

ASSOCIATED VACCINE CAMPAIGNS
ORGANIZATION AND LOGISTICS

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I. INTRODUCTION

Vaccination is probably the most efficient activity of services dealing with the prevention and control of contagious illnesses. However, because of the expenses involved in the operation of vaccination teams, it is necessary, in order to be truly efficient, to administer simultaneously multiple vaccinations. It is thus possible to vaccinate a maximum number of people against a maximum number of illnesses in a single visit.

Unfortunately, all vaccines may not be used simultaneously due to certain effects of interference, proved or suspected, and we must proceed with care. Even when the simultaneous inoculation of two vaccines in the same or different parts of the body is not dangerous, the price of the products may be too high to risk "wasting" a vaccine as a result of interference in immunity induced by either of the vaccines. Furthermore, the false security provided by vaccination with products which are thus rendered partially ineffective would constitute a serious danger.

Before examining vaccination policies which OCEAC has been trying to implement for the past few years, let us agree on the exact meaning of certain terms:

Combined vaccination is the injection of a mixture of vaccines at a single site. Simultaneous vaccination is the injection of two or more vaccines at different sites.

The term "associated" refers to both combined and simultaneous vaccination.

Vaccination programmes may extend over varying periods of time. We shall speak of two-year or three-year plans depending on the period covered. However, for a given location, the coverage cycle shall be called six-monthly, yearly, two-yearly or three-yearly, depending on whether the team will visit the location every six months, every year, every two years or every three years.

II. VACCINATION POLICY IN OCEAC

The policy outlined is a general policy which may be changed in response to local or temporal epidemiological circumstances, to financial conditions and to other factors. It covers most parts of a country, primarily the rural areas.

Polyvalent Teams

While we recognize the advantages of specialized teams which can rapidly conduct a specific campaign, we prefer to have polyvalent teams which proceed more slowly and deal with a number of disease problems at the same time. Vaccinations are most important, but there are other activities which must not be forgotten. It has been noted that the population response is much greater when the visit by the team is accompanied by vaccination and sanctioned by the delivery of vaccination certificates. Moreover, since it is difficult to achieve a good response from the population every two years, we should take full advantage of each visit to do all that can be done. None of the countries we are dealing with have at their disposal funds exceeding their needs, and it is much more economical to do a number of things at one time than to have

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to return to the same place several times. By this means, the same equipment, the same staff, the same fuel will be used only once and the limited funds available will not be used for a single special campaign to the disadvantage of other activities.

Vaccination Certificates

We believe that the delivery of personal vaccination certificates is essential, even though the cost of such a certificate may be significant and its delivery time-consuming. The certificate is generally carefully kept and the issuance of a certificate not only attracts people but also helps to prevent unnecessary vaccination of children who have already been vaccinated. Additionally, mistaken conclusions regarding the ineffectiveness of a given vaccine may be avoided, since very often people claim to have been vaccinated against a given disease when in fact they have been vaccinated against another. With the increased use of Ped-O-Jets, all vaccinations resemble each other in the eyes of the villager. This problem may be partially solved by administering vaccines at specific sites, i.e. left arm, right arm, left fore-arm, etc.

Pooling of Equipment

Vaccines and equipment are usually obtained through different sources. Some are bought by the government and others offered by various organizations such as USAID, FAC, UNICEF, etc. However, pooling of all available equipment must be an absolute principle. It must be possible, for example, to preserve the 17/D yellow fever vaccine in refrigerators provided primarily for measles vaccine and to have it injected by a team transported in vehicles provided by FAC along with other vaccines obtained from other sources.

Preference for Simultaneous Vaccinations

On the basis of the conclusions arrived at by the 1967 OCEAC Technical Conference, it appears that two simultaneous vaccinations are preferable to one combined vaccination so long as we do not have the vaccines already mixed in a single multi-dose bottle.

