Saudi Epidemiology Bulletin
Department of Preventive Medicine and Field Epidemiology Training Program
Ministry of Health / Riyadh / July 1994 / Volume 1, Number 4

النشرة الوبائية السعودية
تصدرها وزارة الصحة
الوكالة المساعدة للطب الوقائي وبرنامج الوبائيات الحقلي
المجلد الأول - العدد الرابع - محرم ١٤١٥ هـ

About necrotizing fasciitis

There has recently been considerable media coverage about a few cases of necrotizing fasciitis (NF) reported in Britain. NF is an acute necrotizing cellulitis that involves the superficial fascia and subcutaneous fat. The outstanding characterization in infection is extensive undermining of surrounding tissue, which may result in patchy cutaneous anesthesia gangrene and even death.

There are two main bacterial causes of NF: *Streptococcus pyogenes* and a syngergistic infection with facultative and anaerobic bacteria, usually of bowel origin. Streptococcal and mixed infections are painful and rapidly progressive, with prominent systematic toxicity and similar skin changes.

The features of the disease suggest that most cases occur from one of three mechanisms:

* Infection of trauma involving the genital skin may allow cutaneous organisms to reach subcutaneous tissues.
* Extension from urinary tract infections may occur.
* Infection may spread from the perianal or retroperitoneal areas.

Early NF may be indistinguishable from typical acute cellulitis. Prompt diagnosis of NF is essential because it correlates strongly with a better outcome.

In London, the public health laboratory service is assisting in the investigation of a cluster of NF cases in the Gloucester area. The condition is rare and would normally account for fewer than 10 reported cases in any given year from all bacterial causes, including Group A *Streptococcus*.

The evidence so far indicates that the organisms isolated from the Gloucester cases are within the range. The type and number of necrotizing conditions that could be expected to occur normally have been demonstrated by microbial investigations of the Gloucester cases to be of different subtypes of Group A *Streptococcus* and of the various types that would routinely be encountered.

Microbiological investigations looking at toxin production have demonstrated different combinations of toxin genes that also have been within the normally expected results. Consideration is being given to what other microbiological investigations might be fruitful; however, additional tests would involve other research groups and results would not be forthcoming rapidly.

Cases of NF have been occurring for years in many countries but are not usually reported in the popular press. The cases in Britain attracted attention not because they represent a new disease, but because by chance several cases occurred

Continued on Page 5

Inside . . .

Foodborne diseases, 1411-1413H

The expression "food poisoning" is generally applied to any disease caused by food. A more appropriate rubric is "foodborne disease" or "waterborne disease," which refers to illnesses acquired through consumption of food or water. This designation includes not only true poisoning, such as from the metabolic products (toxins) produced by certain organisms, but also foodborne contamination such as bacteria.

We reviewed all computerized data for foodborne diseases sent to the Ministry of Health from all the regions in Saudi Arabia for the years 1411-1413H and analyzed the data by computer. We found 781 events of foodborne diseases reported from 18 regions. There were 6,052 cases, of which 3,515 required hospitalization. No deaths due to foodborne disease were reported.

The highest rate of events was reported from Riyadh region, followed by Taif (Table 1). In this three-year period, more than 70% of the cases occurred in adult males, and 30% in children. More than 40% of the cases were non-Saudi.

Food prepared in restaurants accounted for 32% of the events, while 64% of events were associated with food prepared at home.

Staphylococcus aureus was the most common organism associated with events (319 events, 41%), followed by *Salmonella* (Figure 1). Chicken, meat and rice were the food items most commonly associated with events. All the events were associated with abdominal colic, vomiting and diarrhea. For all events the most common contributing factors were poor storage, unsafe food sources and inadequate refrigeration.

The data which were presented were not enough to give a good picture about these events. Data should be entered into the computer by case, not by event. This is important in determining the incubation period and any association between cases.

The high rate of reporting from Riyadh and Taif regions may be due to good reporting from regional authorities or to underreporting from other regions.

There is a steady increase in number of cases in children. We do not know if the children were of school age or preschool age, or the sex of the children. This information is important, especially in girls' schools because they have lessons about food preparation and cooking.

More than 40% of events occurred among non-Saudis. According to the last census, non-Saudis account for 30% of the population, so that means that they have a high percentage of events. Occupations were not listed, so we were unable to determine from the data whether they were laborers.

