

النشرة الوبائية السعودية

تصدرها وزارة الصحة

الوكالة المساعدة للطب الوقائي و برنامج الوبائيات الحقلية

المجلد الاول - العدد الثاني - رجب ١٤١٤ هـ

Surveillance in Saudi Arabia

Health surveillance programs in Saudi Arabia are as old as the Kingdom itself, beginning in 1933 (1353 Hejira) with a Royal decree implementing communicable disease prevention efforts. In 1940, Aramco began malaria control activities, particularly in the Eastern Region, to protect its employees from major endemic health problems. Taking seriously its responsibility as the site of Islam's two holiest cities, the government in 1952 began its own malaria control efforts to protect pilgrims on their route to Makkah and Madinah. This program was later expanded to include all malarious areas of the Kingdom. In 1963, the government and the World Health Organization agreed on a plan of operation along the lines of the worldwide malaria control program. In 1979, the first comprehensive annual report of communicable diseases was published by the Department of Preventive Medicine, Ministry of Health, and over the years the surveillance system has been expanded.

The objectives of the surveillance system are:

- To estimate the magnitude of morbidity with emphasis on identifying high-risk population and geographical areas, determining risk factors and establishing public health priorities
- To detect as early as possible any abnormal trend in disease patterns and implement prevention and containment measures
- To prevent introduction of infectious diseases from abroad by controlling border entry points and checking pilgrims coming from countries affected by certain diseases
- To assess the effectiveness of the system and to monitor immunization coverage.

The surveillance system functions on several levels. The primary health care centers (PHCCs) collect morbidity data for reportable diseases and compare that

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Surveillance system in Saudi Arabia

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data with previous information in order to detect any change, either up or down. They pass that information on to the regional level for action, and work with patients and their contacts in instituting preventive measures.

At the regional level, surveillance data from the PHCCs are analyzed and the diagnosis and preventive measures are verified. These data are passed on to the central authority for action. The data are compared with other regional and national figures. Regional health authorities also provide technical and educational support for employees.

Finally, the central level collects, tabulates and presents all regional data. Regional and national incidence rates are compared with each other and with international figures. The central authority verifies reasons for trends as described by local and regional levels and provides technical support as needed, either by personal visit or by phone and fax. Finally, it ensures that preventive and control measures are within stated policy and decides whether changes in policy are needed.

Surveillance is conducted in several ways. Most information comes from passive surveillance, whereby the central authority collects information sent in by the regions. Reporting times are established by law. Diseases are reportable by number and classified by week of occurrence, age group, nationality and sex. Animal bites and scorpion stings are reported every one and three months, respectively. Active surveillance is used in certain circum-

Clarification

An article in the first issue of the Saudi Epidemiology Bulletin described the Field Epidemiology Training Program. The program accepts only Saudi nationals and physicians who are citizens of other GCC states.

For information, write the Field Epidemiology Training Program, Ministry of Health, P.O. Box 6344, Riyadh 11442, Saudi Arabia, or call or fax 01-479-0726 or 01-478-1424.

Class 1 diseases (reportable within 24 hours)

- Acute flaccid paralysis
- Anthrax
- Cholera
- Diphtheria
- Food poisoning
- HIV infection
- Meningitis, meningococcal
- Plague
- Relapsing fever
- Tetanus, neonatal
- Typhus
- Viral hemorrhagic fever
- Yellow fever

Epidemics

Unusual occurrences of any disease

Class 2 diseases

- Amoebic dysentery
- Brucellosis
- Gonorrhoea
- Hepatitis (A, B, unspecified)
- Leprosy
- Malaria
- Measles
- Meningitis, aseptic
- Mumps
- Pertussis
- Puerperal sepsis
- Rabies
- Rheumatic fever
- Rubella
- Salmonellosis
- Scabies
- Scorpion stings
- Sexually transmitted diseases
- Shigellosis
- Surgical wound infection
- Syphilis
- Tetanus
- Tuberculosis
- Typhoid & paratyphoid
- Varicella
- Viral encephalitis

stances when completeness is important. Recent examples include collection of information about *Haemophilus influenzae* and some zoonotic diseases, such as brucellosis.