Frequency of Visits

Each country must decide on its own cycle of visits depending on the funds available, the number of its inhabitants, the number of mobile teams, the area of the districts, the ease of communications, the laws prevailing in the country and on local permanent or temporary circumstances. The frequency of visits may be fixed for the country as a whole, or different frequencies may be chosen for different parts of the territory.

For a number of years now, OCEAC has formulated schedules for yearly, two-yearly, and three-yearly cycles. Each has its advantages and its disadvantages. For various reasons, particularly for ease of implementation and for the coverage provided, the two-yearly cycle appears to us to be the best. It is of this cycle, therefore, that I shall speak in greater detail.

III. ORGANIZATION OF A VACCINATION CAMPAIGN

It is relatively easy to give vaccinations, particularly with jet injectors, and there is no need for "specialists" who only perform vaccination. Knowledge of how to preserve vaccines, of how to maintain and repair the equipment and how to inject the vaccines is important, however. Equipment necessary for this purpose is as follows:

Cold Chain

At the district centre, the following equipment must be available:
A freezer where dry vaccines requiring storage of -10°C to -20°C can be stocked, and
a refrigerator for those vaccines that must be kept at $+4^{\circ}\text{C}$.

a freezer or portable refrigerator, preferably gas-operated, to be transported in the vehicles used by each team for the transport and conservation of vaccines and the refrigeration of ice-boxes.

one or two isothermic chests to carry vaccine when the vehicle containing the freezer is not nearby, or when it is necessary to put the vaccine temporarily in a cold place during an interruption in vaccination procedures.

Any district which does not have this equipment or any team which is unable to renew its ice-boxes daily must not undertake vaccination campaigns, except for smallpox and BCG campaigns, for which vaccines are more stable than, for example, measles or yellow fever vaccine.

Ped-O-Jet

Small series of vaccinations may be given with needles or vaccinostyles. But in the case of a real mass campaign it is preferable to use jet injectors. Doubtless, the Ped-O-Jets are less indispensable if vaccinations are integrated into routine activities, but they simplify the work considerably and experience has shown, particularly as regards smallpox vaccination, that take rates are better than when given by scarification or by multiple pressure.

It is necessary, however, to have a staff well-trained, not only in the use of the Ped-O-Jet, but also in its maintenance and repair. Staff members must also know exactly when the Ped-O-Jet must be used with the sub-cutaneous nozzle and when the intradermal nozzle should be used. Finally, all teams leaving on a vaccination tour must be provided with a sufficient number of spare parts.

Although it is always possible to use a single Ped-O-Jet to vaccinate successively with different vaccines the various age groups which are to receive different vaccinations, it is preferable to have several machines. It is thus possible to vaccinate persons simultaneously (for instance, with smallpox vaccine in one arm and measles vaccine in the other) instead of having to keep them waiting at the risk of seeing many of them disappear. Finally, it must be anticipated that from time to time the jet injectors will break down. Consequently, alternate equipment, such as syringes and needles must be provided. Most failures reported in vaccination campaigns are caused by the non-observance of these rules concerning refrigeration and the correct use of the Ped-O-Jets.

IV. TWO-YEARLY CYCLE OR BIENNIAL PROGRAMME

The two-yearly cycle is the one we recommend, whenever circumstances allow it. The age groups to be vaccinated and the vaccines to be used on each visit are shown in Table 1. The protection afforded to each person over a period of years may also be seen. For clarity, we have assumed that the first year would be dedicated to the initial phase of the measles campaign. Actually, this campaign has already taken place everywhere and only the additional campaigns need still to be undertaken. Smallpox, it will be noted, is systematically given to everyone on each visit. It is true that this means giving more vaccinations than are necessary and will be more expensive. However, it will provide extra protection with no major disadvantage other than the consumption of vaccine. Since, unfortunately, it is not possible to see 100% of the population on each visit, a systematic revaccination on each visit will make it easier to cover that part of the population which was absent on the preceding visit.