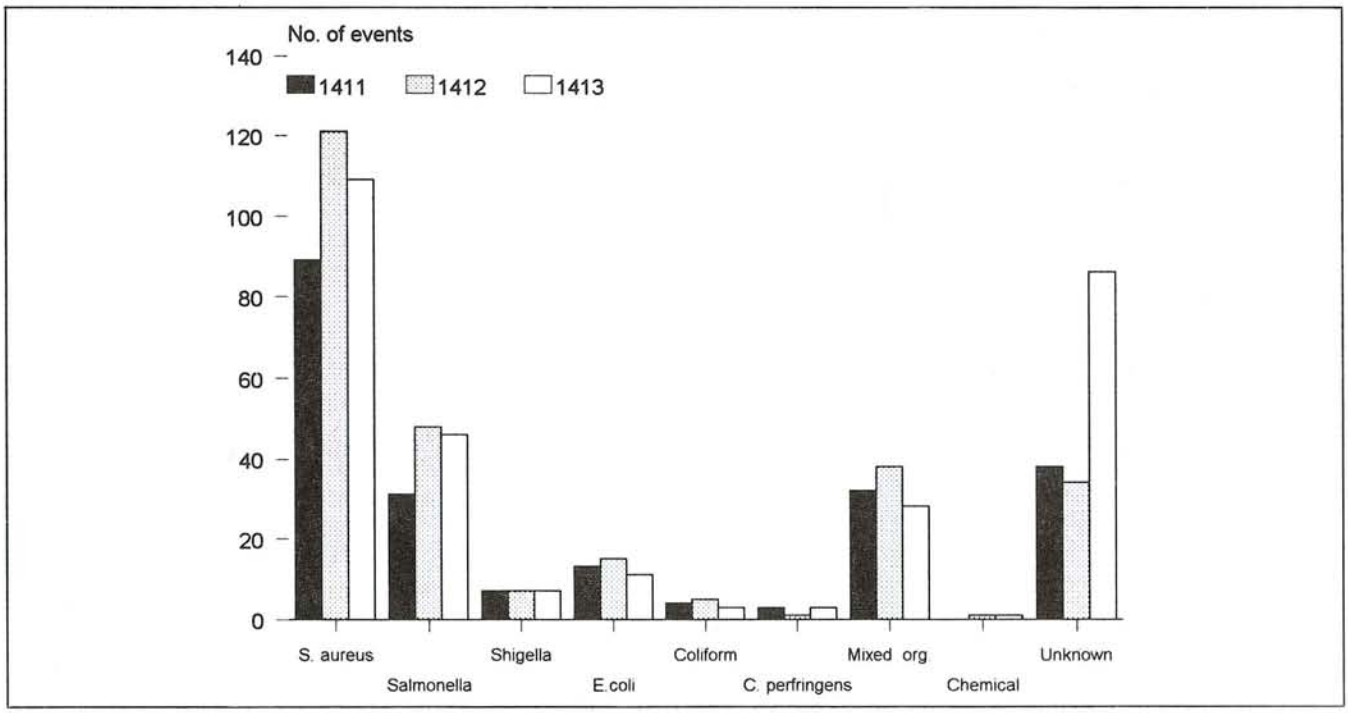
A high percentage of events occurred in the home, but this does not mean that houses have greater problems than restaurants. Because most people eat at home, a higher percentage there would be expected.

The difference in the relation between organisms isolated and associates symptoms may be caused by improper epidemiological investigation of the cases, including the questionnaire or a laboratory error. Because data were not available, we were unable to determine the relationship between events and food handlers or to determine the incubation period or attack rate.

-- Reported by Dr. Tomader S. Kurdy (Field Epidemiology Training Program)

Editorial note: Food poisoning outbreaks are usually recognized by the occurrence of illness within a short period of time after consumption. Single cases of food poisoning are difficult to identify, with the exception of botulism. Usually there is no microorgan-

Figure 1: Causative agents of food poisoning, 1411-1413H



ism isolated. Many cases and outbreaks are underrecognized and underreported.

