



**WORLD HEALTH ORGANISATION
REGIONAL OFFICE FOR AFRICA**

Measles SIAs Field Guide

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List of Abbreviations

Acronyms used in the document

AD	Auto Disable/ Auto destruct (syringes)
AEFIs	Adverse Events Following Immunization
CBO	Community Based Organizations
CFR	Case Fatality Rate
CPR	Cardio-Pulmonary Resuscitation
DPT1	Diphtheria – Pertussis –Tetanus vaccine 1st dose
EPI	Expanded Program for Immunization
G/V	Gentian Violet
HIV	Human Immunodeficiency Virus
ITNs	Insecticide Treated Bed Nets
IU	International Units
Km/l	kilometres per liter
MoH	Ministry of Health
NGOs	Non-governmental Organizations
NID	National Immunization Day
OPV	Oral Polio Vaccine
RCM	Rapid Convenience Monitoring
SIAs	Supplementary Immunization Activities
SMC	Social Mobilization Committees
UNICEF	United Nations Children’s Fund
VVM	Vaccine Vial Monitor
WHO	World Health Organization

1 General Introduction

1.1 Background

Measles is a highly infectious viral disease for which humans are the only reservoir. Transmission is primarily person-to-person via aerosolised droplets. The average incubation period for measles is 10 – 12 days. The clinical syndrome is characterised by rash, prodromal fever, conjunctivitis, coryza, cough and the presence of Koplik's spots in the mouth. In developing countries, up to 75% of cases may have one or more complications. These include pneumonia, diarrhoea, otitis media, laryngo-tracheo-bronchitis (croup) or encephalitis. The 3 major causes of high case fatality are pneumonia, diarrhoea and croup. Measles can lead to life long disabilities including blindness, brain damage and deafness. Low Vitamin A status is associated with a higher rate of complications and death from measles.

The 3 major causes of high case fatality in measles are pneumonia, diarrhoea and croup.

Before the wide spread availability of the measles vaccine, virtually all children contracted the disease and seven to eight million deaths occurred each year worldwide. Childhood immunization programmes have led to a dramatic decrease in measles morbidity and mortality. As of 2005, measles is estimated to cause about 250,000 deaths annually in the African Region and ranks among the top ten-causes of childhood mortality.

Despite the remarkable progress made in measles control, a combination of factors such as crowding, exposure at a younger age and malnutrition contribute substantially to high case fatality rates (3- 10%). During major outbreaks, case fatality rates are known to reach levels as high as 30%.

1.2 Measles Vaccination

▪ **Vaccine characteristics and storage**

Measles vaccine is made from live, attenuated virus. When correctly administered at 9 months of age, measles vaccine confers life-long protection to approximately 85% of those vaccinated.

Measles vaccine should be kept at temperatures below 8°C. At central stores, it is recommended to keep the vaccine (and not the solvent) at a temperature of -20 ° C and protected from light. Reconstituted measles vaccines quickly lose their potency at room temperatures; at 22° to 25° C they suffer approximately 50% loss in potency in one hour. It is therefore extremely important to keep reconstituted measles vaccine cool and protected from sunlight. The vaccine, once reconstituted, should be used within one vaccination session. Opened vials of measles must be safely discarded at the end of each immunisation session.

Reconstituted measles vaccine should at all times be kept cool and protected from sunlight.

▪ **Dosage and Administration**

Measles vaccine is given in a single dose of 0.5 ml subcutaneously usually at the outer part of the child's upper arm. (See figure 1) It is recommended that measles vaccine be administered beginning at 9 months – the age when most children have lost maternally derived protection (maternal antibodies). There are virtually no contra-indications to measles vaccination.

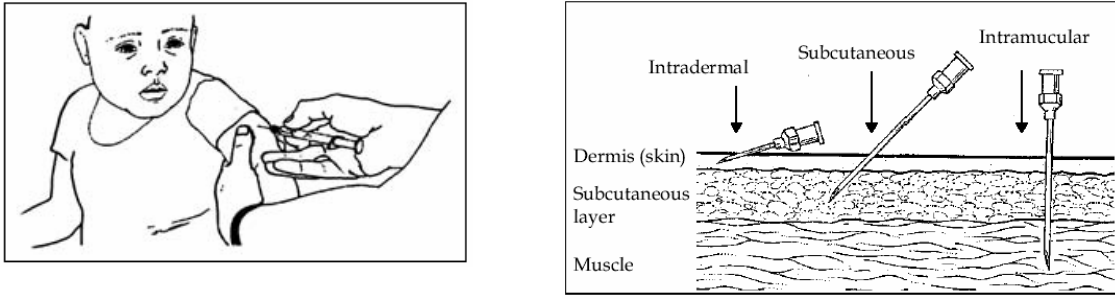


Figure 1. Subcutaneous administration of measles vaccine.

1.3 Reaction and Complications

Measles vaccine is generally safe. It is important to stress that the rate of serious adverse events following immunisation is quite minimal compared to the complications observed after measles disease or infection. Possible adverse events following measles vaccination are listed in the table below.

Adverse Effect	Estimated Risk Associated with Vaccination	Estimated Risk After Measles
Fever \geq 39.4 C	1 in 9	Always
Rash	1 in 10	Always
Febrile convulsions	1 in 2500	1 in 200
Encephalitis/ Encephalopathy (and other serious neurological disorders)	1 in 1,000,000	1 in 1,000
Subacute sclerosing panencephalitis	1 in 1,000,000	1 in 50,000

Table 1 Risk of adverse events associated with measles vaccination and disease

1.4 Strategies for Accelerated Measles Control and Elimination

As of 2005, most of the developed countries have successfully managed to eliminate indigenous circulation of measles for more than 3 years, and a number of countries in the African Region have proven that measles mortality can be reduced to near zero levels in a sustainable manner using the following strategies:

1. strengthening routine immunisation to achieve and sustain high coverage
2. providing a second opportunity for measles immunization through the implementation of high quality Supplemental Immunisation Activities (SIAs)
3. epidemiologic surveillance with lab confirmation of cases and outbreaks
4. improved case management

Whatever the degree of control of measles in a country, high measles vaccine coverage in every new birth cohort through routine services is necessary to control measles and sustain the achievement over time. SIAs should therefore be accompanied by simultaneous actions aimed at improving routine services.