Sentinel reporting comes from selected institutions that provide rapid information on common diseases; measles, for instance, is reported on a weekly basis and meningitis on a daily basis. Laboratory-based surveillance is currently carried out only for poliomyelitis and animal rabies.

Case investigation reports include getting information on contacts of patients, observing those contacts for the maximum incubation period, collecting relevant specimens for laboratory examination, providing chemoprophylaxis, and determining the source of infection and mode of transmission.

Occasionally, special surveys are conducted to collect information that may not be available by routine reporting.

The notifiable communicable diseases are divided into two categories (above). Class 1 diseases, epidemics and any unusual occurrence of events must be reported within 24 hours. Class 2 diseases are reported weekly from PHCCs to regions and monthly from regions to the central authority.

A surveillance system is useful if it contributes to the prevention and con-

trol of disease. For example, the Expanded Program on Immunization concentrates on vaccinating children under age 2 against childhood diseases. Analysis of surveillance data noted a high incidence of measles in children aged 5-14. This led to the requirement that all children be vaccinated prior to school enrollment and that the first dose of measles vaccine be given at 6 months of age. A high mortality rate due to scorpion stings led to a fivefold increase in the dosage of the antitoxin. Veterinary authorities were convinced to implement an animal immunization program by the high incidence rate of brucellosis.

The system is reviewed regularly for completeness, timeliness, accuracy and flexibility. Feedback throughout the surveillance system is crucial and is accomplished by phone, fax, regular visits, letters and publications such as this one.

The MOH is pledged to improve the surveillance system. We plan to strengthen and upgrade the central computer system and extend it to regional and local levels. A communicable disease manual is being prepared. Finally, training in epidemiological surveillance will be expanded.

Reported by the Infectious Diseases Department, Ministry of Health.

A new line of defense against disease

It is more desirable to prevent a well person from getting sick than to make a sick person well. With that in mind, the Ministry of Health (MOH) is establishing epidemiology units in each of the Kingdom's health regions (Circular 866/6/21, dated 9/4/1414). Each unit has four main responsibilities: investigating outbreaks of disease, developing a surveillance system to detect diseases before they become epidemic, conducting health studies and surveys, and training workers in epidemiological techniques.

The units will work in cooperation with primary health care departments in the regions and the preventive medicine department in the MOH. Their work is intended not to replace the activities of already existing departments, but to enhance them, by providing a focus for epidemiological activities and by organizing workshops and seminars on the spread of disease. The main place of work for the units is the field: in primary health care centers (PHCCs), hospitals, field investigation and training. Gizan was the first region to set up a unit, which is headed by a graduate of the Field Epidemiology Training Program.

Development of the surveillance system is the key for all other functions of the epidemiology unit. The new concept of surveillance concentrates not just on infectious diseases but also on other health problems, including chronic, endemic, environmental and occupational diseases.

In establishing these units, the MOH considered the experience of the World Health Organization, which has initiated a worldwide "Program of Intensified Action for the Strengthening of Epidemiology Capacity." The two main objectives of this program are to raise the quality of epidemiologic data produced, including surveillance data, and to increase the use of those improved data at all levels of decision-making for health (1). It also sought to follow the example of the U.S. Centers for Disease Control and Prevention (CDC), one of the most prominent centers for epidemiological activities in the world.

Regions can customize surveillance to meet their own resources and priorities. While some illnesses are found across the Kingdom, each region has unique problems. Some are mainly infectious diseases and environmental

sanitation; others are primarily byproducts of modern life, such as diabetes mellitus and hypertension; still others are occupational diseases.

The units are staffed by epidemiologists or specialists in public health or community medicine, and it is their job to provide decision-makers in the region with the right information at the proper time. An epidemiology unit may not be as glamorous as an organ transplant unit, but if given financial

and personnel support it will provide far more significant results for many more people.

Reported by the Field Epidemiology Training Program.

Reference

(1) Hapsara HR. Welcoming remarks, Proceedings of the 1992 International Symposium on Public Health Surveillance. *MMWR* 1992; 41 Suppl: 1-4.

What an epidemiology unit does

- **Outbreak investigation.** If an epidemic (an unusual number of cases) occurs either in the community or in a hospital, the unit begins an investigation to study the risk factors, detect the source of infection and suggest control measures. It will be assisted by hospital infection control committees and/or PHCC prevention units. The report of the investigation is presented to the assistant of the general director for primary health care, and the concerned department (environmental sanitation, infectious diseases department, etc.) takes action to control the problem.