Food contamination occurs in the presence of living pathogenic agents on food. The illness is caused by the entrance of these agents or their toxins into the body and the reaction of body tissues to their presence.[1]

Foodborne disease surveillance has traditionally served three objectives: disease prevention and control, knowledge of disease causation and administrative guidance.[2] Ten "golden rules" for safe food preparation[3] are:

(1) Choose food processed for safety.
(2) Cook food thoroughly.
(3) Eat cooked food immediately.
(4) Store cooked foods carefully.
(5) Reheat cooked foods thoroughly.
(6) Avoid contact between raw foods and cooked foods.
(7) Wash hands repeatedly.
(8) Keep kitchen surfaces clean.
(9) Protect foods from insects, rodents, and other animals.
(10) Use pure water.

References

1. Center for Disease Control. Diseases transmitted by foods. Atlanta, Center for Disease Control: 1976.
2. Last JM, Wallace RR, editors. Maxcy-Rosenau-Last public health & preventive medicine. Norwalk: Appleton & Lange, 1992.
3. Benenson AS, editor. Control of communicable diseases in man. Washington: American Public Health Association, 1990.

Regions	1411H (N=217)	1412H (N=270)	1413H (N=294)
Riyadh	35.5	40.4	30.3
Taif	25.8	17	19.4
Makkah	8.3	3.3	6.8
Eastern	6.5	7.8	10.9
Tabuk	5.5	0.7	1
Jeddah	3.7	2.6	1
Asir	3.7	4.4	3.4
Al Ahsa	3.7	3.7	1.7
Hail	2.8	3	3.4
Arar	1.7	0.7	0
Gizan	0.9	0	1
Qassim	0.9	3.3	0.7
Najran	0.5	2.6	2
Madinah	0.5	2	3.4
Bisha	0	5.2	10.2
Hafr al-Batin	0	2.2	3.1
Al Baha	0	0.7	1.7
Goriat	0	0.4	0

Table 1: Percentage of events by region, 1411-1413H

Brucellosis in an urban setting

Prince Salman Hospital, which serves southwest Riyadh city, noted increasing numbers of brucellosis cases during 1993 and requested a study to determine the risk factors for brucellosis in this urban setting.

We identified all positive (>=1:160) *Brucella* agglutination tests from the hospital laboratory logbook for 1993 and from those chose 52 patients (case-persons) with a clinical history of brucellosis.

We interviewed all case-persons about their exposure to dairy products, meat and livestock during the 60 days before the first symptom. We also asked about their habitual exposure to these same things.

We selected as household control-persons two persons of the same sex and approximate age from the same household as each case. We also selected 52 community control-persons from among visitors to two primary health clinics in the same districts from which most of the cases came. We interviewed all control persons using the same questions covering the same possible exposure period for the corresponding case.

The incidence rate of laboratory-diagnosed brucellosis from the Prince Salman Hospital catchment area was 78.5/100,000 population in 1993. Males accounted for 65% of brucellosis cases.

Sixty-nine percent of case-households kept livestock, compared with 19% of community control households (odds ratio [OR] = 9.5, 95% confidence interval [CI] 3.2-24). Sick livestock were reported by 32 of 36 case households, compared with none of the 10 community control households that reported raising livestock ($p<0.001$).

We next looked at 36 households that raise livestock for risk factors specific to contact with livestock. In these households 83% of case-persons performed general livestock care, compared with 9% of household control-persons (OR = 51, 95% CI 13-217).

Because the livestock were kept outside the city, usually only one family member was responsible for animal

Continued on Page 4

WHO goal: Eliminating neonatal tetanus

In 1989 the General Assembly of the World Health Organization set a target date of 1995 for the elimination of neonatal tetanus (NNT). This was subsequently expressed as a rate of NNT cases of below 1/1000 live births in every region of every country. Unlike the programs to eliminate smallpox or polio, the disease potential is always present with NNT even after the target is reached, due to the nature of organisms found everywhere in the environment. Continuity of surveillance and services is extremely important.

NNT is an underreported disease, with barely 5% of the cases reported. Only recently has awareness of the problem come forward, but timeliness and completeness of reporting are lagging. The program for elimination of NNT was prompted by the fact that NNT is the second-greatest killer of children below the age of 1 (only measles is greater). In many African and Asian countries, mortality may reach as high as 5/1000 live births. Countries at risk include almost all of the African countries and countries of South and East Asia.

Immunization was identified by the Expanded Programme on Immunization (EPI) as one of the important elements of child survival and development; hence, it is crucial to maintain high immunization coverage, including tetanus toxoid (TT), for women of childbearing age.

The strategy for NNT elimination includes the following:

* Identify high-risk areas through active search review of health records and proper case investigation to identify unimmunized women.