2 Supplemental Immunisation Activities (SIAs) for Measles control

2.1 Purpose of SIAs

Supplemental immunization activities are necessary to reach never-vaccinated children who have never had measles disease and to provide an opportunity for a second dose for cases of primary vaccine failure. All children in the target age group and geographic area will be eligible to receive a dose of measles vaccine irrespective of past immunisation or history of clinical measles. A second dose of measles vaccine, available through good quality supplemental immunisation reduces the proportion of susceptibles in a given population quite rapidly, prevents measles outbreaks and in the context of high routine immunisation coverage, can help to eliminate indigenous measles transmission.

Even with high routine EPI coverage, susceptible individuals will accumulate for the following reasons

- Un-reached or un-vaccinated children within the community
- Primary vaccine failure as a result of the fact that measles vaccine is about 85% effective when given at 9 months of age.

SIAs, apart from providing a perfect second opportunity for immunising children, are also opportunities to build national capacity by improving cold chain and logistics capacity, by providing refresher training to health workers, strengthening local partnership and coordination among different stakeholders and partners, and by increasing community awareness regarding vaccination.

The readiness and capacity of countries to embark on large scale SIAs is determined by the level of political commitment, technical capacity, human and financial resources, strength of routine immunisation services and capacity for disease surveillance.

2.2 The roles of Partners

SIAs provide a perfect opportunity to build new partnerships where they never existed, and to strengthen existing ones. In the initial planning stages, the MoH should conduct a role analysis of different partners and try to determine which activities might be better supported by specific partner agencies and organisations. Civic societies, Professional societies, the private sector, media, schools and teachers, cultural institutions, Religious leaders and organisations, relief and humanitarian organisations, the manufacturing sector, Bilateral aid agencies and UN bodies all have roles to play in mass immunisation campaigns.

2.3 Types of Measles SIAs

Supplemental vaccination activities will entail

- “Catch-up campaigns”: A one-time effort to vaccinate all children under the age of 15 years. Experience in several African countries has shown that there is significant incidence of measles above 5 years and with equally significant mortality. Children aged 9 months to 14 years are targeted since more than 90% of measles incidence takes place in this age group. Here, the purpose is the reduction of susceptibles in a population.
- “Follow-up campaigns”: periodic mass immunisation campaigns every 2-4 years following “catch-up” campaigns whose purpose is to reduce any build up of susceptibles born since the previous SIAs. The timing of follow-up SIAs is determined by the speed of accumulation of susceptibles which in turn is a function of the routine immunisation coverage and the coverage during preceding catch up or follow up SIAs. Therefore, the lower the routine immunisation coverage, the shorter the interval between campaigns. In general, follow-up campaigns are advisable just before the risk of measles outbreaks reached its peak as a result of susceptibles accumulating to

the size of a birth cohort. Specially designed computerised tools are available to determine population susceptibility profiles and help in deciding the timing of campaigns.

Epidemics of measles occur when the number of susceptible individuals in a population reaches a critical threshold. This classical picture is modified by immunisation. As immunisation coverage increases, the size (number of cases) of the epidemics decrease. In addition, the inter-epidemic period lengthens, and the proportion of cases among older children increases. Figure 2 illustrates the relationship between routine immunisation coverage, the coverage achieved during SIAs and the expected window period before follow up campaigns may be necessary. For any given coverage achieved during SIAs, the interval between campaigns necessary to prevent epidemics increases with increasing routine immunisation coverage

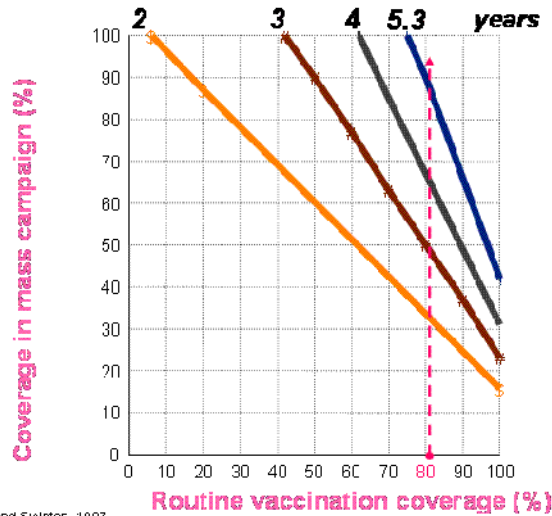


Figure 2. Relationship between routine immunisation coverage, campaign coverage and the expected inter-campaign interval

3 Planning measles SIAs

3.1 General Considerations

3.1.3 *Target population*

Supplemental immunization activities should reach the members of the population who are most likely to die from measles to reach the goal of reducing mortality due to measles disease. All children in the target age group should be vaccinated, regardless of their history of measles immunization or illness. This eliminates screening and provides protection for the 15% or so of children who have not developed immunity with their first dose of vaccine, thus giving them a second opportunity

Lower age limit: In normal circumstances, the lower age limit for measles vaccination during SIAs should be 9 months. Children as young as 6 months may be vaccinated in SIAs if a large proportion of measles cases occur in children between 6 and 9 months of age. Children who are vaccinated before 9 months should receive another dose at 9 months in order to ensure protection, because up to half of those vaccinated before 9 months do not develop immunity against measles.