- **Development of the surveillance system.** Currently, reports about disease (mainly infectious disease) are sent to regional primary health care departments from PHCCs and hospitals (MOH, governmental and private). This system will be developed and expanded to cover all items on the MOH's list of reportable diseases. The epidemiology unit will ensure that all data are reported quickly, regularly and accurately. The system needs to be both simple and flexible, to show the trends of diseases in the region and enable authorities to take timely action.

- **Health studies and surveys.** With the cooperation of concerned departments in the MOH and the regional health office, the unit will follow up on the data of regional registries and records of chronic diseases (e.g., diabetes registry) and other major health problems, and will conduct surveys to determine the magnitude of health problems. Tracking disease trends and mapping disease outbreaks will permit early intervention and preventive efforts. If there is any change in the trend of a disease, the unit should investigate it and report it. The resources and abilities of the health region should be kept in mind for such work.

- **Training.** The epidemiology unit will organize and cooperate with other departments in training personnel in PHCC prevention units and hospital infection control committees, to update their knowledge and give them new skills in outbreak investigation, surveillance, health research and disease control measures.

National Cancer Registry is established in Kingdom

Beginning Jan. 1, 1994 (19 Rajab 1414), the newly created National Cancer Registry (NCR) began collecting data on cancer cases throughout the Kingdom. This will provide a unified system for cancer reporting and will give health planners a clear epidemiological map of the disease.

Cancer registration is the continuing process of systematic collection of data on the characteristics of all cancers and of the patients with cancer. Members of the NCR board include all major health providers.

The NCR has its main office in Ri-

yadh's King Faisal Specialist Hospital and four regional branches: Central in King Khalid University Hospital (Riyadh, Qassim and Hail), Eastern in King Fahad University Hospital (Dammam, Ahsa and Hafr Al-Batin), Western in King Abdulaziz Hospital (Jeddah, Makkah, Taif, Madinah, Tabuk, Goriat and Northern) and Southern (Asir, Baha, Gizan, Najran and Bisha).

The address is: National Cancer Registry, MBC-64, P.O. Box 3354, Riyadh 11211, Saudi Arabia; phone 01-442-3938 or fax 01-442-3941.

HBV vaccine program: A success story

Hepatitis B virus (HBV) infection leads to cirrhosis of the liver and liver cancer as well as acute hepatitis. Field studies carried out in the Kingdom indicate that by 10 years of age, 6.7% of children have HBsAg, and 19.7% have at least one HBV marker (1).

To prevent and control this disease, the Kingdom in October 1989 began the mandatory immunization of all newborns against HBV and integrated this activity within the national Expanded Program on Immunization (EPI). HBV vaccine is given at birth, 6 weeks and 6 months of age. Pilot studies show that 93% of children less than 1 year old immunized by three doses of HBV vaccine show a titer of 10 IU/L of anti-HBs.(2)

Beginning in 1991, students entering primary school were also included in the program. They also receive three doses, with the second given one month after the first and the third given six months after the first.

Coverage for the first dose of vaccine increased from 87% in January 1990 to 92% in December 1992. Similar progress was made in coverage for the third dose, from 83% in September 1990 to 100% in December 1992.

During the Gulf crisis (January-March 1991), coverage for the first dose dropped below 80% and for the third dose below 70%.

Coverage of first-grade students has remained above 95% for all three doses from the inception of the program. By the end of 1995, these vaccination programs for newborns and schoolchildren should achieve more than 90% coverage of children under 10 with three doses of HBV vaccine. Theoretically, this would prevent 600,000 infections with HBV and 201,000 carriers of HBsAg.

The vaccination coverage maintained during three years shows the striking success of the EPI program. It took more than 10 years to reach comparable levels of coverage for DPT and polio vaccines. These results indicate that the EPI has become mature, a fact that should encourage planners to consider adding other vaccines to the armamentarium of EPI against infectious diseases.

Reported by the Infectious Diseases Department, Ministry of Health.

