---|---|
| Coverage | 99.5% | 93.6% | 90% |


**References**

1. Al Mazrou YY, Al Shehri S, Al Jeffry M, Frag MK, Baldo MH, Khan MU. Saudi maternal and child health survey. Ministry of Health, Riyadh: 1991.

2. Abanamy A, Khalil M, Salman H, Abdelazeem M. Follow-up of measles antibodies and seroconversion after measles vaccine. Ann Saud Med 1991;11:51-53.

3. Khalil M. Follow-up study of children vaccinated against measles at the age of six months with 3.0 log10 Edmonston-Zagreb. Saudi Med J 1993;14(1):44-45.

4. Khalil M, Al Mazrou Y, Abanamy A, et al. National serosurvey of post-vaccination antibody in Saudi Arabia. Ann Saud Med 1994;14(2):111-113.


# WHO guidelines for immunization safety

*The following are the most recent guidelines on immunization safety from the Expanded Programme on Immunization (EPI) Update (November 1993):*

A sterile syringe and a sterile needle must be used for each injection.

Reusable, sterilizable needles and syringes must be cleaned and sterilized after each use according to EPI guidelines (1).

All health facilities providing immunization services should have access to sterilization. Even facilities using single-use syringes will require reusable, sterilizable equipment for backup in case of a stock shortage.

Single-use syringes and needles should only be used when it can be assured that they will be destroyed after use. Auto-destruct syringes that automatically reuse can now be purchased through UNICEF (2).

Used needles and syringes must be placed in a safe, puncture-resistant container, which should be available at all immunization sessions. If no safe container is available and a needle must be recapped, it should be done with one hand to avoid needle-stick injuries.


References

1. Expanded Programme on Immunization. Immunization in practice -- A guide for health workers who give vaccine, part 2: syringes, needles and sterilization. World Health Organization 1987. WHO Document WHO/EPI/PHW/84/2 Rev. 1.

2. Expanded Programme on Immunization -- Cold Chain. UNICEF launches autodestruct syringes. Technet News -- Logistics for Health 1992; 92.2:6.

# Malaria: Policies for treatment

The occurrence of resistance to 4-aminoquinolines (a safe, cheap and effective anti-malarial) in the most virulent species of malaria (*Plasmodium falciparum*) has necessitated the adoption of a drug policy to maximize the utility of available chemotherapeutics. The World Health Organization has repeatedly called upon countries to adopt policies to mitigate the ill effects of anti-malarial drug resistance. Saudi Arabia was prompt to formulate such a policy.

Malaria transmission in Saudi Arabia is confined to the southwest (Gizan, Asir, Al Baha, Najran and Bisha regions), plus some isolated rural foci in the Jeddah, Makkah, Madinah, Tabuk, Hail and Taif regions. During 1992, 19,623 laboratory-confirmed cases were reported, 17,340 of which were *P. falciparum* (1). Locally contracted cases numbered 15,340.

R1 resistance to 4-aminoquinolines has been documented for some locally acquired cases. More than 4,000 cases were imported to all regions from countries representing a wide variety of sensitivity of *P. falciparum* to 4-aminoquinolines.

The drug policy (2,3) is built on practical issues to try to meet the following aims:

Early treatment of any diagnosed case to relieve symptoms and prevent complications.

Stop or delay introduction of *P. falciparum* resistant to 4-aminoquinolines.

Prevent resumption of transmission to areas free of local transmission.

Prevent relapse in *P. vivax* and *P. ovale* infection.

The policy envisages the following scenario:

All malaria cases, regardless of species, are immediately treated with chloroquine (10 mg base/kg) followed by 5 mg base/kg 6, 24 and 48 hours later.

For *P. vivax* and *P. ovale*, the chloroquine is followed by 14 daily doses of primaquine as follows: 15 mg base for adults or 0.3 mg base/kg (not to exceed 15 mg base) for children.

In case of infection with *P. falciparum*, treatment with chloroquine and primaquine is monitored at 24 hours by looking at the level of parasitemia. If the patient is doing well and parasitemia is substantially reduced, then treatment is continued for three days. If parasitemia is only slightly reduced and the patient is not improved, then a shift is made to one dose of sulfadoxine (25 mg/kg)-pyremethamine (1.25 mg/kg). If there is no response, then resort is made to mefloquine (15 mg base/kg). If treatment with mefloquine fails, then the patient is treated with quinine (10 mg salt/kg) (or quinidine) followed by tetracycline. Severe and resistant cases are to be treated in the hospital.