“Upper Age Limit” – Catch-up SIA: Experience from most African countries shows that significant measles mortality occurs in children aged 9 months to 5 years. However, more than 90% of measles cases occur in the age group up to 15 years. Therefore, catch up SIAs should target children up to 15 years where appropriate.

“Upper Age Limit” – Follow-up SIA: target age group should include children born since the last campaign. For example, if the most recent campaign was held three years ago, children born ever since, and those who were not yet eligible during the catch-up SIAs (aged below 9 months or 6 months of age as the case might be) should be immunized. According to this scenario, this would include children 9 to 47 months.

3.1.3 *Timing:*

While measles may occur throughout the year, it is more often a seasonal disease with peaks during certain months. The best time to schedule measles SIAs is during seasons of low transmission, as determined from local experience and from review of epidemiological data. Planners should also take into consideration factors such as seasonal accessibility, and important events such as planting, harvesting, religious, traditional and political events, school openings, etc.

3.1.3 *Duration:*

Unlike polio mass campaigns that must be completed within a few days, measles campaigns may take place over one to two weeks. Experience has shown however that campaigns running beyond 3 days duration in the same locality have a significant drop in attendance. The more health workers available to vaccinate, the shorter may be the duration of SIAs

3.1.3 *Target area for SIA:*

It is strongly recommended that SIAs be conducted in large, contiguous districts or ideally nationwide. In the absence of experience or resources needed for a campaign in a large area, a “rolling” approach can be adopted where SIAs are conducted in smaller but contiguous regions (e.g. all children 9 months to 15 years in half of the regions of the country during the first year, and the other half during the subsequent year).

In order to enable more effective planning for SIAs, countries are encouraged to review the epidemiology of measles, and to assess their cold chain capacity, the policy and practices of injection safety and medical waste disposal, as well as disease surveillance and laboratory performance.

3.1.3 *Integration with other campaigns:*

Integrating measles SIAs with other interventions may provide managerial, financial and logistical advantages. Measles SIAs have in the past been successfully utilised to provide an integrated package of child survival interventions including Vitamin A, de-worming medicine, insecticide treated Bednets (ITNs), and oral polio vaccine. However, detailed and early planning, as well as good social mobilisation and program coordination are vital to the success of such multi-intervention campaigns. The role of monitoring and evaluation at every step of the campaign preparation and implementation cannot be overemphasised.

▪ *Types of Vaccination Posts*

Vaccination posts to be employed during measles SIAs may be Fixed (permanent or temporary) or mobile.

Permanent - Fixed Immunization posts

These posts are located at permanent health facilities. Immunization will be provided at the health facilities the whole day for the seven days during the campaign. These sites will also serve as depots for storage and distribution of vaccine to temporary fixed sites and mobile teams.

Temporary - Fixed Immunization posts

These posts are located at schools, churches, bus depots, roadblocks and market areas. Immunization will be provided at these sites for either the duration of the campaign or partially depending on the population density.

Mobile - Immunization posts

These posts move from community to community reaching populations that are living in hard-to-reach areas who may not have access to a fixed site, too small in size to justify an all-day fixed post or unlikely to visit the fixed sites. These mobile teams set up an immunization post at a fixed site for a few hours, then move the post to a new site after completing their task.

3.2 **National Level Planning**

Macro-planning at National level helps to develop realistic budget estimates to secure policy level commitment and to mobilise resources, to obtain commitments from key partners, and to order vaccines, cold chain equipment and related supplies.

At national level, planning for measles SIAs includes the following elements:

- Obtaining go ahead from policy makers
- Soliciting high-level political commitment
- Involving the EPI Inter-Agency Coordinating Committee
- Establishing appropriate inter-sectoral sub-committees (e.g., social mobilisation, logistics, monitoring and evaluation, surveillance, injection safety...)
- Resource mobilisation
- Developing a plan of action, that specifies the target population, target area, timelines for the various activities.
- Recruitment of extra personnel (national or international supervisors) as necessary
- Developing training materials/guidelines etc...
- Social Mobilisation
- Developing logistics and data sheets
- Organising district-level training and micro-planning
- Procurement of vaccines and other supplies
- Distribution of vaccine, supplies and other campaign materials to peripheral levels

Table 2. Steps for planning measles SIAs - National level

Suggested Timing	Activity
8 months before SIAs	Establish national coordinating committee Establish national social promotion committee Establish technical committees Define and disseminate a schedule of activities Develop logistics forms Develop task lists for various levels
7 months before SIAs	Meet with District leaders and health officials Develop plan for social mobilization
6 months before SIAs	Develop and field test guidelines
5 months before SIAs	Recalculate a more precise budget Print guidelines
4 months before SIAs	Distribute guidelines to Districts Develop Social mobilization materials Confirm participation of important public figures in launching ceremony Develop & print supervisory checklists Develop and print tally sheets and referral forms
3 months before SIAs	Prepare training on how to run an immunization post or manage an immunization team Develop radio/TV announcements and press articles Develop plan for evaluation of SIAs
8 weeks before SIAs	Conduct District level training
7 weeks before SIAs	Prepare launching ceremony
6 weeks before SIAs	Verify availability of transport for supervision, social promotion etc... Finalize logistics spreadsheets and ensure consistency of calculations
5 weeks before SIAs	Make supervisory visits to Districts
4 weeks before SIAs	Transfer vaccine from central level to Districts
3 weeks before SIAs	Make supervisory visits to problem Districts Prepare supervisory teams for SIAs
2 weeks before SIAs	Confirm preparations for opening ceremony
1 weeks before SIAs	Begin newspaper, TV and radio announcements
1 weeks before SIAs	Intensify all social promotion activities
1-2 days before SIAs	Prepare site for launching ceremony
Day of SIAs	Conduct opening ceremony
Day of SIAs	Visit/supervise posts and vaccinating teams
2 weeks after SIAs	Calculate immunization coverage and vaccine wastage
2 weeks after SIAs	Meet with all District and national coordinators to review campaign
1 month after SIAs	Calculate expenditures
1 month after SIAs	Compile and submit a technical report

3.3 District Level Planning

District planning follows a schedule of activities similar and complementary to national level planning but with greater operational elements (see Table 3).