* Increase TT coverage by ensuring that any prenatal care or any visit to an EPI facility includes tetanus immunization, if needed.

* Monitor progress toward NNT elimination by requiring monthly routine reporting of NNT by all health facilities and monthly routine reporting of the proportion of newborns protected at birth by tetanus immunization of their mothers.

* Ensure quality of the TT used (to WHO standard) by regular evaluation of the cold chain.

Within Saudi Arabia, a standard case definition was formulated and distributed to all health units in 1992, the same year that zero reporting for NNT became required. Reporting timeliness and completeness are now monitored closely at both regional and central levels. Every case of NNT should be immediately reported and thoroughly investigated.

Since 1986, the Kingdom has

Brucellosis

Continued from Page 3

care. Among specific livestock care activities, cleaning livestock pens (OR=27, 95% CI 32-1,263) and slaughtering livestock (OR=inf) had the highest odds ratios. Other activities were attending birth of livestock (OR=40.3, 95% CI 10-177) and milking livestock (OR=82.5, 95% CI 10-1,804).

Given the strong association with livestock, we stratified additional analyses of exposure to raw meat and raw milk by livestock ownership. The OR for eating raw liver among households that raised livestock was 4.9 (95% CI 1.6-3.8).

We found no other association of brucellosis with eating raw meat, raw milk or dairy products. However, persons who had a sore or bleeding gums or other lesions in the mouth and drank raw milk in households that kept livestock had an increased risk of brucellosis (OR = 19, 95% CI 2.3-849). The association was not seen in houses without livestock or with community controls.

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

Editorial note: Brucellosis is endemic in the Middle East[1,2]. In Saudi Arabia, the prevalence (percent) of brucellosis, based on a nationwide survey in 1992, was found to be 2.5% in the central region, 2.3% in the southern and eastern regions, 1.6% in the northern region and 0.6% in the western region[3].

In Saudi Arabia 92% of cases are due to infection with *B. melitensis* and 8% are due to *B. abortus*; *B. suis* of hogs has not been isolated[1].

This study found that the incidence of laboratory-diagnosed brucellosis in southwestern Riyadh City (central region) was about 0.8% in 1993. However, patients with brucellosis usually undergo more that one serologic test either to confirm the diagnosis or for follow-up purposes. Moreover, serologic tests can be positive long after recovery.

Without exclusion of repeated tests, incidence rates of brucellosis may have been overestimated. The surveillance system at Riyadh Al Kharj Hospital developed a computer program to identify only newly diagnosed cases of brucellosis based on serologic tests. As a result, a dramatic fall (by about 75%) in the number of reported cases was observed[4].

Risk factors for brucellosis in Saudi Arabia included: intake of unpasteurized (raw) milk or milk products, contact with livestock (including breeding, milking, attending birth, touching placental membranes of animals) or cutting raw meat[2,3]. However, according to this study, drinking raw milk is not a risk factor for brucellosis. This result should be taken with caution as it presents a disagreement with other studies cited repeatedly in medical literature.

The low prevalence of brucellosis in urbanized western Saudi Arabia was attributed to the less common practice of drinking raw milk[1]. However, raw milk may not serve as a good medium for brucella after it turns sour (laban).

Interventions to control the disease should include socially acceptable health educational programs to increase awareness among people about the modes of disease transmission.

References

1. Oldfield EC, Wallace MR, Hyams KC, Yousif A, Lewis DE, Bourgeois AL. Endemic infectious diseases of the Middle East. Rev Infect Dis 1991; 13 (suppl 3), S197-S217.

2. Al-Sekait MA. Epidemiology of brucellosis in northern Saudi Arabia. Saudi Med J 1992; 13:296-9.

3. Al-Aska A, Al-Sekait M, Almuflih I, Al-Balaa S, Al-Nasser A. Epidemiology of brucellosis in Saudi Arabia, the scientific report (in Arabic). Ministry of Health and King Saud University, Saudi Arabia. 116 pages (1992).

4. Asogwa SE. Communicable diseases notification in RKH – the zoonosis. Riyadh Al Kharj Hospital Programme Epidemiological Bulletin 1993; 2(3):17-19.

achieved a level of more than 90% coverage for DPT (3) among children 1 year old. Knowledge, attitudes and practices toward tetanus immunization, antenatal services and postnatal care were first investigated through the mother and child health survey of 1991, which was based on a national random sample of 150 clusters, with 6,305 urban and rural households.

