

Missed Opportunities for Immunization

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SUMMARY

Missed opportunities for immunization were studied at five Saudi health centers. Of 383 children studied, 77.8% were up-to-date with their immunization, 10.2% had real contraindications, and 12.0% missed opportunities. Only 48.8% of mothers were up-to-date. We recommend that immunization be made available at all clinics and that presentation of immunization cards be required.

RÉSUMÉ

Cinq centres de santé de l'Arabie Saoudite ont étudié les occasions manquées d'immunisation. Parmi les 383 enfants qui ont participé à l'étude, 77.8% étaient à date dans leur calendrier de vaccination, 10.2% présentaient des contre-indications réelles et 12.0% avaient manqué les occasions. Par contre, seulement 48.8% des mères avaient un carnet à jour. Nous recommandons que toutes les cliniques puissent offrir l'immunisation et que la présentation des cartes d'immunisation soit obligatoire.

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IMMUNIZATION IS ONE OF THE most powerful and cost-effective health interventions. Immunization activities started in the Kingdom of Saudi Arabia in 1964 with BCG vaccine as part of the containment measures against tuberculosis. Immunizations against diphtheria, pertussis, tetanus (DPT), poliomyelitis, and measles were subsequently introduced.

Since 1979 vaccines in the Expanded Program on Immunization (EPI) have been given regularly to all children in accordance with the World Health Organization (WHO) recommended schedule of 1977. In 1979 a Royal Decree mandated that birth certificates for newborns be withheld by health authorities until immunizations against DPT, poliomyelitis, and tuberculosis were completed. In 1983 measles vaccination was added to the list of compulsory vaccinations by another Royal Decree.¹⁻³

The World Health Organization advocated the availability of immunization for all

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children of the world by the year 1990, as a vital step toward WHO's stated goal of health for all by the year 2000.⁴ Saudi Arabia was one of the developing nations that accelerated its immunization program to reach full immunization coverage by 1990.⁵ Since 1984, the EPI has been implemented as an essential and integral element of primary health care.⁶ Previous studies have indicated a high level of EPI coverage,⁷ and child morbidity and mortality from the target diseases have decreased significantly throughout the Kingdom of Saudi Arabia during the last 20 years.⁸⁻¹⁰

The important determinants of immunization coverage rate are acceptability, availability, accessibility, and perception of its importance. It is the policy of the EPI program that immunizations should be available to every eligible child and woman of childbearing age at every contact with the health care system. Failure to immunize a child whose immunization is not up-to-date and who has no contraindications is considered a missed opportunity.

This survey was designed to determine how many immunization opportunities were being missed in urban Riyadh health centers. We are unaware of any previous study of the subject in the Kingdom of Saudi Arabia.

METHOD

The survey was undertaken in Riyadh, the capital of Saudi Arabia. Riyadh's estimated population is about 1.9 million, constituting

Table 1. MISSED OPPORTUNITIES FOR IMMUNIZATION

STUDY SUBJECTS	TOTAL NO. (%)	IMMUNIZATION STATUS RECORDED IN CLINIC CHART (%)	IMMUNIZATION UP-TO-DATE (%)	GENUINE CONTRAINDICATIONS (%)	MISSED OPPORTUNITY (%)	
Children (age in months)	0-4	57 (14.9)	53 (93.0)	26 (45.6)	3 (5.3)	28 (49.1)
	5-8	60 (15.7)	56 (93.0)	41 (68.3)	3 (5.0)	16 (26.7)
	9-35	180 (46.9)	162 (90.0)	158 (87.8)	22 (12.2)	0
	>35	86 (22.5)	68 (79.0)	73 (84.9)	11 (12.2)	2 (2.3)
TOTAL	383 (100)	339 (88.5)	298 (77.8)	39 (10.2)	46 (12.0)	
Mothers (15 to 45 years)	383 (100)	187 (48.8)	187 (48.8)	0	196 (51.2)	

18% of the total population of the Kingdom. More than half of Riyadh's population (58.5%) lives in the urban areas, whereas 41.5% lives in rural areas.^{11,12} Children younger than 1 year of age constitute 4.2% of the population.¹³ Since the implementation of the primary health care program in the Kingdom of Saudi Arabia during 1984, all health centers have been allotted defined catchment areas based on population, as determined by a special household survey.