All drugs mentioned above are made available and kept in strategically suitable places to meet the requirements of any situation. All dosages given are for oral administration.

Available drugs (4):

**Chloroquine** (4-aminoquinoline): Schizonticide (treatment of attack)

**Fansidar** (sulfadoxine-pyremethamine): Schizonticide (treatment of attack)

**Quinine/quinidine** (methoxyquinoline methanol): Schizonticide (treatment of attack)

**Mefloquine** (quinolinemethanol): Schizonticide (treatment of attack)

**Primaquine** (8-aminoquinoline): Liver schizonticides and gametocytocides (prevention of relapse; stop transmission)

**Tetracycline**: Schizonticides (treatment of attack -- supplementary)

The policy is directed through issuance of circulars, meetings and seminars. So far, three circulars have been distributed to Regional Health Affairs offices throughout the Kingdom.

*Reported by the Parasitic Disease Department, Department of Preventive Medicine, Ministry of Health*

**References**

1. Annual reports, Ministry of Health, Kingdom of Saudi Arabia.
2. Practical chemotherapy of malaria. WHO TRS 1990; No. 805
3. Severe and complicated malaria. Trans R Soc Trop Med Hyg 1990; 84 (Suppl 2).
4. World Health Organization. Chemotherapy of Malaria. 2nd ed. Geneva: WHO, 1981.

# 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 (telephone) or 01-467-2575 (fax).

## Outside the Kingdom

**October:** "Eastern Mediterranean Region: Heading Toward the 21st Century." Sponsored by the International Epidemiology Association, the World Health Organization, ministries of health and other international organizations.

*Please send information to: Calendar, Saudi Epidemiology Bulletin, Department of Preventive Medicine, Ministry of Health, Riyadh 11176, or fax: 01-402-8494.*

***Saudi Epidemiology Bulletin***

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Send comments, suggestions 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.

# Brucellosis surveillance, 1986-93

Brucellosis is the most important zoonotic disease in the Kingdom of Saudi Arabia. Human brucellosis has been part of the communicable disease surveillance system since 1986 and should be reported weekly from health centers to regional health authorities. These authorities should report monthly to the Infectious Disease Directorate of the Ministry of Health. Since surveillance began in 1986, Saudi Arabia observed an increase in the notified cases of human brucellosis, which reached a peak in 1990 (Figure 1). Thereafter, reported cases have gradually declined to 6,985 in 1993. Brucellosis patients are found throughout Saudi Arabia, with incidence rates above 100 per 100,000 per year in Bisha, Al-Jouf, Hafr al-Batin, Al-Baha and Qassim regions and lowest in the regions along the Red Sea and the Gulf (Figure 2). Over half (3,628) of the cases in 1993 came from the 15-44 age group (Table 1). However, age distribution of the population is not available and the case numbers in the 5-14 age group also represent an incidence equivalent to the 15-44 age group. This age distribution is similar to previous years.

In 1990, the Ministry of Agriculture and Water began mass animal vaccination programs against the disease in all kinds of animals. Government agencies collaborating on combating the disease from various angles include the Ministries of Health, Agriculture-and Water, and Municipal Affairs, and the Saudi Arabian Standards Organization. National authorities are well aware of the seriousness of brucellosis and have published specific preventive measures, which received royal approval in 1989:

Prevention of animal importation, except from brucella-free countries

Prevention of disease introduction from outside Saudi Arabia through the establishment of veterinary quarantine (under implementation)

Application of control measures in the northern provinces

**Table 1: Reported brucellosis cases by age group, 1993**

| | |
|---|---|
| Under 1 year | 31 |
| 1-4 years | 581 |
| 5-14 years | 1502 |
| 15-44 years | 3628 |
| 45+ years | 1243 |