Table 3. Sample Steps for planning measles SIAs at the District Level

Target Time for completion	Activity
7 months before SIAs	Prepare for meeting initial planning meeting: census data, maps, list of communities, inventory of cold chain equipment in district Attend national meeting
6 months before SIAs	Start filling logistics forms Establish a District SIAs coordinating committee Establish a District social mobilization sub-committee
5 months before SIAs	National level meeting to complete logistics forms Meet with the sub-district and local level SIAs coordinators
3 months before SIAs	Distribute a schedule and task lists Distribute SIAs guides to sub-district and local coordinators Verify accuracy of district calculations Visit and design strategies for difficult to reach and special populations
8 weeks before SIAs	Finalize strategies for difficult to reach and special populations Initiate local level SocMob activities Attend national level training
6 weeks before SIAs	Verify transport and logistics for vaccine and materials distribution, supervision etc. Finalize logistics forms
5 weeks before SIAs	Conduct training for sub-district and local coordinators
4 weeks before SIAs	Coordinate/support training for immunization post teams Transfer vaccines, forms, materials to immunization posts
2 weeks before SIAs	Organize supervisory visits to post coordinators; solve local problems Initiate activities for hard to reach areas and special populations Intensify social mobilization activities
1 week before SIAs	Visit and support selected sub-district and post coordinators Make supervisory visits to assist posts and teams
3 days after SIAs	Meet with all sub-district coordinators in district
1 week after SIAs	Estimate vaccine coverage & wastage in district Review supervision check-lists Attend national level review meeting Submit campaign results Respond to all reports/rumors of adverse events

3.4 Micro-planning

The microplanning exercise is a bottom-up approach of planning that should start at the district level. This exercise should try to come up with valid and realistic estimates of the resource needs based on the target population and the reality on the ground with regards to existing and locally available resources – human as well as material. The opportunity should be maximally used to look into the cold chain status and waste management issues among others. The involvement of other Ministries, NGOs, civic society groups and other stakeholders in the planning stage helps to pool resources that normally may not be readily available. Guidelines should be provided on how to do micro-planning at the district level, based on the strategy of

delivery of services during the SIAs. As preparation for the micro-planning workshops, guidelines should be sent for representatives/participants to collect in advance and arrive with the following information:

- Target population
- % Population in rural and urban zones
- Cold chain situation: numbers, locations, gaps and possibilities from e.g. private sector
- Distances to position vaccine in the region/district
- Hard to reach areas with their suggested solutions
- Maps illustrating all the above

The following information should be researched and agreed upon by the district

- Per diem rates
- Number of person-days necessary for distribution of vaccines and materials
- Cost rates for various calculations e.g. cost of hiring a donkey

The key points for logistics planning include using the same format for micro-planning at all levels, making simple and consistent calculations and ensuring adequate cold space at all levels. The calculations specified below should be made using a spreadsheet or micro-planning tool for each sub-district. Sample micro-planning spreadsheets have been annexed (Annex 1).

The key to successful micro-planning lies in allowing enough time to plan in depth and to include mapping as an essential part of the district micro-planning process.

3.4.3 *Estimating the target population*

Campaign managers should obtain population data from an official source before the campaign and for consistency, ensure that all involved in planning SIAs use the same figures. If different population figures are available, the higher figure should be used for estimates. It is better to over estimate rather than under estimate the target population to avoid resource shortages. For SIAs targeting children under 5 years, based on the demographic structure of many countries in the African Region, the proportion of children of different age group categories may be estimated using the figures in the table below.

Age range	Approx.%	Total population
9 – 59 months	17 %	
9 – 36 months	10 %	
9 months – 15 years	48 %	

Table 4. Percent total population by age range

Example

SIAs for a catch-up campaign for children 9 – 59 months
If the total population of Kano district is 221,871 the target population will be:

221,871 x 17% = 37,718 children

It has already been stressed that all target children need to be reached regardless of vaccination status or history of measles disease. In order to be effective, measles SIAs have to reach over 90% of the target population. Estimating the denominator therefore assumes great significance in measles control. While it is advisable to use officially accepted population figures for the campaign, all efforts need to be made to ensure that all eligible children are reached. Towards improving the estimation of the denominator, it is recommended that local campaign managers and supervisors work with the communities (particularly women’s groups and

leaders) and ask them to line list the children in the target age range by household. The children who attend are then ticked off against the list and volunteers are sent for door-to-door canvassing to encourage parents of any missing children to participate.

If the proportion of the target population living in urban and rural areas is known, the size of the population in the different areas can be calculated.

3.4.3 Estimating Vaccine Requirements

Experience from many African countries indicates that the average vaccine wastage rate during measles SIAs is less than 10%. Therefore wastage rates should be calculated on the basis of previous experience when available. However, for the purpose of estimating requirements, a rate of 30% is used and the balance will be used to supplement supplies for the routine immunization activities.

As measles vaccine is usually supplied in 10 dose vials, divide the number of doses required by ten to calculate the number of vaccine vials necessary. The final number of doses calculated should be rounded up to the nearest hundred. The following formula is used to calculate the number of vials of measles vaccine:

Target popln. x wastage multiplier factor¹ of 1.43 (wastage rate of 30%) = number of doses of measles vaccine

Example: following from the Kano District above

34,289 children aged 9-59 months x 1.43 = 49,033 doses
49,033 rounded up = 49,100
49,100 divided by 10 = 4,910 vials.

