

ACCEPTANCE OF MEASLES VACCINE IN SIX MATERNAL AND CHILD HEALTH CENTRES

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SYNOPSIS

Measles vaccine was offered on a trial basis to 2,184 parents of infants and preschool children attending 6 Maternal and Child Health Centres. A total of 895 or 41 per cent of the children were immunized. The immunization rates of the 6 centres ranged from 24 per cent to 64 per cent. The rates among non-Chinese and toddlers were significantly higher than among Chinese and infants respectively. The main reason offered by parents who refused measles immunization was that they preferred their children to develop measles naturally. The vaccine wastage rate was 30 per cent.

INTRODUCTION

Measles is an almost universal disease of childhood. In Great Britain and the USA 90-95 per cent of the population have had measles by the age of 6-10 years. (Dudgeon, 1969). The disease is endemic in Singapore with peaks every 2 to 3 years and the incidence is highest in the 1 to 4 year age group.

In the USA prior to the introduction of measles immunization in 1963, an estimated 4 million cases of measles, 4,000 cases of measles encephalitis and 400 cases of measles-associated deaths occurred annually. However, 10 years after implementation of large scale measles immunization, the number of reported cases was reduced by 50 per cent (De Witte and Axnick, 1975). In Hong Kong, during the measles epidemic in 1966 there were 384 deaths. Following this, measles immunization was introduced in 1967. The number of reported deaths in 1974 was 53 (D.M. and H., H.K., 1974-75).

As measles is not a notifiable disease in Singapore, the actual incidence is unknown. In 1973 there were 100 hospital admissions with 11 deaths attributed to measles. In addi-

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tion, 529 and 165 attendances for measles were recorded at Outpatient Dispensaries and Maternal and Child Health (MCH) Centres respectively. Statistics from these sources, however, represent only the tip of the iceberg as there is no record of the vast number of cases treated by general practitioners, "Sinsehs" or traditional Chinese physicians and by parents with various home remedies.

The Expert Committee on the Immunization Programme in Singapore in 1975 recommended that a single dose of live attenuated measles vaccine be given to infants after they have completed their primary course of immunization against diphtheria. This recommendation was accepted by the Ministry of Health and the Maternal and Child Health Services were charged with the responsibility of implementing it as part of the childhood immunization programme.

In view of the relatively high cost of measles vaccine, it would be necessary to use multiple dose packings to minimize costs. Furthermore, measles vaccines have to be administered within one hour of reconstitution.

Bearing in mind all these factors, it was decided to carry out a trial project, to assess

1. the acceptability of measles vaccine by the public i.e. what percentage of parents offered the vaccine for their children would avail themselves of the offer
2. the vaccine wastage rate.

MATERIALS AND METHODS

The project was carried out in 6 MCH Centres (Aljunied Road, Bukit Ho Swee, Lim Ah Pin, Queenstown, Still Road and Toa Payoh) from December 1975 to April, 1976. Each centre received between 120 to 200 doses (in 10 dose vials) of live attenuated or hyperattenuated measles vaccine—Schwarz strain.

The vaccine was offered to parents of infants and preschool children aged 1-3 years who had completed their primary course of immunization against diphtheria.

Each child whose parent had accepted the offer was screened by a doctor. Those with contraindications to vaccination e.g. pyrexia, tuberculosis, epilepsy, allergy to eggs, history of measles infection, or recent contact were excluded from the trial.

Appointments were given for groups of 10 children at a time. This was an attempt to reduce wastage of the 10 dose vials of vaccine which had

to be utilized within 1 hour of reconstitution. The parent was informed that if the initial appointment could not be kept, the child should attend the same day of the following week.

However, as the trial proceeded and it became clear that many appointments were not being kept, an 'on the spot' offer of vaccination was extended to suitable infants and preschool children who happened to attend these centres on the "Measles Immunization Day".