The following are some of the findings:

* Knowledge about TT among ever-married females: 68%
* Ever-married females who received two or more TT doses: 63%
* Pregnant women who have regularly attended antenatal care clinics: 85%
* Postnatal care -- at government institutions: 76%; at private clinics: 10%; at home: 14%

Home deliveries were four times greater in rural areas than in urban (27% vs. 7%). They were highest in the southern regions (31%) and smallest in the central (5%) and eastern regions (3.5%).

Also in 1986, the Kingdom achieved the objective of NNT elimination, with an overall incidence below 0.1/1000 live births. In 12 of the 19 regions, the range of NNT incidence is between 0 and 0.5/1000 live births.

Intensive training and education are continuing in the area of maternity and child health. Continuing education through supervisory visits helps to ensure quality and the maintenance of the cold chain.

The objectives in the Kingdom are to reach and maintain a coverage level of 97% for all EPI antigens by 2000 and to raise TT coverage among pregnant women by 1995 to match the levels reached by childhood vaccines.

By next year, all areas in which NNT cases are occurring will be identified. Campaigns, followed by outreach mobile clinics, will be used to vaccinate all pregnant women and all women of childbearing age in those areas. Safe facilities for delivery will be provided within easy reach.

By 2000, 97% of pregnant women will be vaccinated with at least two TT doses, and 95% of deliveries will be supervised by qualified medical personnel.

-- Reported by Dr. Omer Makki Mohammed and Dr. Taher Ismail Salim (Department of Infectious Diseases, MOH) and Dr. Mohammed Hassan Baldo (General Directorate of Health Centers, MOH)

Letters

To the editor:

I would like to comment on "Preventing vaccine failure" by Dr. Mohammed Khalil from Suleimania Children's Hospital, Riyadh (Saudi Epidemiology Bulletin, Vol. 1, No. 3). It is still possible to have an occurrence of outbreaks of a vaccine-preventable disease, like measles, despite high vaccine coverage.

First: It is well known that the widespread use of measles vaccine clearly has had a major impact on the number of reported cases of the disease. The success in interrupting measles transmission in some places, coupled with the dramatic success of the smallpox eradication program that was based on vaccination of less than 100% of susceptibles (theory of herd immunity), offered hope of interrupting measles transmission. However, the continued transmission of measles in many areas despite high levels of vaccination raised doubts about the influence of herd immunity. In 1977, Walter A. Orenstein evaulated the influence of prompt response to epidemics in a series of settings. He concluded that aggressive response to outbreaks was a crucial adjunct to high immunization levels and disease surveillance in stopping transmission.

Second: How should we look at vaccine failure? In fact, the issue of vaccine effectiveness is often raised because a considerable percentage of reported measles cases have a history of adequate vaccination. The answer could easily be obtained from the following mathematical model which Dr. Orenstein and I worked on at the U.S. Centers for Disease Control and Prevention's measles eradication program (indigenous measles):

Target population	10000	10000
Vaccine coverage	90%	95%
No. vaccinated	9000	9500
Using a 90% efficacious vaccine:		
No. rendered immune	8100	8550
Susceptibles	1900	1450
	(Unvacc. = 1000)	(Unvacc. = 500)
	(V. failure = 900)	(V. failure = 950)

This model shows that as you increase vaccine coverage, the total number of susceptibles decreases, while the number and proportion of vaccine failure increase. That is why we expect an increasing proportion of measles among vaccinees (vaccine failure) as we increase vaccine coverage. This vaccine failure (primary failure) should not raise too much worry. The prime concern should be to raise and maintain high vaccine coverage, set up a strong surveillance system, and provide rapid response to epidemic occurrence.

Dr. Nasreldin Tantawi
Tabuk

References

Hinman A et al. Epidemic potential of measles and rubella. J Am Coll Health Assoc 1980; 29 (3).

Hinman A et al. History of measles control efforts."Conquest of agents that endanger the brain." Baltimore, Maryland: Oct. 28-29, 1982.

Hinman A et al. The opportunity and obligation to eliminate measles from the United States. JAMA 1979: 242(11).

Orenstein WA et al. Current status of measles in the United States, 1973-1977. J Infect Dis 1978; 137:847-853.

Necrotizing fasciitis *Continued from Page 1*

in the same district. All countries have a good system of disease surveillance and record the incidence of complications. For example, in the United States an average of 150 to 300 people per year develop NF.