3.4.3 Estimating syringes and safety boxes required

As guided by WHO policy (WHO/EPI/HIS/97.04), all mass campaigns/SIAs must only use auto-disable syringes. For mass measles immunization the following supplies are required:

- auto-disable syringes (0.5ml) and needles
- mixing syringes (5ml)
- 19G needle
- cotton swabs
- 'sharps' disposal safety boxes

Auto-disable (AD) syringes for injection:

The policy of one child- one syringe- one needle should strictly be observed in all measles campaigns. For ease of calculation, the same wastage factor is used for vaccines and syringes. The number of AD syringes equals number of doses of measles vaccine calculated above.

Example

49,100 doses of vaccine ordered = 49,100 auto-disable syringes

Disposable syringes and 19G needles for vaccine reconstitution:

One disposable 5 ml syringe (and needle) is required for every vial of vaccine.

¹ Wastage multiplier factor = 100/ (100 - wastage rate)

Example
491 vials of vaccine ordered = 491 disposable syringes (and needles) for reconstitution

Safety boxes:

1 safety box (10L) can hold 100 syringes and needles. Therefore for each district, health centre and vaccination post, adding the number of vaccination - AD – syringes plus the number of disposable reconstitution syringes and dividing by 100 gives the number of safety boxes required.

Example
49100 vaccine syringes + 4910 reconstitution syringes = 54,010 total syringes
54,010 divided by 100 = 5,401 safety boxes

It should be noted that safety boxes and AD syringes are ordered together with the measles vaccines, a principle called bundling.

3.4.3 Estimating cold chain requirements

Some calculations need to be done at each level to verify whether there is adequate cold space for campaign supplies at the district level. To calculate the amount of cold chain space available for vaccine supplies for SIAs, subtract the estimated amount of space used for routine immunization services from the total available space. This requires an updated inventory of the working cold chain equipment available, and a review of the cold space provided by each type of equipment. As a general rule, every 500 doses of measles vaccine require approximately 1 litre of storage space.

Example
49,100 doses of vaccine / 500 doses = 98,2 rounded up gives 99 Litres of fridge (storage) space needed to store measles vaccines

In order to satisfy the extra demand, cold space should be “borrowed” temporarily from the private sector, other ministries or NGOs. In general, the most serious problems of inadequate cold space will occur at the provincial, or district level when mass supplies and vaccines arrive at the depot storage centre. Where there’s a functional fridge, storage space at the most peripheral level is usually adequate.

3.4.3 Estimating the number of teams necessary

The success of mass campaigns depends in large part on there being enough teams of dedicated personnel. Most operational costs are affected by the number of teams to an even greater extent than by the number of children to be vaccinated. Vaccination teams comprise vaccinators and volunteers. Qualified health workers should be drawn carefully from hospitals and/or health facilities to ensure minimal disruption of essential services. The respective roles are indicated below.

Vaccinators; health workers trained in injection techniques and vaccination

- Reconstitution of vaccine
- Administration of vaccine
- Safe disposal of waste
- Response to adverse events
- Final summary of number of children vaccinated
- Supervision of and guiding the volunteers

Volunteers: have no specific health training

- Crowd control
- Screening children
- Recording/tallying

The number of teams necessary and their composition will depend on whether the vaccination post is in a rural or urban setting. The presence of other integrated interventions (eg., distribution of bed nets, deworming medicine...) as well requires that the team size increase accordingly.

Possible locations of vaccination posts include schools, churches, bus depots, and market areas. In urban areas these sites may have more than one vaccination post with a separate team for each post. Given the challenges attendant to the administration of measles vaccine, it is currently not recommended to use the house-to-house approach in most African countries. However, mobile teams can complement the activities of the teams at fixed permanent and fixed temporary sites. These teams set up temporary immunisation posts for a few hours at a fixed site and then move the post to a new site after completing their task.

The schedule of deployment of vaccination teams depends on the local situation. However, it may be judicious to assign teams in sparsely populated areas to cover permanent fixed posts for the first few days when the expected turnout is high, and then deploying them in temporary fixed sites or even mobile teams for the remaining days of the campaign.

Urban: A vaccination team in the urban setting, with minimal travel requirements, can vaccinate between 300 and 400 children per day, depending on the number of volunteers available. In the urban setting, the ideal composition of a vaccination team is

- 2 vaccinators (1 for vaccination, 1 for reconstitution)
- 3 - 4 volunteers (1 recording, 1 for screening children, 1 - 2 for crowd control)

Under certain circumstances, a vaccination post may be operated with fewer persons depending on availability of health workers and volunteers. On the other hand, in high density urban areas, especially during the first 2 to 3 days of the SIAs, large crowds are likely to form and waiting times for services may be too long. In such cases, the option of placing more than one team in one site should be explored. The extra team may be dispatched elsewhere after the third day.

During measles campaigns, only qualified health workers should perform vaccinations and vaccine reconstitution.

Rural: Teams in rural settings often have to cover long distances and therefore tend to be smaller than in urban areas. The team composition and numbers will depend on the distances travelled between villages and the size of the target population. The following recommendations concerning the number of children to vaccinate per day are made for different sizes of rural vaccination teams

- A Team comprising 1vaccinator and 1 volunteer: 100 – 150 children/day
- A Team comprising 2 vaccinators and 1-2 volunteers: 150 - 200 children/day

Example

Luapula rural sub-district has 1000 children to reach using 10 health workers.