Let us go over some of the points of this schedule:

1. Protection against Measles

Except for the first visit, during which all children aged 6 months to 5 years are vaccinated, only children aged 6 months to 3 years are vaccinated. These are, of

course, the susceptible and vulnerable age group. Additionally, children who were vaccinated on the previous visit, when they were aged 6 months to a year, will be revaccinated. For some this will be unnecessary, but it is a good precaution, since we know that failures occur in this group because of the persistence of maternal antibody. It appears that, particularly in rural areas, one visit every two years is sufficient to keep the "susceptible" population at a low level. 2-1584

2. Protection against Tuberculosis

On each visit, all children 0 to 6 months old (those who are not yet old enough to be vaccinated for measles) will be given BCG vaccine (half the normal dose) as will, in the first year, all children aged 6 to 20 years. During the second visit, children aged 4 to 9 years will be vaccinated. Thereafter, at each visit, only children aged 4 to 20 years will be vaccinated.

Thus, every child will be vaccinated from the earliest age and revaccinated once or twice until the age of 20; this is considered to provide sufficient protection.

3. Protection against Yellow Fever

It is impossible to vaccinate the entire unvaccinated backlog at one time. Therefore, the 17/D yellow fever vaccine will be given on each visit to all children who have been vaccinated against measles, or better still, where discrimination is possible, to those among the children already vaccinated for measles who are over one year old. Thus, in a few years, all susceptible children will have been vaccinated. Every 10 years, beginning with the second or third visit, the entire population over 10 years old will be vaccinated with the Dakar strain yellow fever vaccine. Once, on the fifth visit, persons aged 10 to 13 years may be given this same vaccine, in order to fill a gap.

It is to be noted that this is a general outline. For financial reasons, it may only be possible in some cases to buy small quantities of Dakar strain yellow fever vaccine. In this case, it would be possible to vaccinate each year part of the population over 10 years old so as to cover the entire population over a period of 10 years and to revaccinate it every 10 years. If, again for financial reasons, it is impossible to buy yellow fever vaccine for the entire population, it will be preferable to obtain in the first instance only 17/D strain vaccine for the protection of children. Finally, this protection could at first be limited to children living in areas recommended as priority areas, particularly large urban centres. However, considering the gradual decrease of the cost of 17/D strain vaccine produced in Dakar, it is not unreasonable to hope that all age groups may soon be protected with this vaccine.

CONCLUSIONS

On the basis of what we now know, it is possible to associate several vaccinations. In OCEAC, these will be integrated in the normal activities of polyvalent teams who will visit all localities at least every two years. It will thus be possible to obtain excellent coverage of the population. This schedule may be further improved when we have evidence that the measles vaccine can be associated with BCG vaccine with no disadvantages. This is at present being studied. If the results, which will be made available in July, are favourable, (and we have reasons to believe that they will), the vaccination schedules described here will be drastically simplified and our last obstacles will have been overcome.

Table 1. Schedule of Vaccinations in a Two Year Campaign
(Frequency of visits - every 2 years)

Year	Population Under 10				Population Over 10	
	0-6 months	6 months to 3 years	4 to 5 years	6 to 9 years	10 to 20 years	Over 20 years
1	S BCG		Smallpox Measles 17/D	S BCG	S BCG	Smallpox
3	S BCG	S M 17/D		Smallpox BCG		Smallpox
5	S BCG	S M 17/D	S BCG	S		Smallpox Dakar
7	S BCG	S M 17/D	S BCG	S		Smallpox
9	S BCG	S M 17/D	S BCG	S		Smallpox Dakar
11	S BCG	S M 17/D		Smallpox BCG	S BCG	Smallpox

Continue thereafter as in 5th, 7th or 9th year in the table, depending on whether or not it is necessary to vaccinate for yellow fever after age 10.

S = Smallpox vaccine
 BCG = BCG vaccine
 17/D = 17/D strain yellow fever vaccine
 M = Measles vaccine
 Dakar = Dakar strain yellow fever vaccine