There are no specific preventive or control measures other than the usual basic principle of not neglecting skin infections or wounds, even if they are small. They should be treated quickly and properly.

The causative agent is very sensitive to antibiotics. It is also necessary to maintain aseptic techniques in case any invasive procedure is undertaken, no matter how small or simple it may seem.

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

A *Shigella* outbreak in Barshash

In April 1993 the Ministry of Health identified an outbreak of *Shigella dysenteriae* type 1 resistant to ampicillin, tetracycline, chloramphenicol and trimethoprim sulfamethoxidate and sensitive to nalidixic acid. All health regions were asked to report isolations of *S. dysenteriae* type 1. The Eastern Province responded with a report of two isolations of multiply resistant *S. dysenteriae* type 1 in visitors from Barshash, a village near Najran city. They were Yemenis and said that many of their relatives in Barshash had bloody diarrhea.

Beginning in week 19 of 1993, monthly case reports and admission, laboratory, emergency room and physician logbooks at King Khalid Hospital, the Barshash primary health care center (PHCC) and six other PHCCs were reviewed to find dysentery cases. During the next two weeks the Barshash PHCC began recording every bloody diarrhea case and interviewing patients and their families and visiting their homes with a control team.

During weeks 22 and 23, the control team began chlorinating all water tanks. We conducted a case-control study in Barshash by comparing risk factors between 31 houses with one or more persons with bloody diarrhea and 31 houses with no bloody diarrhea from January to June 1993.

We detected 859 cases of dysentery in Barshash from January to June 1993 (attack rate/1,000=151.2). Six developed HUS. The number of dysentery cases reported per week rose from 18 in February to 160 in May. Sixty percent of the cases were male, and the median age was 6 years (SD=15.4). Multiply resistant *S. dysenteriae* type 1 was isolated from four cases.

Families with bloody diarrhea reused washing water in the latrine more frequently than families in control houses (odds ratio [OR]=5.9; 95% confidence interval [CI] 1.3-31). Houses with bloody diarrhea cases also had stool in the yard around the toilet more often than control houses (OR=10; 95% CI 1.2-239).

The mother's presence in homes during the illness of a child was more common in houses with only primary cases than in homes with secondary cases (OR=12; 95% CI 1.1-298). Among individuals in the houses, handwashing after defecation was protective (OR=0.3; 95% CI 0.1-0.7), but handwashing from the same container used for perianal cleaning was associated with dysentery (OR=2.9; 95% CI 1.1-8).

-- Reported by Khalid M. Al-Shibani (Field Epidemiology Training Program)

Editorial note: *Shigella*, a gram-negative bacillus that occurs exclusively in humans and subhuman primates, is very susceptible to high ambient temperatures and to desiccation; and survives longer in a cooler humid environment, especially *S. sonnei*[1]. A two-year study at King Khalid University Teaching Hospital found that shigellosis is responsible for the etiology of 1% of all childhood gastroenteritis in Riyadh[2].

It is necessary, especially during outbreaks of shigellosis, to promote handwashing practices and use of soap after defecation, changing diapers and before eating in order to interrupt transmission. Emphasizing personal hygiene was found to be an effective and practical method for interrupting shigellosis; it markedly reduced secondary infection and case rate except in cases of *S. dysenteriae* type 1.

Failure in *S. dysenteriae* type 1 might be due to its greater virulence and smaller dose requirement for infection[3]. However, interventions to change people's behavior and improve their personal hygiene levels are quite difficult. The reported study identified local unhygienic practices involved in perpetuation of the outbreak and thence suggested avenues for control measures.

The danger of presumptive treatment for bloody diarrhea and the vital role of surveillance system in controlling outbreaks of shigellosis have been discussed in a previous issue of this bulletin; inappropriate use of antibiotics has been implicated as the cause of hemolytic uremic syndrome in children under 11 years of age in southern Saudi Arabia[4].