Editorial note: HBV infection and

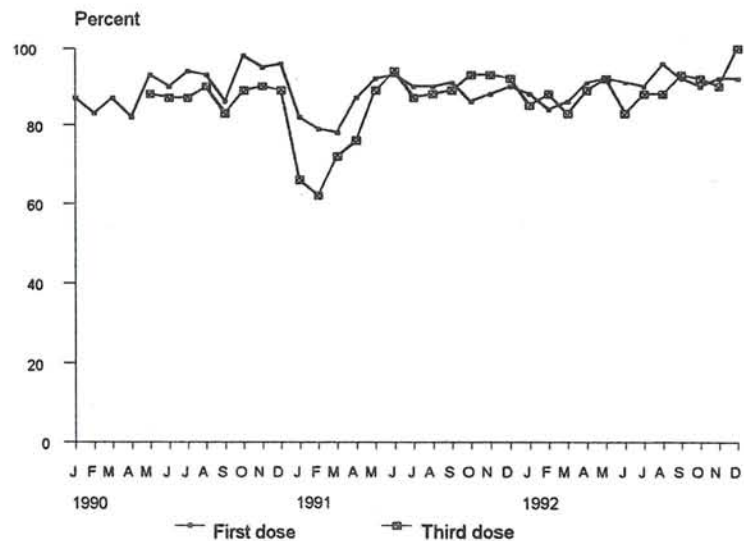


Figure 1: HBV vaccination coverage rates, 1990-1992

its complications are a worldwide health problem. More than 2 billion people have been infected with HBV, and approximately 300 million remain chronically infected with the virus.

More than 70% of the world's population lives in highly endemic areas. The development of hepatitis B vaccines and the demonstration of their safety, immunogenicity and efficacy in the early 1980s have provided an effective tool for the prevention of HBV infection and its consequences.

Interruption of HBV transmission and prevention of the sequelae of chronic HBV infection are the main goals of integrating hepatitis B vaccination program with the EPI in the Kingdom. Comparing the HBV surveillance data from the Ministry of Health for the first six months of 1992 and 1993, there is a 47% increase in number of cases, from 1,227 to 1,805. This may be explained by two factors:

- The program is still a new one, and it covers younger ages (infants and first-grade school children). The reduction in hepatitis B resulting from universal infant vaccination may not become apparent for a number of years. Disease control could be accelerated by vaccinating emerging at-risk populations, such as adolescents and susceptible contacts of chronic HBV carriers (3).

- HBV reporting has been improved because of increased awareness after introduction of the vaccine. The

major host factors that affect vaccine immunogenicity are age and immunocompetency. Neonates and children respond superbly; virtually 100% of those vaccinated develop anti-HBs. Adults over 40 respond less well. Immunosuppressed persons may not respond to HBV vaccination and are unlikely to respond even after a second vaccination series (4).

References

- (1) Al-Faleh FZ, Ayoola EA, Aref M et al. Seroepidemiology of hepatitis B infection in Saudi children: a baseline survey for a mass vaccination against hepatitis B. Saudi Arabian Ministry of Health, Infectious Diseases Department.
- (2) Al-Faleh FZ, Ayoola EA, Al-Jeffry M et al. Integration of hepatitis B vaccine into the Expanded Program on Immunization: the Saudi Arabian experience. Saudi Arabian Ministry of Health, Infectious Diseases Department.
- (3) CDC. Hepatitis B virus: A comprehensive strategy for eliminating transmission in the USA through universal childhood vaccination: Recommendation of the immunization practices advisory committee (ACIP). *MMWR* 1991; 40:4-16.
- (4) Koff RS. Hepatitis B and hepatitis D. In: Gorbach SL, Bartlett JG, Blacklow NR. Infectious diseases. Philadelphia: W.B. Saunders 1992: 709-16.

The sixth annual World AIDS Day, sponsored by the World Health Organization, was Dec. 1. This year's theme was "Time to Act." As background, we offer this selection from *AIDS in the World: A Global Report*.

The global HIV/AIDS epidemic is volatile, dynamic and unstable, and its major impacts are yet to come. By early 1992, 12.9 million people around the world (including 7.1 million men, 4.7 million women and 1.1 million children) had been infected with the human immunodeficiency virus (HIV). About one-fifth (2.7 million; 21%) have thus far developed acquired immunodeficiency syndrome (AIDS); of these, over 90% (nearly 2.5 million) have died.

