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تصدرها وزارة الصحة

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المجلد الثالث - العدد الثالث - يوليه ، أغسطس ، سبتمبر ١٩٩٦م

Post vaccination abscesses and deviations from correct vaccination practices

Two sisters aged five months and four years developed post vaccination abscesses after receiving DPT vaccine on 8 May 1996 in a Primary Health Care Center (PHCC) in the index City. Within two days after the vaccination, the younger sister, aged five months, developed oedema around the injection site in the right thigh extending to the abdomen. Her temperature was 40.8°C. She was pronounced dead on arrival to the hospital due to septicemia shock. The elder sister, aged four years, was hospitalized for incision and drainage of an abscess at the DPT vaccination site in the right gluteal region on 16 May 1996. The abscess recurred seven days later and was reincised. Of the 20 other children vaccinated at the PHCC on same day, 14 children were given DPT vaccine, and one of these developed a persistent intramuscular nodule at the vaccination site. No abscesses formed in the other 13 children, or in six who received other vaccines.

The nurse who vaccinated the two sisters in this PHCC routinely left a hypodermic needle inserted through the rubber septum of multidose (10 dose) DPT vaccine vials. She then used new syringes to withdraw individual DPT doses through the needle left in the septum. After loading the syringe, she placed a new needle on the syringe for vaccinating the child. This process would allow airborne microorganisms to contaminate the residual vaccine in the needle which could have been injected into the vaccine vial or extracted with next vaccine dose.

All children under five years of age who had incision and drainage for gluteal, thigh, shoulder, or cervical abscess treated in hospitals, PHCCs or dispensaries in the index city from May 1995 to July 1996 were identified from log books and corresponding medical records were reviewed.

Including the two sisters, we identified 11 thigh and gluteal abscesses in children aged five years or less (31 per 100,000 children). However only three abscesses

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National immunization campaign for the eradication of Poliomyelitis, Saudi Arabia, Nov. and Dec. 1996

The member countries of the World Health Organization (WHO) have resolved to eradicate poliomyelitis by the year 2000. National Immunization Days (NIDs) have proved to be successful strategies in this effort.

Saudi Arabia completed its first NID in November 1995 and second in November and December 1996, simultaneously with NIDs in other Gulf states. To ensure a successful second NID in Saudi Arabia, the campaign was under the direct supervision of their highnesses, princes of the regions. The target population (all children under 5 years of age) was estimated and the amount of vaccine needed and its delivery to all regions in the Kingdom was organized. To promote the NIDs, several methods were used. The telephone department used billing records to ask customers to bring their children for vaccinations. Radio, TV, and newspapers were used to inform the public about the importance of NIDs. Posters were made and distributed. Meetings were held with poliomyelitis campaign coordinators and representatives of gov-

ernmental and private sectors.

The first OPV dose was given over three days beginning on 9 November in all 20 regions in KSA under instruction of their highnesses, the princes. Of 2048129 targeted children 95% (1,945634) received the first dose and 97% (1,990,325) received the second (Dec. 7-9, 1996)

—Reported by: Dr. Amin A. Mishkas, Director of Infectious Disease and Dr. Sayed Halali, Dept. of Infectious Diseases, MOH Riyadh.

Editorial note: From 1988, when the World Health Assembly announced the goal of global poliomyelitis eradication, the number of poliomyelitis cases reported to World Health Organization (WHO) has decreased by 82%. The successful implementation of NIDs is an important factor in this decrease(1).

NID are nationwide mass campaigns to deliver supplemental doses of oral poliovirus vaccine (OPV) over a short time. WHO recommends that NIDs target children under five years of age

and be conducted over as short a time as possible, preferably 1-2 days, during two rounds, 4-6 weeks apart during the season of low poliovirus transmission. The main purpose of NIDs is to rapidly boost systemic and intestinal immunity in the entire population over a wide area. Wild polioviruses will then have no suitable host in which to multiply and will cease to circulate(2). Other strategies are, strong routine immunization programs, "mop-up" campaigns, and acute flaccid paralysis (AFP) surveillance. For those who are interested, a special supplement of the Journal of Infectious Diseases (Volume 75, supplement February, 1997) covers many aspects of the Global Poliomyelitis eradication initiative including NIDs.