1000 children / 100 children/day = 10 days necessary

10 divided by 5 teams = 2 days for vaccination of target population

3.4.3 Estimating vaccine carrier and icepack requirements

In general, each team should have 1 vaccine carrier, and will require 4 frozen ice packs or approximately 1 kilogram of ice per day of work. The number of days the cold packs or ice will be needed is determined by the number of days of duration of SIAs plus the 2 days for travelling to and from the vaccination post. In some settings it may be preferable to supply teams with more than one vaccine carrier, when all the foregoing estimates will be doubled. If ice is to be used, ice makers should be notified in advance of the amount needed and the timing.

3.4.3 Estimating transport requirements

Transport is needed at all levels before and during SIAs for the following purposes:

- Transportation of vaccines, Vitamin A, cold chain equipment such as cold boxes, ice packs, vaccine carriers and other supplies from the central to periphery levels of service delivery points.
- Distribution of social mobilization and monitoring materials.
- Transport of personnel for monitoring and supervision of SIAs planning and implementation, other personnel to conduct independent observation of SIAs process and manning the vaccination posts.

All rural-mobile vaccination teams should have an independent mode of transport. There is no simple formula for calculating transport requirements, as these will vary dramatically in each area. Districts are expected to use the vehicles within the health sector as well as those from other government departments, Non-Governmental Organizations, business houses, service clubs, the private and religious sectors. Consideration should be made for terrain. Alternative modes of transportation may be needed, including air transport, boats, rafts, and animals.

3.4.3 Calculating Fuel and Transport Costs:

All estimates of operational costs, whether transport or personnel, should be made in local currency. Figures may be rounded up to the nearest unit to facilitate local management of funds

Calculations should consider possible variation of fuel prices within a country and field conditions e.g. mountainous terrain, water transport etc., which affect the number of km/l of fuel. One manner to calculate fuel costs is to give each team in a district an average number of kilometres of travel. Provision should also be made for vehicle maintenance and repair. One suggestion is to include 15% of all fuel costs for vehicle maintenance at the district level.

Example

Timbuktu – a rural and desert district where vehicles use 0.25 l gasoline per km travelled and where the price of 1 litre of fuel is \$1.00.

75 km per day per team x 0.25l gasoline/km x 1 \$/l = \$18.75 per day per team in fuel costs

Hence, 5 teams in Timbuktu district x \$18.75 = \$93.75 as fuel costs per day.

Therefore, 3 days of vaccination = \$281.25 total fuel costs

Example - using the calculation for Timbuktu District above:

\$281.25 total district fuel cost x 15% = \$42.2 as overall vehicle maintenance for the SIAs

3.4.3 Estimating personnel costs:

Per-diem rates for vaccinators and volunteers should be decided before the micro-planning. The per-diem rate to apply during the SIAs should be clearly communicated to all participants beforehand. Any problems or misunderstanding regarding payment rates has to be resolved well before the SIAs start. Per-diem may be uniform for all personnel or may vary depending on the responsibilities of participants (volunteer or health worker) or the type of activity (rural mobile team vs. fixed post team).

Example

Kendu District has 25 vaccinators and volunteers who will work for 3 days each to complete the measles SIA. If there's a standard per-diem rate of \$1.00 per person per day, then the personnel costs for Kendu will be

25 vaccinators x 3 days x \$1.00 = \$75.00

NB. Some countries may have different rates between volunteers and health workers.

3.4.3 Estimating budget for training and planning at district level

Estimation of training budget requires the number of trainees, the number of trainers, and the number of days of training to be multiplied by the per diem rates. The stationary costs for a standard set of items is also factored in trainings and planning meetings. Transportation costs for the different participants in these sessions will have to be calculated as well.

3.4.3 Estimating other necessary materials

During micro-planning, it is important to remember and include the costs of materials not directly related to vaccination. These include:

- Pencils for vaccine posts
- Tally sheets (sufficient number per post)
- Materials for training including pens, paper, chalk
- G/V paint for marking vaccinated children
- Cotton wool
- Banners and posters
- Dry cells for megaphones
- Arm bands/ aprons for vaccination teams

3.4.3 Miscellaneous/extra costs

Because of the unpredictability of field conditions and the frequent need for rapid response to unforeseen circumstances, it is important to allow for contingency funds for each district. This might cover costs such as emergency vehicle repairs, or hiring of extra transport to cope with unforeseen weather conditions etc. With good micro-planning, a figure of 5% of the total budget as contingency should be enough to take care of the unforeseen.

3.5 Planning to reach the un-reached

To effectively control and eliminate measles, it is important to immunise the hard to reach, and under served populations who are often missed by routine vaccination. Here, the questions, which need to be answered, are 'who' and 'where' are the un-reached? These will lead to the next question of 'why' these populations are under served, and help managers to develop effective strategies to reach them. These groups include those:

- Populations known to have a disproportionate share of the disease burden.

- Areas of un-immunized or under immunized children in urban and peri-urban areas.
- Populations with poor sanitation;
- Populations inhabiting difficult or mountainous terrain
- Nomadic populations
- Refugees, internally displaced persons, migrant workers and other transient populations.
- Politically and or socially marginalized populations or minority groups
- Religious groups who oppose vaccination
- Persons living in areas of civil unrest

District micro-plans should include the provision of additional financial and technical support to address social mobilisation, logistics and security needs when targeting certain groups of hard-to-reach populations. Although intensified and targeted efforts are needed to reach under served populations during SIAs, care must be taken to avoid stigmatising or antagonizing them.

3.5.3 *Strategies to reach the un-reached*

Reaching the under-served populations often requires working through local "non-official" leaders or informal channels through religious leaders and NGOs. Such agents as are accepted by them should be approached to participate in the development and implementation of appropriate strategies aimed at reaching their under served subjects.