No community or country in the world already affected by AIDS can claim that HIV spread has stopped. In 1991, an estimated 75,000 new HIV infections occurred in Europe. Among adults in Abidjan, capital of the Cote d'Ivoire in West Africa, HIV prevalence increased from about 1% in 1987 to over 7% in 1991. Among pregnant women in Sao Paulo, Brazil, the rate of HIV infection increased over sixfold in just three years (1987-1990)

HIV is spreading — sometimes quite rapidly — to new communities and countries around the world. In Poland, the first HIV-infected drug user was detected in late 1988; by early 1991, 70% of HIV-infected people in Poland were

drug users. Ominously, HIV is spreading from urban to rural Africa, where most of the African population lives. The impact of the pandemic on women — both directly and indirectly — is increasing dramatically. For example, in Mexico, the rate of HIV-infected men to women decreased from 25:1 in 1984 to 4:1 by 1990.

Against this background of a dynamic, evolving worldwide epidemic, the major impacts of HIV/AIDS are yet to come. By 1995, an additional 6.9 million people will become infected with HIV (5.7 million adults and 1.2 million children). Projecting to the year 2000, the most conservative *AIDS in the World* estimates suggest that a minimum of 38 million adults will have become HIV-infected; a more realistic projection is that this figure will be higher, perhaps up to 110 million. Of great importance, the largest proportion of HIV infection by the year 2000 would be in Asia and Oceania (42%), compared with 31% in sub-Saharan Africa and 14% in Latin America and the Caribbean.

Thus, HIV has repeatedly demonstrated its ability to cross the borders — social, cultural, economic, political — and the conditions that foster HIV spread are complex and changing.

From: Mann J, Tarantola D, Netter T, editors. *AIDS in the World: A Global Report*. Cambridge, Mass.: Harvard University Press, 1992: 2-4.

Sterile thigh abscesses at vaccination site

Within nine months of adding HBV vaccine to the EPI, the Ministry of Health received a report of 17 cases of unusual sterile thigh abscesses at the site of HBV vaccination. No organism had been isolated. Officials were concerned about the safety of the recombinant HBV vaccine.

All the hospitals in the health region provided information about the number of births and HBV vaccination of newborns. A review of admission and operation logbooks in all hospitals revealed 27 sterile thigh abscesses with no growth on culture.

The abscesses were situated on the anterior or anterolateral side of the thigh. They were not tender, not red and intramuscular, containing yellow liquefied pus. The mean age of the infants at the time of incision and drainage (I&D) was 4.5 months. Median healing time after I&D was 4.5 weeks. No organism was grown using the four standard growth media. However, acid-fast bacilli were seen in one of two examined under Zeil Nelson staining.

Of these 27 cases, 24 were born in one hospital (3 per 1000 live births), compared with none (0/1000 live births) from the seven other hospitals ($P < 0.01$). The birthplaces of two were

unknown and one was born outside the region.

Within the involved hospital, all 24 abscesses were in newborns vaccinated in the delivery room (3 per 1000), compared with none vaccinated in the nursery. In the delivery room, BCG syringes were usually loaded prior to delivery and kept in the refrigerator. HBV vaccine and Vitamin K were loaded into syringes as needed. Syringes for all three newborn injections were the same size, but usually with different needle lengths. The syringes were not labeled.

A case-control study showed that none of the four lots of HBV used was associated with the thigh abscesses (odds ratios [OR] = 1.0, 2.1, 1.0, 0.8; $P = NS$ for each). These lots had also been used on hospital staff and on infants vaccinated in the nursery.

Newborns who had been vaccinated by one nurse had a very high risk of developing an abscess (OR = 124; 95% confidence interval = 24, 751). In one month, 33% of the infants she vaccinated later developed abscesses. Because of language differences, communication between this nurse and other nurses was difficult.

As a control measure, the hospital transferred all newborn vaccinations to the nursery and enforced labeling of all syringes used for routine newborn vaccination. Continuing surveillance at the hospital has revealed five new cases, all vaccinated before beginning the control measures, and one case vac-

inated elsewhere.

Reported by Dr. Wafa Al-Dajani (Maternity & Children's Hospital, Damman).