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- Birmingham ME, Aylward RB, Cochi SL, Hull HF. National immunization days: the state of art. *J. Infect Dis* 1997; 175 (Suppl 1): S183-8.

Vaccination abscesses in index and study cities

(Continued from page 17)

(eight abscesses per 100,000 DPT vaccination) followed DPT vaccination by less than one week. The remaining eight index city children had an interval from two weeks to 16 months between DPT vaccination and abscess appearance.

To identify the extent of the practice of keeping a needle inserted in the

multidose vial, and other deviations from safe hygienic vaccination practice, we surveyed all 13 PHCCs in the index city and a sample of 14 PHCCs in the study area.

Nurses in all health centers in the index area routinely used saline soaked cotton swabs to clean the vaccination site. They did not wash their hands before picking up saline soaked

cotton swabs. Of the vaccinating nurses, 0% washed her hands before administering a vaccine to the child and 30% left a needle inserted through the septum of the DPT vaccine vial (Table).

In the study area, the questionnaire on vaccination practices was modified and administered to the vaccinating nurses in selected centers. In addition, settling plates (blood agar) were left for one hour during a vaccination session to estimate the number of airborne microorganisms that could fall into the hub of the needle. We collected seven DPT vials which had a needle left inserted through the septum from the PHCCs in the study area and cultured the remaining solution in the vial and residual vaccine remaining inside the hub and needle.

From a sample of 20 nurses working in the 14 selected health centers, we observed that only 25% washed hands before administering vaccines,

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Table. Vaccination hygiene in index and study areas, Saudi Arabia, 1996.

Vaccination Practice	Index Area (13 nurses)		Study Area (20 nurses)	
	Knowledge	Practice	Knowledge	Practice
Disinfection of injection site	14%	15%	95%	90%
Washing hands before giving vaccine	93%	0%	100%	100%
Save vaccine between shifts	14%	0%	60%	0%
Vaccine in syringe for > 1 child	100%	0%	95%	0%
Needle left in septum of multidose vial	30%	30%	50%	50%

Knowledge, attitudes and practices of communicable diseases reporter participants in Makkah city, 1996

The health surveillance program in Saudi Arabia began in 1933 (1353 Hijra). The program has improved over the years and now 19 regions report 47 communicable diseases (13 are reported within 24 hours and 34 are reported weekly). Since a surveillance system cannot succeed without a continuing and reliable source of information from the reporter, this study aimed to evaluate the knowledge, attitudes and practices of those responsible for reporting communicable diseases in Makkah.

Health units were selected at random from a list of all medical facilities in the Makkah region health affairs (RHA). Self administered questionnaires were made in English and Arabic requesting demographic and professional information. The questionnaire listed 10 diseases and asked participants to match these to the official reporting requirements. They were also asked to list four more reportable diseases. To evaluate and measure attitude towards confidentiality of data, reporting source, feedback, and training, participants were asked their opinion (strongly agree, agree, no opinion, disagree, or strongly disagree). We also asked them to mark important, no opinion or unnecessary on 14 items of information usually contain in the reporting form.

The response rate of the study was 90%, including 257 physicians, 53 non-physicians. Only 51 (17%) had attended one or more courses in public health during the past five years. These were mainly RHA (57%) and PHCC (39%).

Physicians working at RHA and PHCCs correctly identified 100% and 96% of reportable diseases compared to 70% for private clinic physicians. Correct answers of physician knowledge for the three communicable diseases (CD) reported within 24 hours, ranged as high as 99.6% for HIV to 90% for yellow fever. For six CD reported weekly, correct answers ranged as high as 95% for hepatitis B to 78% for non-pulmonary tuberculosis. For one non-reportable disease, Trachoma, 42% answered correctly.

All physicians working at RHA and

other government health units (GHU) were able to list four different reportable CD, compared with 92% of physicians working at PHCCs, 73% of private hospital physicians, and 72% of MOH hospital and private clinic physicians.

Only 36% of non-physicians were able to list four CD reportable within 24 hours; five employees at RHA (100%), nine employees from PHCCs (90%), lower scores were achieved by employees in other GHU (40%), and three employees of MOH hospitals (19%). Of non-physicians, only 60% were able to list four CD reportable weekly. Again RHA (100%) and PHCC (90%) employees scored higher than GHU (67%) and MOH hospital (52%) employees.