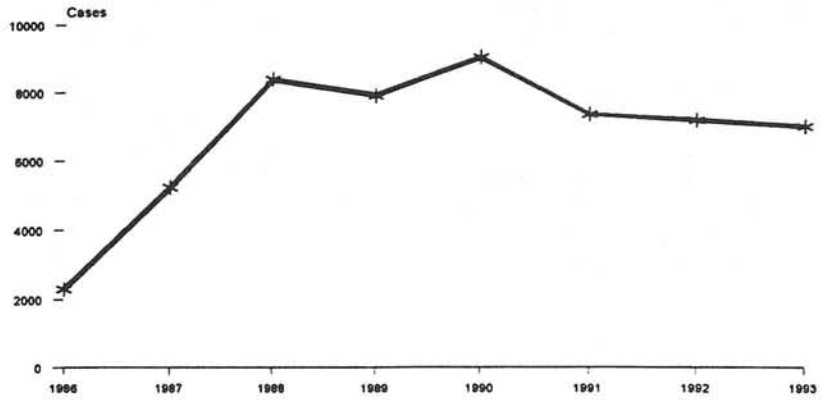



**Figure 1: Reported brucellosis cases, 1986-1993**

Random testing of imported and slaughtered animals

Continuing random testing of milk and milk products

Implementation of compulsory vaccination program for livestock

Health education of animal owners about the importance of vaccination for the animals.

**Editorial note:** The principal reservoir for brucellosis in Saudi Arabia is livestock. A survey survey in 1977 showed an infection prevalence of 0.5% among local sheep and 2.8% among local camels compared with 1.1% and 3.5% of imported sheep and camels. Between 1977 and 1982 a nationwide animal brucellosis survey on 14,000 animals, both local and imported, yielded an infection prevalence rate of 11.6%.

Two controlled studies (1,2) have been published on risk factors for human brucellosis. Both show an increased risk of brucellosis associated with animal contact including milking livestock, contact with placental membranes and cutting raw meat. The risk of brucellosis to people who drank raw milk or ingested dairy products made from raw milk was lower than for animal contact. Other studies from Saudi Arabia have shown that brucellosis is a significant risk to medical laboratory workers and to slaughterhouse workers (3).

*Reported by the Infectious Diseases Department, Ministry of Health*

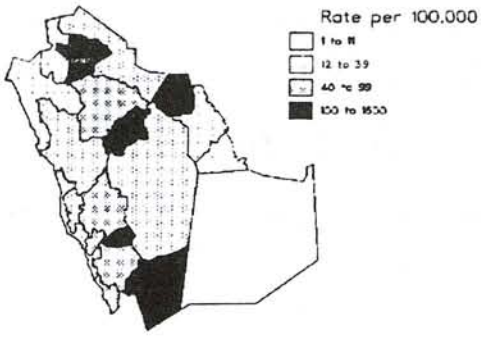
**References**

1. Al-Sekait MA. Epidemiology of brucellosis in northern Saudi Arabia. Saudi Med J 1992; 13(4):296-299.

2. Cooper CW. Risk factors for transmission of brucellosis from animals to humans in Saudi Arabia. Trans R Soc Trop Med Hyg 1992; 86:206-209.

3. Kiel FW, Khan MY. Brucellosis among hospital employees in Saudi Arabia. Infect Control Hosp Epidemiol 1992; 14(5):268-272.