Editorial note: BCG vaccine is given intradermally in the upper left arm at the insertion of the deltoid muscle and HBV is given intramuscularly at the anterolateral side of the thigh. Vitamin K is given in the opposite thigh. Several lines of evidence suggest that these abscesses were caused by accidental intramuscular injection of BCG into the thigh.

The long incubation period, prolonged healing period and clinical nature of the abscess suggest a slow-growing organism like BCG. Although acid-fast bacilli were not routinely sought in microbiological testing, they were seen in stained preparations from one case. An obvious source of the organism was present in the delivery room. Poor identification of the syringe contents and poor communication between nurses made a mix-up more possible. The problem was specific to the delivery room of one hospital and to one nurse, which implies an error in vaccine administration rather than a defect in the vaccine.

The investigation also identified three suspect cases from other hospitals. Regional health authorities should detect and report new cases of abscesses following routine vaccination. This can identify other sites where vaccination practices need improvement.

Hepatitis C infection in dialysis patients

After beginning an anti-HCV screening program for dialysis patients in one health region in 1992, one hospital reported four patients with anti-HCV. The hospital raised concerns about transmission through its dialysis equipment. To identify the possible mode of infection, a cross-sectional study was done.

All patients treated in the five renal dialysis units (RDUs) in the health region since January 1992 were identified. Patients with anti-HCV were identified by a screening program using a second-generation ELISA (Abbott) test. All medical records were reviewed and patients interviewed for symptoms and signs of hepatitis, history of transfusion of blood and its derivatives, other exposures (e.g., surgery), liver function test results and hepatitis B markers.

Eighty-nine patients had been treated in RDUs and tested for anti-HCV. Forty-four had anti-HCV (prevalence rate [PR]=49%). RDU patients with anti-HCV were more likely to have symptoms and signs of hepatitis than patients without anti-HCV. Patients with anti-HCV had a median SGPT of 178 IU, compared with 34 IU for patients without anti-HCV ($P<0.01$, Kruskal-Wallis test).

Patients with anti-HCV had been under dialysis for a median of 531 days, compared with 640 days for patients without anti-HCV ($P=NS$). RDU patients who had received three or more blood transfusions had a PR of 93%, compared with a PR of 4.5% in patients who had received fewer than three transfusions (Figure 1) (risk ratio [RR]=20.5, 95% confidence interval 5.3, 80).

Neither major nor minor surgery was associated with anti-HCV ($RR=1.6$; $P=NS$). Hospitals with a higher PR in RDU patients also had a higher PR in blood donors. The blood banks had only begun screening donors for abnormal liver function and for anti-HCV in 1992.

Reported by Dr. Mohammed S. Al-Qahtani (Field Epidemiology Training Program).

Editorial note: Blood transfusion, rather than a defect in renal dialysis units or machines, was responsible for hepatitis C infection in the dialysis patients. Blood banks should screen for