All non-physicians identified cholera as a CD required to be reported within 24 hours and bacterial meningitis and poliomyelitis were identified correctly by 98% and 70% respectively. Of four other CD reported weekly, only 49% of them or less answered correctly. Of the three diseases which do not require reporting, 51% or less of them answered correctly as not reportable.

Of 53 non-physicians, 50 (94%) stated they had enough time to do reporting, and they spent a median of six hours (1-96 hours) weekly.

The attitude of all physician and non-physician participants was good, they agreed with the CD surveillance system, confidentiality of cases reported, feedback, and strongly agreed with demands for training. They dis-

agreed with reporting by telephone. They all thought information requested in the CD reporting form was important and no significant difference was found between different health units. The main motivation for reporting CD was for epidemiological investigation (61%).

The three CD reporting forms used in Makkah are similar to the one designed by RHA. There is no difficulty sending the forms to RHA (Figure 1).

None of the health units had an updated circular containing all communicable diseases required for reporting. However circulars regarding reporting of a single communicable disease are often received.

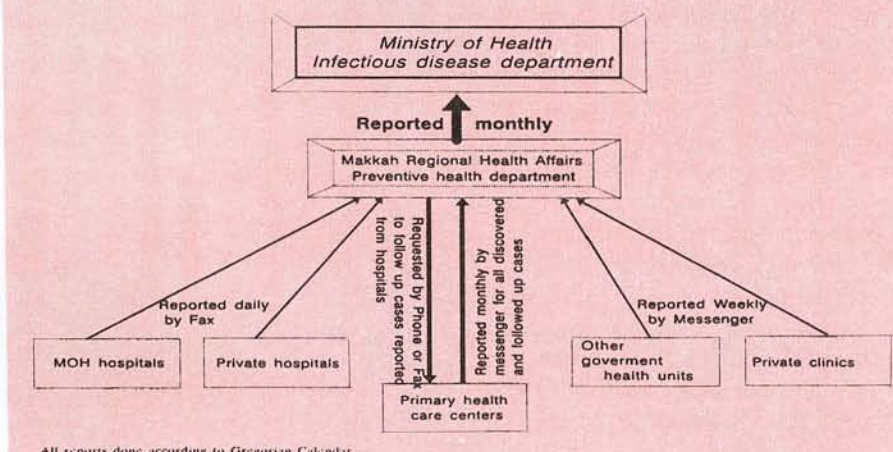
During the study period, we implemented a computerized data entry for reported CD at the department of disease prevention in Makkah RHA using Epi Info 6.02 (a microcomputer database and statistics program).

—Reported by: Dr. Adel M. Turkistani, Dr. Nasser Al-Hamdan (Field Epidemiology Training Program), Dr. Abdulhafez Turkistani and Dr. Mohammed Al Amin Al-Mahdi (Makkah Regional Health Affairs).

Editorial note: The overall knowledge for reportable diseases among physicians at different health units is high for all diseases and slightly higher for diseases that require reporting within 24 hours. Physicians were more confused about non-reportable diseases, showing a tendency to report

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Figure. Communicable diseases reporting system, Makkah Regional Health Affairs, 1996.



KAP survey

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diseases which were not listed for reporting. This may be due to unavailability of an updated circular containing all CD required for reporting and/or the special circumstances of Makkah (visitors for Hajj and Omra). A booklet, to be published annually by the MOH listing all diseases required for reporting and contain other criteria required for reporting would help eliminate confusion and keep reporters better informed.

Daily reporting from hospitals by fax requires daily tabulation, is time consuming, and wastes resources. Monthly reporting leaves no time for the data to be examined and delays discovery of possible epidemics. Weekly reporting would give the hospitals more time to revise data, to recognize any abnormal increases in cases of specific diseases and still leave time for the RHA to follow up cases. A standard reporting form requesting all information should be used by all health units. Thus the resources and efforts of the PHCCs can be concentrated on applying prevention measures. The reporting of different diseases should be standardized for all health units according to MOH regulations.

Feedback is an important factor in improving reporting because without feedback, health workers do not know if what they report or whether they report matters. This was mentioned by all participants. A one or two page monthly newsletter could be distributed locally to all health units summarizing surveillance information and the current health situation. It would also serve as a forum for providing credit to those who have made an exceptional contribution, such as identifying an outbreak. A standardized reporting form for all health units should be used which includes all essential variables. This would eliminate the need for the PHCC to track down additional information for the cases reported from the hospitals.