References

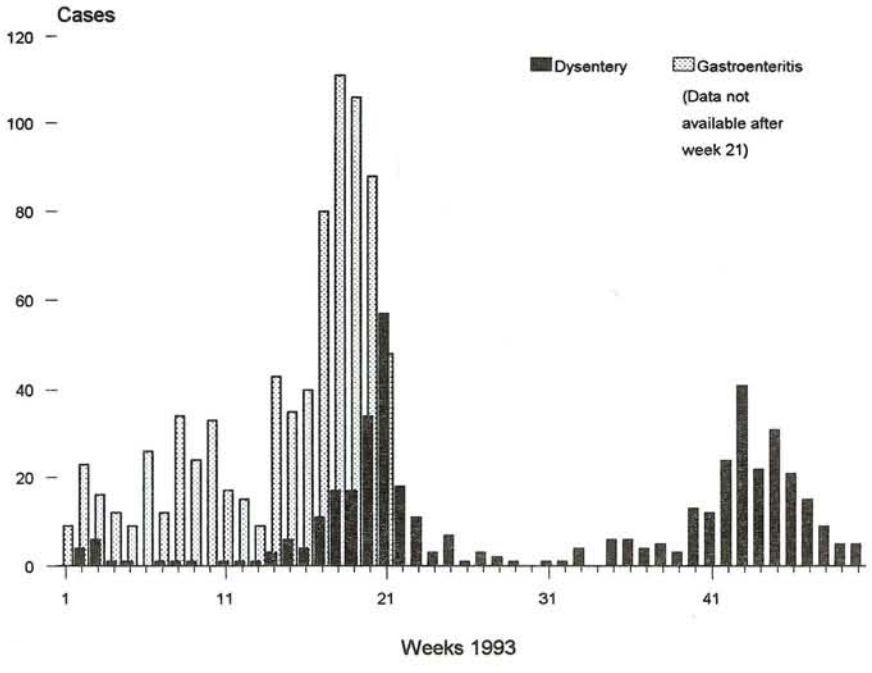
1. Keusch GT, Formal SB, Bennish ML. Shigellosis. In: Warren KS and Mahmoud AAF (editors). Tropical and Geographical Medicine, second edition. New York: McGraw Hill 1990; 762-776.

2. Al-Eissa Y, Al-Zamil F, Al-Kharashi M, Kambal A, Chowdhury M, Al-Ayed I. The relative importance of *Shigella* in the aetiology of childhood gastroenteritis in Saudi Arabia. Scand J Infect Dis 1992; 24:347-351.

3. Khan MU. Interruption of shigellosis by handwashing. Trans Trop Med Hyg 1982; 76: 164-168.

4. Editorial. Alert: Hemolytic uremic syndrome. Saudi Epidemiology Bulletin. September 1993; 1(3).

Figure 1: Gastroenteritis and dysentery by date of onset



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.

Saudi Epidemiology Bulletin

Published by the Saudi Arabian Ministry of Health, Department of Preventive Medicine, Field Epidemiology Training Program

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

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

Mark your calendar . . .

In the Kingdom

Oct. 16-18: Fifth Advanced Medicine Symposium and Workshop on Tuberculosis Control. Sponsored by the Riyadh Armed Forces Hospital Department of Medicine and Department of Postgraduate and Academic Affairs. Contact: Department of Postgraduate and Academic Affairs, Riyadh Armed Forces Hospital, P.O. Box 7897, Riyadh 11159, Saudi Arabia, 01-477-7714 ext. 4934/4935/4936/4937 (telephone) or 01-478-1017 (fax).

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).

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 (telephone) 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 (telephone) 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 (telephone) or 01-442-7499 (fax).

Outside the Kingdom

Sept. 12-13: "Rethinking Disease: Implications for Epidemiology." 13th annual scientific meeting sponsored by the American College of Epidemiology. Rosslyn Westpark Hotel, Arlington, Virginia, USA (outside Washington, DC). Contact: William A. Satariano Ph.D., Epidemiology Program, School of Public Health, University of California at Berkeley, Berkeley, CA 94720 USA, 00-1-510-642-6641 (telephone) or 00-1-510-643-5163 (fax).

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.

Oct. 25-28: International Association of Cancer Registries annual meeting, Bangalore, India. Main topic is "Cancer in Women." Contact: Secretariat IACR '94, Kidwai Memorial Institute of Oncology, Hosur Road, Bangalore 560 029, India, 00-91-80-635049/640245/632302 (telephone) or 00-91-80-644801/602010 (fax).

Special notice

Hospital laboratories require regular quality assurance to moitor and assess the performance of media, chemicals, equipment and their technical expertise. The World Health Organization and the United Kingdom External Quality Assurance Scheme have encouraged countries to develop national quality control schemes.