RESULTS

A total of 2,184 children were studied—15.1 per cent of whom were infants and 84.9 per cent toddlers aged 1 to 3 years. There were 52.5 per cent males and 47.5 per cent females. The ethnic distribution was 77.9 per cent Chinese and 22.1 per cent non-Chinese.

Out of a total of 2,184 parents offered the vaccine, whether by appointment or on the spot, 1,576 or 72.2 per cent verbally agreed to their children being immunized (See Table I). 1,454 children were given immunization appointments but only 53.2 per cent or 773 of these appointments were kept. In addition there were 122 'on the spot' acceptors.

The total number of children immunized was therefore 895, which gives an immunization rate of 41 per cent (i.e. 895 out of 2,184).

The range of immunization rates at the different centres varied from 24.3 per cent at Bukit Ho Swee to 64.0 per cent at Still Road. Bukit Ho Swee, Queenstown and Toa Payoh Centres serve mainly residents of Housing and Development Board flats in public housing estates. Bukit Ho Swee however serves people from a lower socio-economic group than either Queenstown or Toa Payoh. Its immunization rate was almost half that of the latter two clinics.

Patients attending Still Road Centre are predominantly non-Chinese. The immunization rate among non-Chinese is significantly higher than among Chinese (See Table III). This accounted for the relatively high immunization rate at Still Road Centre.

There is no significant difference in the immunization rates by sex.

The difference between the immunization rates for infants and toddlers (31.6 per cent and 42.6 per cent respectively) is highly significant. While a reasonable assumption could have been that some parents of infants might have considered them to be too young, this does not however

TABLE I: No. of Patients offered Vaccine and No. immunized

Patients	Centres*							Total
	SR	LAP	QT	TP	ARC	BHS		
(a) Total No. offered vaccine	275	277	307	512	434	379	2184	
(b) No. who accepted vaccine ('on the spot' or given appointments)	237	238	277	369	217	238	1576	
(c) No. given appointments	182	238	213	369	217	235	1454	
(d) No. actually immunized from (c)	121	144	70	210	139	89	773	
(e) No. Immunized without prior appointment ('on 'the spot')	55	0	64	0	0	3	122	
(f) Total immunized (d & e)	176	144	134	210	139	92	895	

*SR — Still Road Centre
 LAP — Lim Ah Pin Centre
 QT — Queenstown Centre
 TP — Toa Payoh Centre
 ARC — Aljunied Road Centre
 BHS — Bukit Ho Swee Centre

TABLE II: Immunization Rates by Centres

Centres	SR		LAP		QT		TP		ARC		BHS		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total No. Immunized	176	64.0	144	52.0	134	43.6	210	41.0	139	32.0	92	24.3	895	41.0
Total No. Offered Vaccine	275	100.0	277	100.0	307	100.0	512	100.0	434	100.0	379	100.0	2184	100.0

TABLE III: Immunization rates by ethnic group

Ethnic Group	Chinese		Non-Chinese*		Total	
	No.	%	No.	%	No.	%
No. immunized	604	35.5	291	60.1	895	41.0
No. refused	1096	64.5	193	39.9	1289	59.0
Total	1700	100.0	484	100.0	2184	100.0

*Predominantly Malays

(P = 0.001)

TABLE IV: Immunization rates by sex

Sex	Male		Female		Total	
	No.	%	No.	%	No.	%
No. immunized	455	39.7	440	42.4	895	41.0
No. refused	692	60.3	597	57.6	1289	59.0
Total	1147	100.0	1037	100.0	2184	100.0

TABLE V: Immunization rates by age

Age	Below 1 year		1 to 3 years		Total	
	No.	%	No.	%	No.	%
No. immunized	104	31.6	791	42.6	895	41.0
No. refused	225	68.4	1064	57.4	1289	59.0
Total	329	100.0	1855	100.0	2184	100.0

(p 0.001)