**Figure 2: Brucellosis incidence rates by region, 1993**



# Selected notifiable diseases by region, July-Sept. 1993

| | 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** | 62 | 47 | 45 | 11 | 51 | 291 | 16 | 0 | 11 | 57 | 14 | 2 | 4 | 0 | 0 | 39 | 35 | 58 | 2 |
| **Mumps** | 143 | 203 | 43 | 86 | 56 | 101 | 24 | 9 | 16 | 61 | 23 | 6 | 7 | 12 | 14 | 11 | 40 | 30 | 3 |
| **Rubella** | 25 | 14 | 23 | 2 | 8 | 33 | 2 | 2 | 2 | 15 | 4 | 3 | 1 | 2 | 0 | 4 | 21 | 17 | 1 |
| **Varicella** | 536 | 131 | 63 | 42 | 170 | 685 | 118 | 127 | 63 | 799 | 243 | 22 | 27 | 89 | 27 | 76 | 142 | 56 | 39 |
| **Brucellosis** | 234 | 33 | 21 | 26 | 105 | 289 | 54 | 118 | 56 | 31 | 5 | 2 | 90 | 1 | 6 | 104 | 312 | 167 | 166 |
| **Meningitis, mening.** | 1 | 0 | 1 | 4 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Meningitis, other** | 25 | 22 | 0 | 8 | 0 | 8 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| **Hepatitis A** | 75 | 27 | 8 | 50 | 26 | 223 | 5 | 79 | 26 | 50 | 85 | 16 | 44 | 3 | 8 | 0 | 103 | 33 | 20 |
| **Hepatitis B** | 102 | 144 | 81 | 45 | 20 | 65 | 7 | 16 | 102 | 166 | 21 | 1 | 0 | 0 | 8 | 3 | 21 | 140 | 34 |
| **Hepatitis, unspecified** | 32 | 78 | 84 | 27 | 0 | 152 | 43 | 12 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 48 | 0 | 4 | 13 |
| **Typhoid & paratyphoid** | 42 | 18 | 11 | 16 | 6 | 10 | 8 | 4 | 0 | 67 | 8 | 1 | 10 | 0 | 2 | 5 | 5 | 23 | 1 |
| **Shigellosis** | 34 | 6 | 0 | 2 | 0 | 6 | 49 | 9 | 0 | 82 | 3 | 6 | 0 | 0 | 0 | 0 | 0 | 16 | 4 |
| **Salmonellosis** | 136 | 70 | 10 | 0 | 0 | 13 | 7 | 1 | 0 | 170 | 29 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 7 |
| **Amoebic dysentery** | 21 | 76 | 5 | 0 | 115 | 488 | 80 | 14 | 0 | 127 | 19 | 7 | 49 | 1 | 0 | 15 | 0 | 0 | 12 |
| **Syphilis** | 7 | 38 | 12 | 0 | 0 | 15 | 2 | 1 | 7 | 54 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 18 |
| **VD, other** | 6 | 13 | 0 | 0 | 0 | 20 | 26 | 4 | 2 | 181 | 69 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

# Comparisons of selected diseases, 1992-1993

| | Jul-Sep 1993 | Jul-Sep 1992 | Jan-Sep 1993 | Jan-Dec 1992 |
|---|---|---|---|---|
| **Diphtheria** | 0 | 0 | 6 | 2 |
| **Pertussis** | 18 | 41 | 40 | 94 |
| **Tetanus, neonatal** | 5 | 3 | 16 | 16 |
| **Tetanus, other** | 4 | 2 | 14 | 15 |
| **Poliomyelitis** | 1 | 0 | 1 | 2 |
| **Measles** | 745 | 1349 | 2750 | 11299 |
| **Mumps** | 888 | 977 | 2904 | 5054 |
| **Rubella** | 179 | 450 | 714 | 3725 |
| **Varicella** | 3455 | 12650 | 18816 | 93919 |
| **Brucellosis** | 1830 | 1771 | 5794 | 7184 |
| **Meningitis, mening.** | 9 | 7 | 45 | 88 |

| | Jul-Sep 1993 | Jul-Sep 1992 | Jan-Sep 1993 | Jan-Dec 1992 |
|---|---|---|---|---|
| **Meningitis, other** | 74 | 60 | 277 | 411 |
| **Hepatitis A** | 881 | 735 | 2595 | 3292 |
| **Hepatitis B** | 976 | 836 | 2768 | 2989 |
| **Hepatitis, unspecified** | 512 | 319 | 1535 | 1684 |
| **Typhoid & paratyphoid** | 242 | 329 | 712 | 1201 |
| **Shigellosis** | 217 | 151 | 729 | 806 |
| **Salmonellosis** | 445 | 429 | 970 | 1226 |
| **Amoebic dysentery** | 1009 | 1507 | 3012 | 5645 |
| **Syphilis** | 174 | 112 | 405 | 576 |
| **VD, other** | 322 | 254 | 656 | 910 |