Currently 58 health centers provide first-line health care in urban Riyadh. These health centers are normally staffed with primary care physicians, qualified nurses, social workers, and sanitarians and are supported by paramedics and administrators. They provide a range of free health care services to the community, including disease prevention, health promotion, and essential curative and rehabilitation services as recommended by WHO.⁶ Patients who need secondary or tertiary care are referred elsewhere.

Sample size was determined on the hypothesis that the proportion of missed opportunities would be between 10% and 15%. The desirable sample size ranged from 290 (for 15%) to 325 (for 10%).¹⁴

Riyadh is arbitrarily divided into five sections (north, south, center, east, and west). We selected one health center randomly from each section and interviewed the first 77 mothers who attended each of the five selected health centers with their

children. Daily patient workload in these health centers was classified as A (low), B (moderate), or C (high).

A structured data form, based on the WHO protocol for the assessment of missed immunization opportunities,¹⁵ was used to interview mothers of children visiting the health centers. A missed opportunity was defined as any visit to a health center by a person whose immunizations were not up-to-date (according to the 1977 WHO schedule and its modification in 1983) at which the person was not immunized and did not have a true contraindication to immunization at that visit. Questions covered the mother's and child's age, the reason for consultation, the child's immunization status with regard to EPI vaccines, and the mother's status with regard to tetanus monovalent antiserum. Mothers were also asked whether they had been offered immunization for themselves or their children on the day of the clinic visit, and, if not, whether they would accept a new offer of immunization.

One trained social worker conducted all the interviews, during 2 weeks in May 1990 to avoid interobserver errors. Interview data were processed on a microcomputer, using the χ^2 test.

RESULTS

A total of 385 mothers accompanying their children to the five health centers was interviewed. Two mothers and their children

Table 2. EXPECTED ACCEPTANCE RATE OF IMMUNIZATION: Mothers' reports of what they would have done had immunization been offered.

TIME OF OFFER OF IMMUNIZATION	OFFERED IMMUNIZATION	ACCEPTING (%)	REFUSING (%)
CHILDREN (<i>P</i> < 0.02)			
Immunization offered at scheduled visit	224	195 (87.1)	29 (12.9)
Immunization offered later	159	124 (77.9)	35 (22.1)
MOTHERS (<i>P</i> not significant)			
Immunization offered at scheduled visit	187	144 (77.0)	43 (23.0)
Immunization offered later	196	164 (83.7)	32 (16.3)

were excluded due to incompleteness of information, leaving a total of 383 mother-child pairs. Three hundred two pairs (78.9%) had come for well baby visits and 81 (21.1%) because the children were ill.

Thirteen mothers (3.4%) brought their own immunization cards; 311 (81.2%) brought their children's immunization cards. Review of the clinic charts revealed that the immunization status of 88.5% of the children had been duly recorded.

Table 1 shows missed opportunities for immunization. Only 77.8% of the children and 48.8% of mothers were up-to-date with their immunization. Contraindications to immunization were found in 10.2% of the children but in none of the mothers, while opportunities to immunize were missed for 12.0% of the children and 49.3% of the mothers. The rate of missed opportunities was higher among younger children than among older ones.

The reasons given by staff in the interview for missed opportunities to immunize the children included mild upper respiratory tract infections, cough, diarrhea, and weight loss. Other reasons were that the visit did not occur on an immunization day or that there were too few patients to justify opening a new vaccine vial.

Table 2 shows the acceptance rates when immunizations were offered to mothers and their children on the days of their clinic visits and when immunizations were offered for other days. The immunization acceptance rates were significantly better when immunization was offered on the day of the visit (*P* < 0.02).

Table 3 shows the number of patients seen by health centers daily in relation to the incidence of missed immunization opportunities. Wide variations existed, which were statistically significant in the case of children (*P* < 0.001).