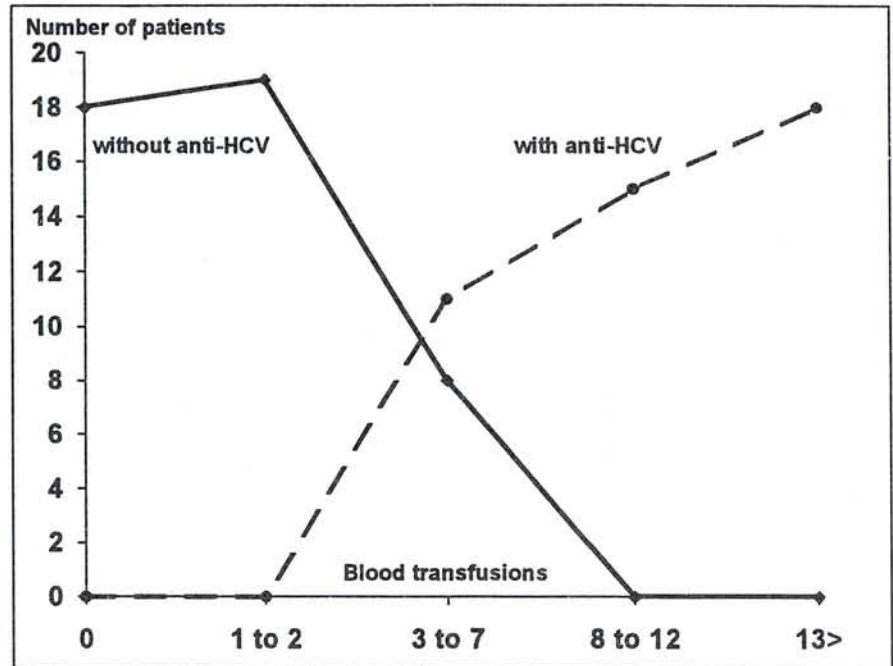


Figure 1: Blood transfusions and prevalence of anti-HCV

abnormal liver function in addition to anti-HCV. Alternatives to blood transfusions for RDU patients need to be instituted.

HCV is primarily a bloodborne agent, and it is believed to be the most common form of post-transfusion hepatitis. Neither sexual intercourse nor vertical transmission appears to be an efficient way for HCV to spread. Patients with renal failure are at high risk of HCV infection because of frequent blood transfusions. In the Kingdom there are 3266 patients on dialysis; 78% are Saudi (1). Other dialysis units in different health regions have also reported cases of HCV among their dialysis patients. In an effort to control the transmission, some kept one machine for the hepatitis patients only. This is not recommended because disposable dialyzers are used.

For the control of HCV in dialysis units we recommend the following (2):

- Patients positive for anti-HCV do not have to be isolated or dialyzed separately on a dedicated machine.
- Following universal precautions is the proper measure to control the infection.
- Patients should be monitored monthly for elevation in alanine aminotransferase and aspartate aminotransferase. Currently, elevation in liver

enzymes is a more sensitive indicator of acute HCV infection than is anti-HCV.

• Routine screening of patients or staff for anti-HCV is not necessary for purposes of infection control because it cannot distinguish between chronic infection and infection that has resolved. Screening may be needed to determine prevalence or to determine medical management.

References

- (1) Ministry of Health. Annual Health Report 1412/1413 Hejira. Riyadh: MOH, 1993: 223.
- (2) Favero MS, Alter MJ, Bland LA. Dialysis-associated infections and their control. In: Bennett JV, Brachman PS. Hospital infections. Boston: Little, Brown & Co., 1992: 375-403.

Did you know . . . ?

The total number of cardiovascular deaths attributable to cigarette smoking is far greater than the number of deaths caused by lung cancer.

New graduates in epidemiology

On Jan. 15, 13 graduates of the Field Epidemiology Training Program were honored during a ceremony and dinner at the Riyadh Marriott. In addition, six physicians were recognized as the first graduates of the Arab Board in Family Medicine.

Officials of the Ministry of Health, the Faculty of Medicine at King Saud University, and the Ministry of Finance were in attendance.

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.

Mark your calendar . . .

In the Kingdom

Jan. 25-27: Fifth scientific session of the Saudi Heart Association. Al Khobar, Eastern Province. Topics include: coronary artery disease, valvular heart diseases, pericardial diseases, intervention cardiology, non-invasive cardiology, infective endocarditis, cardiac surgery, pediatric cardiology, cardiac anesthesiology and congestive heart failure. Call 01-467-1554 / 01-467-1556 or fax 01-481-1853 / 01-467-1379.

Feb. 1-2: Symposium on the organization of perinatal care in Saudi Arabia. Al-Khobar, Eastern Province. Sponsored by King Faisal University (Dammam) College of Medicine. Topics include: planning of perinatal care, the role of hospital administration, levels and functions of neonatal care services, regionalization of perinatal care, neonatal care facilities in Saudi Arabia, statistics and evaluation of perinatal care, interrelation between obstetrical and neonatal care, quality control, neonatal and perinatal transport, infection control, perinatal nursing, promotion of breast-feeding, research issues, follow-up of high-risk neonates and personnel requirements. Call 03-898-4501 / 03-898-1189 or fax 03-864-5972 / 03-857-4992.

Apr. 18-21: "New Dimensions in Family and Community Medicine." Abha Intercontinental Hotel, Abha. Sponsored by the Saudi Society of Family and Community Medicine, the Asir Region directorate of health affairs, the Armed Forces Hospitals program in Khamis Mushayt and the King Saud University (Abha) faculty of medicine. Topics include: maternal and child health, environmental and occupational health, mental health, accidents, infectious diseases, chronic diseases and their management, and health planning and economics. Call or fax Dr. Ibrahim A. Badawi at 07-226-5351.