The Microbiology Laboratory at King Khalid National Guard Hospital, Jeddah, established a Microbiology Quality Control Scheme in 1987. It has grown to include several laboratories in Jeddah, Riyadh, and other parts of Saudi Arabia. There is growing interest in participation, and the hospital plans to expand the program, extending facilities to laboratories throughout the Kingdom.

Hospital laboratories seeking more information about this program should contact: Dr. Raina Zaman, Senior Non-Medical Microbiologist, King Khalid National Guard Hospital, P.O. Box 9515, Jeddah 21423, Saudi Arabia; 02-665-6200 (telephone), 02-665-3031 (fax), 605442 HOSNGJ SJ (Telex).

Selected notifiable diseases by region, Jan.-March 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	31	36	22	5	66	86	11	3	4	18	12	0	17	1	0	6	18	8	1
Mumps	63	136	33	44	30	103	12	6	20	59	11	4	10	3	5	2	21	19	9
Rubella	26	26	10	0	7	11	2	0	0	7	9	4	12	0	1	16	19	3	0
Varicella	1026	436	111	98	223	896	131	44	43	1966	841	37	154	104	170	73	194	340	13
Brucellosis	110	25	45	51	77	176	10	111	55	30	2	2	82	3	4	71	153	35	92
Meningitis, mening.	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Meningitis, other	46	7	0	6	3	5	12	3	0	1	3	1	0	0	0	1	2	2	0
Hepatitis A	50	12	4	31	13	124	0	27	4	40	21	7	39	7	18	2	47	53	4
Hepatitis B	63	258	84	22	16	54	7	8	95	188	33	4	2	1	8	1	16	94	3
Hepatitis, unspecified	26	90	69	25	2	46	37	30	78	120	25	1	0	0	3	61	0	0	1
Typhoid & paratyphoid	16	2	14	5	1	21	10	1	0	32	1	1	6	0	0	1	5	4	0
Shigellosis	20	28	1	2	0	8	6	99	0	50	2	2	0	0	0	0	1	8	0
Salmonellosis	74	73	0	0	0	8	4	10	0	96	14	0	0	0	0	0	0	0	0
Amoebic dysentery	43	69	11	0	111	447	56	4	0	87	11	4	126	0	0	5	0	1	2
Syphilis	8	44	0	0	0	8	4	10	11	38	8	0	0	0	0	1	0	2	7
VD, other	3	32	0	0	0	21	7	0	1	111	42	4	0	0	0	0	0	5	5

Comparisons of selected diseases, 1993-1994

	Jan-Mar 1994	Jan-Mar 1993	Jan-Mar 1994	Jan-Dec 1993
Diphtheria	0	3	0	8
Pertussis	1	4	1	45
Tetanus, neonatal	6	2	6	30
Tetanus, other	8	7	8	20
Poliomyelitis	1	0	1	2
Measles	285	862	285	3182
Mumps	590	922	590	4033
Rubella	153	209	153	848
Varicella	6900	7804	6900	23011
Brucellosis	1184	1658	1184	6985
Meningitis, mening.	5	9	5	52

	Jan-Mar 1994	Jan-Mar 1993	Jan-Mar 1994	Jan-Dec 1993
Meningitis, other	92	89	92	383
Hepatitis A	503	850	503	3442
Hepatitis B	957	931	957	3756
Hepatitis, unspecified	614	440	614	2194
Typhoid & paratyphoid	120	192	120	882
Shigellosis	227	181	227	965
Salmonellosis	279	170	279	1394
Amoebic dysentery	977	864	977	4070
Syphilis	141	94	141	547
VD, other	231	160	231	916

Diseases of low frequency, Jan.-March 1994

Yellow fever, plague, rabies, cholera, diphtheria: No cases
Viral encephalitis: 9 (Gizan 2, Tabuk 2, Eastern 1, Madinah 4)
Neonatal tetanus: 6 (Jeddah 2, Gizan 1, Makkah 3)
Other tetanus: 8 (Jeddah 1, Gizan 2, Makkah 5)
Poliomyelitis: 1 (Al-Jouf 1)
Pertussis: 1 (Riyadh 1)

DEPARTMENT OF PREVENTIVE MEDICINE AND FIELD EPIDEMIOLOGY TRAINING PROGRAM, MINISTRY OF HEALTH
P.O. BOX 6344, RIYADH 11442, SAUDI ARABIA