Training programs for surveillance are needed and reporter participants must be encouraged to attend as only a few participants in our survey had had the opportunity to attend any public health courses.

Salmonella interrupts final exams, Sakaka Al Jouf, March 1996

On 31 March 1996, 18 young women students from the girls college of Sakaka were evaluated in the emergency room of Prince Abdulrahman Al-Sudairy General Hospital in Sakaka, Al Jouf region for gastroenteritis symptoms including diarrhea, vomiting, abdominal pain, or fever. The hospital notified the regional health affairs (RHA) in Al Jouf and the RHA asked the Field Epidemiology Team to identify the cause of the outbreak.

Using the enrollment list for the female art college students, case-records were identified at the local hospital emergency room. Out of 1071 students, 154 (14%) students, all midway through taking final examinations, developed gastroenteritis and visited the hospital (Figure). Gastroenteritis was characterized by diarrhea for all patients lasting from one to three days (median = 1.3), fever (median = 37.8 C), abdominal pain (78.5%), and vomiting (64%). From 7 rectal swabs taken by patients, *Salmonella* was isolated from four in the hospital laboratory. The mean age of the identified cases was 21 (age ranged from 17 to 29 years). The affected students reported that they routinely ate morning snack in the college cafeteria.

A case of gastroenteritis was defined as an acute onset of diarrhea (more than three loose stools per day) for one or more days during examina-

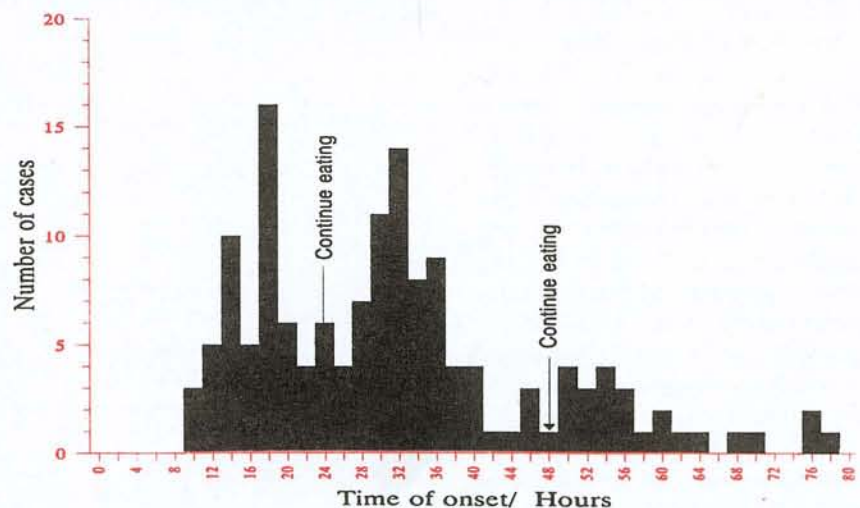
tion weeks, 31 March through 10 April 1996, in any female student at art college in Sakaka. We selected 154 control-students at random from the same enrollment list. We distributed a self-administered questionnaire to case and control-students which requested information about the nature of illness and foods eaten from the cafeteria from March 31 to April 2. We compared students' frequencies of exposure to different food and drink for one day before and two days after the first case appeared in the hospital. Of 154 students who reported illness, 145 (94.2%) completed the questionnaire.

Students who reported eating cafeteria food on March 31 had a higher risk (odds ratio = 8.1, 95% Confidence interval = 4.2-15) when compared to children who ate cafeteria food only on other days.

Among 29 food and drink items served on March 31, falafel sandwiches were associated with gastroenteritis (OR=7.9; 95% CI=4.3-14.7). Falafel sandwiches contained cucumber, tomato and potato. However many students removed ingredients they did not like. Students who left cucumber in their sandwich had a higher risk of illness than students who removed cucumber from the sandwiches (Table). Only falafel with cucumber was associated with gastroenteritis (OR = 11.2; 95% CI 6.1-21).

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Figure. Onset of gastroenteritis by hour for 145 female students after eating breakfast at the art college cafeteria, Skaka, Al-Jouf, Mar 31-Apr 2, 1996.