# Diseases of low frequency

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

Poliomyelitis, viral encephalitis: 1

Pertussis: 14

Neonatal tetanus: 7

Other tetanus: 4

# Selected notifiable diseases by region, Oct.-Dec. 1993

| | 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 | 30 | 30 | 11 | 4 | 56 | 218 | 8 | 1 | 2 | 19 | 5 | 1 | 13 | 1 | 1 | 5 | 14 | 12 | 1 |
| Mumps | 120 | 246 | 125 | 76 | 68 | 182 | 18 | 2 | 67 | 68 | 35 | 7 | 10 | 5 | 12 | 9 | 41 | 30 | 8 |
| Rubella | 28 | 31 | 6 | 2 | 9 | 26 | 0 | 0 | 0 | 12 | 7 | 2 | 0 | 2 | 1 | 0 | 5 | 2 | 1 |
| Varicella | 734 | 285 | 63 | 68 | 143 | 621 | 152 | 16 | 55 | 1197 | 376 | 33 | 40 | 52 | 92 | 58 | 107 | 86 | 17 |
| Brucellosis | 116 | 15 | 50 | 11 | 111 | 213 | 62 | 68 | 62 | 12 | 0 | 1 | 48 | 1 | 6 | 61 | 170 | 95 | 84 |
| Meningitis, mening. | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Meningitis, other | 27 | 11 | 0 | 13 | 3 | 7 | 21 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 9 | 1 |
| Hepatitis A | 88 | 51 | 21 | 15 | 49 | 172 | 4 | 66 | 6 | 106 | 73 | 10 | 31 | 14 | 26 | 2 | 74 | 36 | 3 |
| Hepatitis B | 91 | 239 | 86 | 23 | 17 | 76 | 8 | 9 | 92 | 172 | 21 | 5 | 0 | 1 | 2 | 12 | 30 | 102 | 2 |
| Hepatitis, unspecified | 38 | 213 | 102 | 19 | 2 | 79 | 37 | 4 | 34 | 63 | 0 | 1 | 0 | 0 | 5 | 60 | 0 | 2 | 0 |
| Typhoid & paratyphoid | 46 | 7 | 15 | 6 | 0 | 12 | 9 | 8 | 0 | 46 | 2 | 0 | 8 | 0 | 2 | 5 | 1 | 2 | 1 |
| Shigellosis | 30 | 21 | 3 | 8 | 0 | 2 | 12 | 62 | 2 | 79 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 13 | 2 |
| Salmonellosis | 125 | 96 | 4 | 0 | 0 | 5 | 2 | 6 | 17 | 136 | 14 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 1 |
| Amoebic dysentery | 47 | 98 | 48 | 0 | 114 | 432 | 89 | 5 | 0 | 114 | 16 | 9 | 64 | 0 | 0 | 13 | 0 | 0 | 9 |
| Syphilis | 6 | 40 | 0 | 0 | 0 | 6 | 2 | 4 | 10 | 63 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| VD, other | 1 | 45 | 0 | 0 | 0 | 16 | 15 | 3 | 1 | 105 | 59 | 6 | 0 | 8 | 0 | 0 | 0 | 0 | 1 |

# Comparisons of selected diseases, 1992-1993

| | Oct-Dec 1993 | Oct-Dec 1992 | Jan-Dec 1993 | Jan-Dec 1992 |
|---|---|---|---|---|
| Diphtheria | 2 | 1 | 8 | 2 |
| Pertussis | 5 | 7 | 45 | 94 |
| Tetanus, neonatal | 14 | 4 | 30 | 15 |
| Tetanus, other | 6 | 6 | 20 | 15 |
| Poliomyelitis | 1 | 0 | 2 | 2 |
| Measles | 432 | 690 | 3182 | 11299 |
| Mumps | 1129 | 1609 | 4033 | 5054 |
| Rubella | 134 | 230 | 848 | 3725 |
| Varicella | 4195 | 10396 | 23011 | 93199 |
| Brucellosis | 1191 | 1814 | 6985 | 7184 |
| Meningitis, mening. | 7 | 2 | 52 | 88 |