Examples of strategies for under served populations include:

- Developing detailed maps in order to carefully plan the extra logistics and social mobilization needed to reach these populations.
- Involving local ethnic and religious leaders of the under served population in planning and social mobilization including special efforts to dispel false rumours.
- Understanding and overcoming barriers (cultural, educational, logistical, political, language or religion) that keep under served populations from bringing their children for immunization.
- Using "mobile-fixed sites" during SIAs. i.e. teams that set up an immunization post at a fixed site for a few hours, then move the post to a new site after completing their task.
- Placing extra posts in highly visible and/or highly convenient sites (e.g., schools, churches, mosques)
- Placing extra posts in strategic sites such as markets, etc. to reach transient populations.
- Providing additional logistical support such as vehicles and mobile teams in areas with under served populations.
- Starting the implementation of the campaign early and extending the duration of the SIAs by a few days more in these areas
- House-to-house canvassing and community line listing
- Providing teams assigned to these areas with experienced supervisors

One to two weeks before SIAs, the supervisors should go to the most under served, high density urban areas to verify that mothers know about SIAs. This will give enough time to correct the situation by last minute intensified social mobilization. Before and during SIAs, the supervisors should actively and frequently supervise preparations and efforts to reach under served populations.

4 Measles SIAs: Pre-Implementation Activities

The last few months before the SIAs are crucial in terms of ensuring that all the technical preparation for the campaign is in place. Some of the key activities involve cold chain logistics, social mobilisation and the training of health workers and supervisors.

4.1 Ensuring Effective Logistics

Logistics planned well in advance is critical to the success of SIAs. The major steps in ensuring excellent logistics during an immunization campaign are:

- Order vaccine in advance.
- Use the best demographic data available and a standard formula throughout the country to make the best possible estimate of the size of the target population at every level. If in doubt, overestimate it!
- Use the logistics spreadsheets (see annex for sample spreadsheets) to calculate requirements.
- Make a written distribution plan specifying when and how supplies will be transferred to the various levels.
- Pay particular attention to logistics needs for hard to reach and under-served areas
- Ensure that vaccine, diluent, AD syringes, reconstitution syringes and safety boxes are always distributed together in matching quantities.
- Detailed planning (including the nomination of a responsible person at each post) is required for daily collection of safety boxes from vaccination posts and for their incineration.

4.2 Maintaining the Cold Chain System

Following an inventory of the cold chain capabilities at all levels, there is almost always room for further strengthening of the cold chain capacity through the repair of some cold chain equipment. These opportunities should be considered as a long term investment for routine health services. However, should cold space be found critical, all efforts need to be made to acquire more new equipment or borrow cold space from other sectors. These provisions have to be clearly stated in the micro-plans.

District EPI managers and EPI logisticians should ensure that the cold chain is working both at the district and health centre level during SIAs. As much as possible, back-up capacity should be organised for national and provincial cold rooms including generators and spares. Adequate power supply has to be assured at all times: the supply of paraffin should be guaranteed for paraffin refrigerators, the batteries for the solar refrigerators need to be in good condition and the solar panels kept clean.

4.3 Training

All key players in SIAs should take part in training sessions in preparation for SIAs. These include coordinators, supervisors, vaccinators, committee members, social mobilisation officers, logisticians, surveillance officers and other health staff. Training for SIAs should occur as a cascade with the central level providing training to the Provincial/regional level, the Provincial/regional level training the district level, and the district level in turn training community volunteers and health workers. Training approaches should be simple but strive to address the specific needs at different levels. These training sessions should be as interactive as possible, with the inclusion of case studies and exercises, as well as group work to stimulate discussion.

At least three months before the SIAs, the national level should elaborate training plans that incorporate training needs for different levels, methods and key areas of focus, training and resource materials, the agenda, a framework of “what-who-where-when”, and a budget.

Training at each level should include information on the following points:

- Introduction:
 - Objectives of SIAs
 - Dates of SIAs
 - Target age group for SIAs
 - Partnerships and resources
 - Chronology of events and activities
 - Update on the global and national status of measles control
- Advocacy and Social mobilisation issues
 - Advocacy with political and administrative authorities
 - Key messages to mobilise the community and ensure community involvement
 - responding to community and media concerns about the campaign
- Logistic issues in the preparation of Measles SIAs
 - Consistent calculations for the allocation of inputs and personnel assignment
 - Storage and transportation of the key inputs
 - Timing and modality of distribution of the different inputs (bundled vaccine, social mobilisation materials, recording and summary forms, funds, etc)
 - Adapting logistics to ensure that hard-to-reach populations are provided with services
- Tasks and activities during the campaign
 - Organisation and management of vaccination posts
 - Team composition and task allocation
 - Flow of services and crowd control
 - Screening for the different age groups/ different types of interventions
- Handling vaccines and issues of safety of vaccination
 - How to ensure that cold chain is maintained.
 - How to use vaccine vial monitors.
 - How to reconstitute the measles vaccine.
 - How to safely administer measles vaccine by subcutaneous route using auto-disable syringe
 - How to prevent needle stick injuries, and safely dispose of the syringes.
 - How to identify, investigate and manage adverse events following immunization.
- Recording, documentation and review
 - How to complete tally sheets
 - How to complete logistics forms at each level
 - Daily activity summary and review at different levels
- Monitoring and supervision
 - Objectives, methodology and tools
 - Pre-implementation assessment of preparations
 - Supervision (Supervisory Checklist & Injection Safety Checklist)
 - Rapid convenience monitoring and troubleshooting during the campaign
- Case based surveillance for measles
 - Case definitions, case investigation and specimen collection procedures
 - Tools for specimen collection and case reporting
- Training plans and content for the different levels

While it is true that such district level trainings should involve all possible participants in the SIAs, one major issue that has surfaced during trainings for SIAs in the past is the number of trainees as compared to facilitators. Organisers of training sessions should always weigh the number of people trained in one session against the advantage of having a smaller group that gets to be coached very well. The alternative of increasing the number of facilitators should be explored very well.