Outside the Kingdom

Jan. 23-28: INCLIN XII in Chiang Mai, Thailand. Sponsored by the International Clinical Epidemiology Network (INCLIN), the U.S. Centers for Disease Control and Prevention Field Epidemiology Training Programs, the International Epidemiology Association, the Thai Clinical Epidemiology Research & Training Complex and Chiang Mai University.

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.

Saudi Epidemiology Bulletin will publish notifications of international, national, regional and district meetings, seminars, symposia and workshops. Please send information to: Calendar, Saudi Epidemiology Bulletin, Department of Preventive Medicine, Ministry of Health, Riyadh 11176, or fax it to: 01-402-8494.

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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 Field Epidemiology Training Program at 01-479-0726 or 01-478-1424.

Selected notifiable diseases by region, April-June 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	57	196	45	14	47	432	150	1	8	56	10	2	10	2	5	17	51	38	2
Mumps	158	232	90	89	120	155	23	5	5	58	17	7	11	13	13	5	52	37	4
Rubella	43	42	43	4	12	75	1	2	1	40	7	0	0	14	2	5	26	8	0
Varicella	1196	522	152	317	442	1686	209	234	116	1053	647	94	44	393	74	92	156	74	64
Brucellosis	277	30	19	50	144	284	41	126	49	38	1	2	49	2	46	159	364	276	214
Meningitis, mening.	0	10	0	2	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
Meningitis, other	30	58	1	4	1	11	8	0	0	1	0	0	0	0	0	0	0	0	0
Hepatitis A	71	59	12	74	14	224	8	45	9	62	66	6	67	10	14	2	80	23	17
Hepatitis B	74	247	31	20	10	47	2	20	86	161	7	0	0	0	9	1	27	128	4
Hepatitis, unspec.	20	105	110	10	1	124	62	9	109	32	0	0	0	0	1	12	0	2	2
Typhoid & paratyphoid	19	10	21	12	0	35	4	3	0	118	3	0	14	15	4	1	1	19	1
Shigellosis	56	12	1	15	0	3	60	8	17	95	1	10	0	0	0	0	0	52	1
Salmonellosis	100	55	9	0	0	13	9	0	9	100	20	0	0	0	0	0	3	0	0
Amoebic dysentery	64	59	14	0	198	432	76	28	0	129	22	25	33	31	0	21	5	0	2
Syphilis	4	38	2	0	0	13	3	1	15	47	3	0	0	0	0	0	0	0	11
VD, other	1	20	0	0	0	9	11	4	1	108	0	0	0	0	0	0	0	0	0

Comparison of selected diseases, 1992 and 1993

	Apr-June 1993	Apr-June 1992	Jan-June 1993	Jan-Dec 1992
Diphtheria	1	0	4	2
Pertussis	18	39	22	94
Tetanus, neonatal	6	5	8	15
Tetanus, other	3	4	10	15
Poliomyelitis	0	2	0	2
Measles	1143	4948	2005	11299
Mumps	1094	1304	2016	5054
Rubella	325	1855	534	3725
Varicella	7565	33142	15369	93199
Brucellosis	2171	1969	3829	7184
Meningitis, mening.	14	66	23	88

	Apr-June 1993	Apr-June 1992	Jan-June 1993	Jan-Dec 1992
Meningitis, other	114	161	203	411
Hepatitis A	863	597	1713	3292
Hepatitis B	874	560	1805	2989
Hepatitis, unspec.	599	364	1039	1684
Typhoid & paratyphoid	280	301	472	1201
Shigellosis	331	152	512	806
Salmonellosis	318	200	488	1226
Amoebic dysentery	1139	1162	2003	5645
Syphilis	137	103	231	576
VD, other	154	135	314	910

Diseases of low frequency (Apr-June)

Yellow fever, plague, cholera, poliomyelitis, leprosy: No cases
Rabies: 1

Diphtheria: 1

Pertussis: 18

Tetanus, neonatal: 6

Tetanus, other: 3

Viral encephalitis: 2

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