Salmonellosis interrupts final exams

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One restaurant supplied the college cafeteria daily with 400 falafel sandwiches. No food remained from the outbreak period but tables and knives were swabbed. All five restaurant employees were interviewed and rectal, nasal, throat, fingernail swabs and stool samples were taken. *Salmonella* was not isolated from any of these swabs. The employee who sliced the cucumbers was employed as a driver and had no health certificate and had not been examined for *Salmonella* infection. He gave a history of onset of diarrhea five days before the outbreak. *Salmonella* was isolated from his stool. He reported slicing the cucumbers beginning on 31 March and for the following three days. He then placed sliced cucumbers in a plastic bag and left them at room temperature for seven hours before assembling the falafel sandwiches.

—Reported by: Dr. Mohammed A. Al-Mazrou, Dr. Adel M. Turkistani, and Dr. Nasser A. Al-Hamdan, Saudi Arabian Field Epidemiology Training

Program, Ministry of Health, Ahmed Al-Mufarraj, Epidemiologist, Dr. Ahmed Al-Shalan, Al-Jouf Regional Health Directorate.

Editorial note: From this outbreak we see how illness in a food handler can spread, thereby affecting a large number of people. This outbreak shows that ill food handlers, particularly those with diarrhea must be prevented from participating in food preparation while they are symptomatic. The storage of the cucumbers

in a plastic bag at room temperature for several hours gave the optimum condition for *Salmonella* multiplication. A high infective dose was probably reached and resulted in this large outbreak.

Education in proper food handling and storage techniques is needed. In this outbreak education was disrupted and exams were delayed. Health education is also needed to inform management of food preparation establishments, food handlers, and the public of food borne disease.

Table. 145 gastroenteritis cases and 145 well controls exposures to food from the female art college cafeteria, Sakaka city, Al-Jouf, Mar 31, 1996.

Sandwich Ingredients	Ill	Well	OR	P-value
F+C+T+P	10	4	10	0.00004
F+C+T	0	1	0	0.6
F+P+C	94	36	10.4	0.0000
F+C	18	5	14.4	0.0000
F+P+T	0	0	NA	NA
F+P	2	2	4	0.1
F+T	0	0	NA	NA
F	0	13	0	NA
Only other food items	21	84		Reference

F =Falafel P=Potato C=Cucumber T=Tomato NA=Not applicable

Vaccination abscesses in index and study cities, 1996

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90% used alcohol to disinfect the vaccination site, and 65% used alcohol to disinfect the vial septum. We found 50% of the nurses kept one needle inserted through the septum of multidose vials and extracted the doses from it (Table 1). Forty-five percent of nurses used one syringe with one needle for vial and vaccination, 20% of nurses used two needles for one syringe for vaccination. Of nurses who left needles in multidose vaccine vials, 55% learned this technique from a previous nurse and 25% from nursing school. We observed that only 55% of vaccination rooms had a sink for hand washing. The results from settling plates indicated that 8.6 organisms would contaminate the hub of a needle left in the vaccine vial per 100 hours of exposure to vaccination room air. No microorganisms were isolated from the remaining solution of seven DPT vials collected.

—Reported by: Dr. Zaki Al Abdulatif, Dr. Robert E. Fontaine, Dr.

Nasser A. Al-Hamdan (Field Epidemiology Training Program)

Editorial Note: Having a needle inserted through the septum of a multidose vial can lead to the contamination of residual vaccine in the needle or vaccine vial contents by airborne microorganisms that fall into the hub of the needle. Although the bore of the needle is very small, the hub is larger and can act as a funnel to trap microorganisms. If the vaccine is refrigerated, multiplication of contaminating organisms is unlikely. However, vaccine vials are often left in an ice bath on the vaccination table. This assures a low temperature for the vaccine in the vial, but residual vaccine in the needle placed through the septum could be at room temperature. Post vaccination abscesses could also be related to unhygienic nurse practices such as not washing hands, not cleaning the site of injection.

DPT vaccine can produce a sterile abscess in one out of 116,000 doses(1). Higher rates of post DPT

abscesses or post DPT abscesses with clinical features of infection need addition epidemiologic investigation to identify and correct unsafe practices.

Vaccinations are only safe when the correct vaccine is properly administered with sterile equipment that is disposed of safely(2). In Saudi Arabia vaccines are always administered with a disposable syringe and needle. Therefore the risk of infection comes from unhygienic techniques in vaccination practices such as keeping a needle inserted into the vial septum.