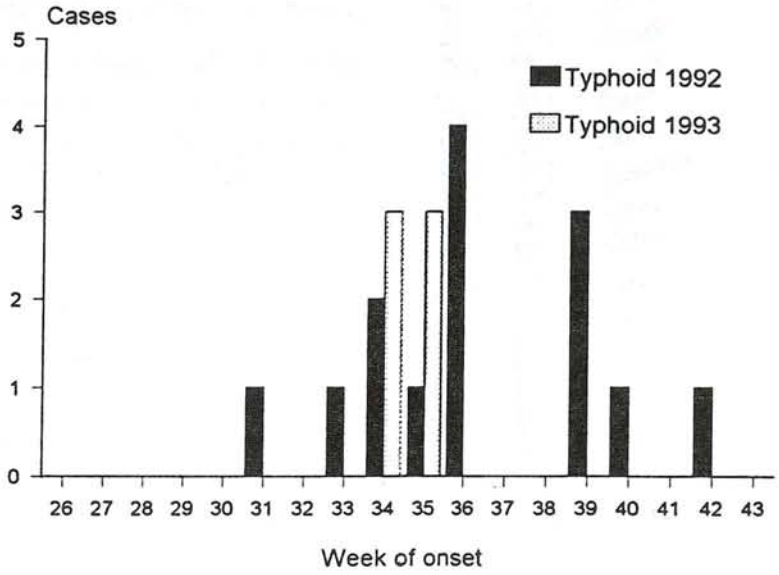
| | Oct-Dec 1993 | Oct-Dec 1992 | Jan-Dec 1993 | Jan-Dec 1992 |
|---|---|---|---|---|
| Meningitis, other | 106 | 146 | 383 | 411 |
| Hepatitis A | 841 | 1140 | 3442 | 3292 |
| Hepatitis B | 988 | 926 | 3756 | 2989 |
| Hepatits, Unspecified | 659 | 599 | 2194 | 1684 |
| Typhoid & paratyphoid | 170 | 350 | 882 | 1201 |
| Shigellosis | 236 | 328 | 965 | 906 |
| Salmonellosis | 424 | 425 | 1394 | 1226 |
| Amoebic dysentery | 1058 | 1692 | 4070 | 5645 |
| Syphilis | 142 | 131 | 547 | 576 |
| VD, other | 260 | 327 | 916 | 910 |

# Diseases of low frequency, Oct.-Dec. 1993

Yellow fever, plague, cholera: No cases
Poliomyelitis: 1
Viral encephalitis: 3
Rabies, diphtheria: 2
Pertussis: 5
Neonatal tetanus: 17
Other tetanus: 6

# Follow-up: Typhoid in travelers to Syria

During the summer of 1992, the Qatif Primary Health Care Department detected 16 confirmed cases of typhoid fever among travelers to Syria. There had been a similar rise in the number of cases in previous years. An investigation revealed the likelihood that the common source in Syria was probably waterborne. During the summer of 1993, all 26 primary health care centers offered health education programs and typhoid vaccinations. Over three months (Moharram, Safar and Rabea Awal 1414), 13,401 vaccine doses were given. Last year, only six confirmed typhoid cases reported travel to Syria. No vaccinated person developed typhoid with the exception of one person who received only one dose of vaccine and traveled to Syria the same day. The total number of visitors to Syria was believed to be similar to the number in previous years. The attack rate of typhoid in travelers to Syria was 6.4 per 10,000 in 1992 and 2.4 per 10,000 in 1993. The incidence of acquired typhoid fever sharply declined last year compared with the year before, and the cases in 1993 were only 37.5% of the 1992 total. No one reported side effects from the typhoid vaccine.




**Recommendations:** All travelers to areas with a high risk of typhoid should be vaccinated.

Travelers should be warned that vaccination is not a substitute for careful selection of food and water.

The vaccine is not 100% effective, and if the number of typhoid organisms in the food or water is very high, it is of little value.

Vaccination should begin well before departure. Two doses of vaccine administered four weeks apart provide the greatest protection.

*Reported by Dr. Hashim A. Abulrahi (Field Epidemiology Training Program)*

**Editorial note:** Typhoid fever is unique to humans. It remains a significant problem in many developing countries and poses a risk to travelers who visit such endemic regions. The proportion of cases acquired in foreign countries has continued to rise. The risk of typhoid should not be underestimated as a travel-related illness. The only measure of protection is by education of the population about hygiene in water and food (e.g., using bottled water, coffee and tea and avoiding unpasteurized dairy products, tap water, and ice). Travelers should refrain from eating raw, unpeeled vegetables and salad and also should abstain from eating foods prepared by street vendors. Also recommended is vaccination of travelers to areas that have a recognized risk of exposure to typhoid.

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