TABLE VI: Reasons for Refusing Measles Immunization

Reasons offered by Parents/Guardians	No. of Patients	%
1. Wants child to have natural measles	309	50.7
2. Parent(s) object	87	14.3
3. Grandparent(s) object	35	5.7
4. Must consult relatives	62	10.2
5. No time	14	2.3
6. Child too small or too weak	8	1.3
7. Child too young	4	0.7
8. Other reasons	20	3.3
9. No reason given	69	11.5
Total	608	100.0

appear to be substantiated by an analysis of the reasons for refusing the immunization—(See Table VI) where only 0.7 per cent of parents said that their children were too young to receive measles immunization.

Among the measles immunization refusers, 50.7 per cent stated explicitly that they wanted their children to contract measles “naturally”. Although 20 per cent stated that parents or grandparents object to measles immunization, and another 10.2 per cent expressed a wish to consult

relatives, the real reason was probably that they prefer their children to have the “natural” disease.

Of the total of 1,280 doses of measles vaccine available, only 895 were actually administered resulting in a utilization rate of 70 per cent. Of the 895 doses given, 773 doses were administered to those who kept their appointments and the remaining 122 were given to other patients who were approached on the “measles immunization day”. Without the inclusion of the latter group, the actual wastage would have been 39.6 per cent instead of 30 per cent.

DISCUSSION

It is understandable that whenever a new vaccine is introduced into the childhood immunization programme, there is a time lag of several years before the immunization rate reaches 70 per cent, the generally accepted level required for effective herd immunity. Our experience shows that although immunization against diphtheria has been available in MCH Centres on a voluntary basis since 1933, and became compulsory in 1962, yet by 1964 the percentage of infants so immunized was only 45 per cent.

Thus it is not surprising to find that the measles immunization rate in the trial was only 41 per cent. This response, however, does not compare too un-

favourably with the experience of other countries. A survey carried out in Hongkong in 1974, some 6 years after the introduction of measles vaccination, revealed that only 41 per cent of children under 5 years had been immunized (D.M. & H., H.K., 1974-75). More recently, it has been reported that in Scotland, only 55.8 per cent of children born in 1971 had received measles vaccine by the end of 1974 (Health Services in Scotland Report, 1975).

Despite the fact that the measles immunization programme in the U.S. was introduced in 1963, only 33.2 per cent of children aged 1-4 years had been vaccinated against measles in 1965. It was not until 1974 that 64.5 per cent of 1-4 year olds were recorded as having received measles vaccine. This represented the highest proportion ever recorded (U.S. Immunization Survey: 1974).

The main stumbling block to the acceptance of measles immunization in Singapore is the cultural belief among the Chinese that measles is an innocuous disease and that every child should contract it "naturally" in order to get rid of "toxic" substances from the body. This is reflected in the reasons given by parents who refused to have their children immunized against measles.

This belief is particularly rife among the lower socio-economic Chinese mothers and grandmothers and is revealed by the difference in immunization rates in Bukit Ho Swee, Queenstown and Toa Payoh Centres. This is further exemplified at Lim Ah Pin Centre which showed a relatively high immunization rate. This centre serves both the middle income group living in semi-detached and terrace houses in built-up private housing estates and the lower socio-economic group living in the more out-lying areas in attap or zinc-roofed houses in small kampongs or villages. According to the Lim Ah Pin Centre

staff, those who accepted the measles immunization were mainly parents from the middle-income group, whereas it was extremely difficult to motivate those living in the kampongs to have their children immunized against measles.

To overcome this belief will require many years of intensive and sustained efforts by health professionals at all levels within the public and private sectors. Parents need to be educated that measles is not always a harmless disease, but that it can be potentially fatal.

Despite the appointment system, the vaccine wastage rate was still 30 per cent. This was mainly because 47 per cent of children failed to keep their appointments. There was further wastage in drawing out individual doses so that in practice, only 8-9 doses were available for injection from each 10 dose vial.

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