MOH requires that post vaccination reactions be reported. In addition to abscesses physicians should report cellulitis at vaccination sites and any antibiotic treatment of a post vaccination reaction. These reports will help identify and remedy defects in vaccination procedures.

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Mumps vaccination coverage: Riyadh children, 1996

A survey by 4th year medical students to ascertain the coverage and efficacy of the mumps vaccine in southwest Riyadh was done from 27/10 to 21/11 1416 Hijra.

Three primary health care centers (PHCCs) (Oraija Al-Gharbi, Al-Suwaidi and Al-Shafa) serving 134,386 residents were selected. Parents of children aged one to 10 who visited one of the three selected PHCCs for any reason during afternoon working hours were interviewed.

Of 698 children assessed, 368 (52.7%) were males and 330 (47.3%) were females (mean age of five years, standard deviation [SD] \pm 2.5). Saudis constituted 682 (97.7%) of those interviewed. MMR vaccine coverage among the children was 98.7%. Parents of 10 children reported possible post-vaccination complications including post-vaccination skin rash (4) and post-vaccination febrile seizures (6).

Among unvaccinated children, parents reported that the vaccines were missed because they were on vacation at the time vaccination was due (age 12 months), the appointment was forgotten, careless attitude toward vaccination, or the child was ill at the time the vaccination was due.

The main symptom of those who acquired mumps was parotitis (eight right side only, six left side only, and four bilateral). Of 18 children who had a history of mumps, the age ranged between seven months and eight years at the time of the disease, the mean age was 3.8 years (SD \pm 2.1). Out of 689 vaccinated, 17 developed mumps compared with one of nine who did not receive the vaccine. Of 619 (89.8%) children vaccinated on time (at the age of 12 months), 14 (2.3%) acquired mumps. While out of 67 children who did not receive the vaccine on time, three (4.5%) acquired mumps.

We found no association between acquiring mumps infection with age, education or occupation of the parents.

—Reported by: Sabig O. Edrees, Hesham A. Al-Babtain, Ali N. Al-Harbi, Faisal T. Al-Goufi, Mohammed K. Al-Harbi, (Students of CMED Course 304, Department of Family and Community Medicine, King Saud University Medical College). Dr. Nasser Al-

Hamdan (Saudi Arabian Field Epidemiology Training Program, Ministry of Health).

Editorial note: The classical symptom of mumps is parotitis which may be unilateral, or bilateral. However only 30-40% of infections produce typical acute parotitis while the rest result in non specific or primarily respiratory symptoms and 15-20% of mumps infections are asymptomatic. The diagnosis of mumps is usually made clinically based on the presence of parotitis. This routine physician based reporting or parent recall will underestimate mumps incidence(2).

At least 10 mumps vaccine strains are in use throughout the world(2). All strains appear to induce high levels of seroconversion. These vaccines contain live attenuated mumps virus, and are available either as a single vaccine or in combination with rubella & measles live virus vaccines (MMR). MMR is the preparation most often used in Saudi Arabia. The vaccine may be administered any time after one year of age, preferably as MMR at 12-15 months of age. More than 95% of recipients develop immunity that is long-lasting and may be lifelong. Vaccination of people already immune, either by wild or vaccine-virus infection, is not associated with increased risk of adverse reactions(3).

The mumps vaccine is contraindicated in persons with immune deficiency disease or suppressed immunity due to any other cause. Persons with severe febrile illnesses should in general not be vaccinated until they have recovered. However vaccination should not be postponed because of minor illness. Adverse reactions to

mumps vaccination have been infrequently reported. Most common are: parotitis, fever, rash, febrile seizures, deafness and although rare meningitis and encephalitis(2,3).