DISCUSSION

We found EPI coverage of children to be as high in Riyadh as it is in other parts of the Kingdom.^{7,9} However, immunization of women of childbearing age with tetanus monovalent antiserum is still low. Immunization coverage of both mothers and children could be enhanced by taking advantage of every opportunity to immunize them. The rate of missed opportunities to immunize mothers and children in this study compares favorably with the rate found in the Egyptian study of 1989.¹⁶ The problem is universal and has also been reported in western industrialized countries. Williams,¹⁷ comparing the immunization coverage in the United States and selected European countries, found suboptimal coverage rates. Klein and colleagues¹⁸ found English immunization rates comparable to national rates in the United Kingdom: 89% for DPT and 64% for pertussis and measles. They found that 38% of missed opportunities for immunizations related to false contraindications.

Many women and children who need immunization fail to report to immunization clinics but later come to a clinic for other reasons. Such valuable chances for immunization are too often neglected by

clinic staff. Even at immunization clinics, women and children are sometimes not offered all the antigens for which they are eligible. Most mothers in our study were willing to accept immunization both for their children and for themselves. A previous study also showed high public acceptance of immunization in Riyadh.¹⁹

Table 3. MISSED OPPORTUNITY AND PATIENT WORKLOAD

DAILY WORKLOAD (patients/day)	MISSED OPPORTUNITY		
	N	CHILDREN (%)	MOTHERS (%)
150-200	137	8 (5.8)	64 (46.7)
300-500	193	25 (12.9)	124 (64.2)
>500	53	13 (24.5)	8 (15.0)

Missed opportunities

Missed opportunities to immunize fall into several categories: lack of routine screening, false contraindications, incomplete immunization, and mothers neglected.

Lack of routine screening. Immunizations are not always routinely offered to women and children attending health centers, outpatient departments, or hospitals, nor are they always offered at antenatal sessions in a maternity clinic. Clinics where sick children are seen miss more opportunities to immunize than immunization clinics. The World Health Organization²⁰ determined that only 7% of those who needed immunizations received any by the time they left the clinic.

False contraindications. Immunizations are denied because of false contraindications or improper immunization schedules. Mild fever, cough, diarrhea, or weight loss are invalid reasons for withholding life-saving immunization. While no vaccine is totally without adverse reactions, the risks of serious complications from vaccines used in EPI are much lower than the risks from the natural diseases. The decision to withhold immunization should be made only after serious consideration of the potential consequences for the individual child and the community.

Guidelines from WHO on true contraindications are as follows.

- Immunization should be deferred in children ill enough to require hospitalization.
- The immunization status of hospitalized children should be evaluated, and they should receive appropriate immunization before discharge (in some cases the high risk of hospital-acquired measles justifies immunization on admission).
- Live vaccine should not be administered to people who have an immunodeficiency or whose immune response could be suppressed because of malignancy or immunosuppressive therapy.²¹
- A child who suffered an adverse reaction to a previous dose should not be given subsequent doses of DPT; pertussis should be omitted and DT given alone.²¹

Incomplete immunization. Sometimes only one vaccine is given when the child is eligible for more than one vaccine (such as BCG and polio vaccine at birth). Mothers and children who present at the right time for these immunizations are sometimes turned away because the vaccines are out of stock or the vaccinator thinks too few children are present to justify opening a new vial of the vaccine. In fact, it is worth opening a vial for even one child; it could be the patient's only chance to be immunized.

Mothers neglected. Mothers are often not immunized when the child is immunized. Tetanus monovalent antiserum should be given to all women of childbearing age at all opportunities. Whenever a child is immunized, the mother should be immunized with tetanus monovalent antiserum if she is not up-to-date.

Heavy workloads

Failure to immunize eligible subjects is sometimes attributable to heavy workloads and restricted consultation time. The mean consultation time in Riyadh health centers is 5.69 minutes, ± 4.27 minutes, with a mode of 3 minutes.²² Many studies agree that consultations lasting less than 10 minutes are ineffective for health promo-

tion.^{23,24} Efforts must be made to correct this deficit in our health centers.

Interviews with staff would give further information on why opportunities are missed.

Recommendations

1. The national immunization policy on contraindications should be reviewed. Most sick children and pregnant women can be immunized safely.
2. Immunization should be made available at all clinics, including clinics for sick children and maternal and child health clinics. We might adopt the approach used in Zimbabwe, where nurses screen ill children for immunization status and give vaccines even before the child sees a physician.²⁰
3. All eligible women and children should have an immunization card and should be required to present the card at every clinic visit, as a prerequisite for receiving health care. ■

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