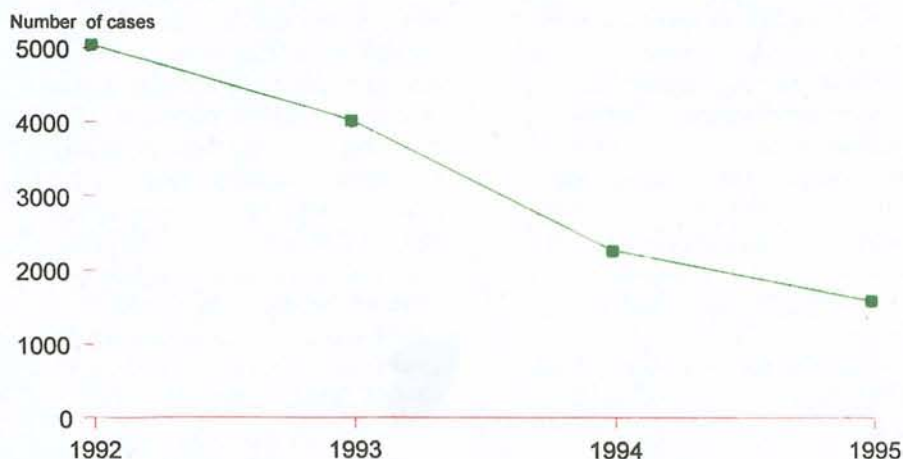
In the Kingdom, MOH first introduced the mumps vaccination program in the mid 1970s, it consisted of voluntarily vaccinating children with the MMR vaccine (Urabe mumps Strains) when reaching 15 months of age. In January 1991, MOH implemented a new requirement that all children to complete all the recommended vaccinations including MMR for the first 12 months of life before he or she would be issued a birth certificate (Infectious Diseases Department MOH).

Mumps is among the diseases reported routinely to MOH. Although the incidence of mumps has been in decline (Figure), doctors are still facing cases of mumps among previously vaccinated children(4). The high coverage rate of mumps vaccination is attributed to the delivery of the vaccines in general through PHCCs and the increase of the public's awareness.

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Figure. Reported mumps cases in Saudi Arabia, 1992-1995.



Who reads the *Saudi Epidemiology Bulletin*?

As part of a study done in Makkah City on knowledge attitudes and practices of reporting communicable diseases among reporters, participants were asked whether or not they read *Saudi Epidemiology Bulletin* (SEB). Of respondents, 29% reported that they read SEB. The majority of these were public health physicians (54%), followed by non-physicians working in infection control department (28%), and physicians (25%). When categorized by health unit, the majority worked at Primary Health Care Centers (44%) followed by other governmental health units (38%) and MOH hospitals (36%). Of seven employees in regional health affairs, two are public health physicians and both stated they read SEB. Only 22% of employees at private hospitals and 4% of employees at private clinics read SEB.

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Inside the Kingdom

May 4-5, 1997: International Symposium on Hospital Acquired Infections. King Fahad National Guard Hospital, Riyadh. Contact: Academic Affairs Department, King Fahad National Guard Hospital, PO box 22490, Riyadh 11426. Tel: (01) 252-0088 ext.2340/2344. Fax: (01) 252-0040.

Outside the Kingdom

April 1-4, 1997: 1st International Conference on Improving Use of Medicines. Chang Mai, Thailand. Contact: Conference Secretariat, The College of Public Health, Chulalongkorn University 10th Floor, Institute Building 3, Soi Chulalongkorn 62, Phayathai Road, Pathumwan, Bangkok 10330, Thailand. Tel: (662)218-8187-8. Fax: (662)255-6046.

April 1-3, 1997: 3rd AGCC Primary Health Care Conference and Exhibition. Abu Dhabi, UAE. Contact: Prof. JC Murdoch, Chairman, Department of Family Medicine, FMHS, UAE University, PO Box 7666, Al Ain, UAE. Fax 00 971 3 657134. e-mail fammed @ medic. uaeu.ae.

June 13-14, 1997: 30th Annual SER Conference, Edmonton, Alberta, Canada. Contact: SER, 111 Market Place, Suite 840, Baltimore MD, 21202-6709, USA.

June 28 - July 1, 1997: UICC Cancer Management Meeting. 1st International Meeting on Advances in the Knowledge of Cancer Management, Vienna, Austria. Contact Mondial Congress, Faulmannsgasse 4, A-1040 Vienna, Austria. Tel: (431) 533-2935. Fax: (431) 535-6016. e-mail: maw@media.co.at.

November 3-5, 1997: International Association of Cancer Registries Annual Meeting, Abidjan, Côte d'Ivoire. Contact: Cancer Registry of Abidjan, C/O Service de Cancerologie, CHU Treichville, BP V.3 Abidjan, Côte d'Ivoire. Tel: (225) 35 06 27.

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Selected notifiable diseases by region, Jul-Sep 1996

	Riyadh	Jeddah	Makkah	Madinah	Taif	Asir	Gizan	Najran	Al Baha	Eastern	Al Ahsa	Tabuk	AlJour	Goriat	Arar	Hail	Qassim	Hafr al Batin	Bisha	Gonfuda	Total
Measles	117	127	13	89	9	18	15	2	0	14	2	5	0	2	0	10	39	5	0	7	474
Mumps	50	156	14	47	2	35	9	9	3	52	10	11	8	7	5	19	46	15	3	2	503
Rubella	12	26	3	9	3	4	3	2	0	6	6	0	0	1	0	1	14	2	0	0	92
Varicella	1288	1209	208	287	293	1095	160	135	160	1657	765	188	76	58	22	178	299	263	89	27	8455
Brucellosis	255	40	33	30	39	391	48	23	35	44	27	7	5	4	8	149	189	82	98	6	1513
Meningitis, mening.	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
Meningitis, other	95	10	4	16	0	4	6	1	0	3	8	1	0	1	0	1	0	4	1	2	157
Hepatitis A	68	64	64	83	3	112	105	84	7	49	39	29	7	43	11	1	40	26	31	0	866
Hepatitis B	143	221	95	13	6	70	20	6	43	127	32	5	2	2	1	14	11	3	6	4	824
Hepatitis, unspecified	28	98	19	7	0	14	42	2	0	5	26	8	0	0	0	33	0	0	0	4	286
Typhoid & paratyphoid	15	9	9	3	0	26	0	20	0	19	6	1	0	1	1	8	4	3	10	0	135
Shigellosis	20	17	0	1	0	18	9	51	0	30	13	19	0	0	0	0	1	3	1	0	183
Salmonellosis	156	80	0	1	0	27	0	15	3	413	34	21	0	0	0	0	8	27	4	1	790
Amoebic dysentery	25	1093	0	7	28	530	2	10	0	19	14	39	0	8	0	156	1	0	15	0	1947
Syphilis	8	11	7	0	0	0	2	3	2	15	6	0	0	0	0	1	0	0	3	0	58
VD, other	13	141	5	0	0	0	19	2	0	27	22	0	0	4	0	3	0	10	0	0	246

Comparisons of selected diseases, 1995-1996

	Jul-Sep 1996	Jul-Sep 1995	Change %	Jul-Sep 1996	Jan-Dec 1995		Jul-Sep 1996	Jul-Sep 1995	Change %	Jul-Sep 1996	Jan-Dec 1995
Diphtheria	0	0	0	0	1	Meningitis other	157	53	196	157	261
Pertussis	28	7	28	28	33	Hepatitis A	866	619	40	866	2697
Tetanus, neonatal	6	5	20	6	25	Hepatitis B	824	875	-5.8	824	3031
Tetanus, other	4	3	33	4	14	Hepatitis, unspecified	286	273	4.8	286	1487
Poliomyelitis	0	0	0	0	3	Typhoid & paratyphoid	135	95	42	135	335
Measles	474	737	-35.7	474	2574	Shigellosis	183	348	-4.7	183	1223
Mumps	503	400	25.8	503	1601	Salmonellosis	790	961	-17.8	790	2973
Rubella	92	113	-18.6	92	385	Amoebic dysentery	1947	2379	-18	1947	5949
Varicella	8455	5984	41.3	8455	35244	Syphilis	58	113	-48.7	58	386
Brucellosis	1513	1596	-5.2	1513	5997	VD, other	246	370	-33.5	246	961
Meningitis, mening.	2	9	-77.8	2	58						

Diseases of low frequency, Jul-Sep, 1996

Pertussis: 28 (Riyadh 8, Jeddah 7, Madinah 3, Qassim 2, Makkah 2, Gizan 3, Eastern 3)

Tetanus, neonatal: 6 (Makkah 2, Jeddah 3, Asir 1)

Tetanus, other: 4 (Riyadh 1, Asir 1, Makkah 1, Jeddah 1)

Cholera 52 (Gonfuda 1, Riyadh 1, Al Ahsa 2, Eastern 48)

Echinococcosis: 2 (Hafr al Batin), Rabies 1: (Qassim), Puerperal Sepsis: 1 (Riyadh)