A pre-requisite to successful training lies in the identification of appropriate participants and making sure that the sessions are interactive as much as possible.

Training should be as practical as possible. It helps to have role plays, group work or individual exercises to ensure that participants are fully conversant with the concepts and procedures. Specific areas that work best with practical exercises include the organisation of immunization sites, filling of the tally sheets, roles of the different team members, and the supervisory process. It is advisable to limit the overall duration of training to 2 days. Table 5 below is a sample matrix that is helpful in organising and standardising training.

Training Topic	Training objectives	Learning Activities	Learning Materials	Time Allocation

Table 5. Matrix for Organisation and standardisation of training

4.4 Social mobilisation

Effective social mobilisation is a critical element of successful SIAs. The objective of social mobilisation is to ensure appropriate awareness so that eligible people seek and accept the immunisation services.

Social mobilisation coordination committees should be organised at each administrative level and ensure that similar high quality information is disseminated at all levels. The National committee should develop a plan to address priorities including the development of and dissemination of key messages, fact sheets and other written materials, involving mass media at all levels, and coordinating with provinces and districts. The plan should be clear about who needs to be aware, what information to release and how to reach target groups. Look at Chapter 8.

5 Implementing measles SIAs

The phase of implementation, for the clarity of description in this document, has been taken to be the period time from vaccine and supplies distribution, the launching of SIAs, the actual events at the immunization posts, as well as supervision and monitoring.

The last 6 weeks before the campaign are critical in terms of determining whether or not the preparations for the campaign are going as scheduled and whether or not to expect major hitches in the implementation phase. It helps to keep in mind some of the major factors that have in the past resulted in suboptimal performance in mass vaccination campaigns.

Most common errors in the preparation and conduct of mass campaigns:

- **Preparations begin too late, vaccine ordered too late**
- **Unclear designation of responsibilities**
- **Inadequate social mobilization**
- **Delayed/ inadequate distribution of supplies to post teams**
- **Inadequate transport facilities**
- **Inadequate involvement of other sectors**
- **Long waiting lines at vaccination posts (for whatever reason)**
- **Posts not open early enough, late enough or during lunch hours to be accessible to working parents (especially in urban and peri-urban areas)**
- **Inadequate feedback to peripheral levels on success of previous SIAs**

5.1 Vaccine and supplies distribution

A plan should be made for distribution of vaccine/injection equipment at each level: central level to district, from where distribution goes out to the sub-district and the immunisation posts. The plan should consider

- Number of kilometres round trip for vaccine distribution
- Method of transport for vaccine distribution with fuel costs
- Personnel required (drivers, technicians for last minute cold checks and maintenance)
- Duration of time required for distribution

Calculations can be based on formulas outlined in section 3.4. In as much as is possible, managers should use supervisory site visits for other aspects of the campaigns (training, social mobilisation, cold chain assessment) to deliver other materials necessary for SIAs (tally sheets, social mobilization materials, supplementary cold chain equipment, training materials).

Delivering vaccines for SIAs should be strategically timed when stocks for routine vaccines are low. This will allow more space for the higher but temporary demand on the cold chain.

5.2 Role of personnel at immunization posts

5.2.3 *Post coordinator*

A health worker may be designated coordinator of the post. The coordinator is responsible for all activities of the post including:

- Supervising vaccinators and the other health worker at the post
- Designating specific responsibilities to health workers and volunteers
- Mobilizing volunteers to make house-to-house visits to find eligible children
- Going into the community and seeking out eligible children during SIAs
- Liaison with District and sub-district supervisors; re-supplying the post
- Ensuring any AEFI are handled promptly and correctly
- Checking tally sheets are correctly filled and summarized at the end of the day
- Conducting post campaign community coverage mini-surveys
- Liaison with community leaders in the catchment area

5.2.3 Health workers

- Post coordination
- Ensuring correct conditions of storage for vaccine.
- Reconstituting and administering vaccines
- Ensuring safe disposal of injection equipment and, eventually, safety boxes
- Training and supervising the volunteers they may be working with
- Answering questions and clarifications from the people whenever asked

5.2.3 Volunteers

- Crowd Control: maintaining order around the immunization post
- Ensuring efficient flow through the post
- Screening: welcoming of parent/child and referring for vaccination children in correct age group

If the child's birthday is unknown, attempt should be made to use local or historical events such as days of celebrations, seasons etc to estimate age.

- Tallying: Each vaccinated child should be recorded on the tally sheet irrespective of previous vaccination history.
- Going into the community and seeking out eligible children during SIAs

Do not record doses of measles vaccine given during SIAs on childhood immunization cards.

Through the use of maps and other guides, each vaccination team must know exactly where they will vaccinate, when, etc. and this information has to be made available to the team supervisors as well.

5.3 Requirements for vaccine posts

A well functioning immunisation post should have a clear sign indicating the event. This can be done using posters, banners or a flag. Another method is making sure that all volunteers and health workers identify themselves by wearing an armband or an apron with a clear message or sign.

The vaccination team should be well organised (a team of health workers and volunteers) and know their assigned roles. A well functioning post should have a one-way traffic flow of clients without any bottlenecks or confusion or long waiting hours for mothers/guardians being attended to. "Bottle-necks" most often occur during screening and recording. At busy posts, it may be useful to have two screeners to avoid "bottle-necks". An example of a vaccination post with an efficient flow is shown in Figure 3.

Attendance at vaccine posts is not evenly distributed over the time of operation of the post. It may be necessary to plan vaccination of up to 40-50% of the post target population for the first day of immunization.

Other ways to improve "flow" at vaccine posts include:

- Fair and proper distribution of posts in the community;
- Organize volunteers with well defined tasks and responsibilities to run the post;

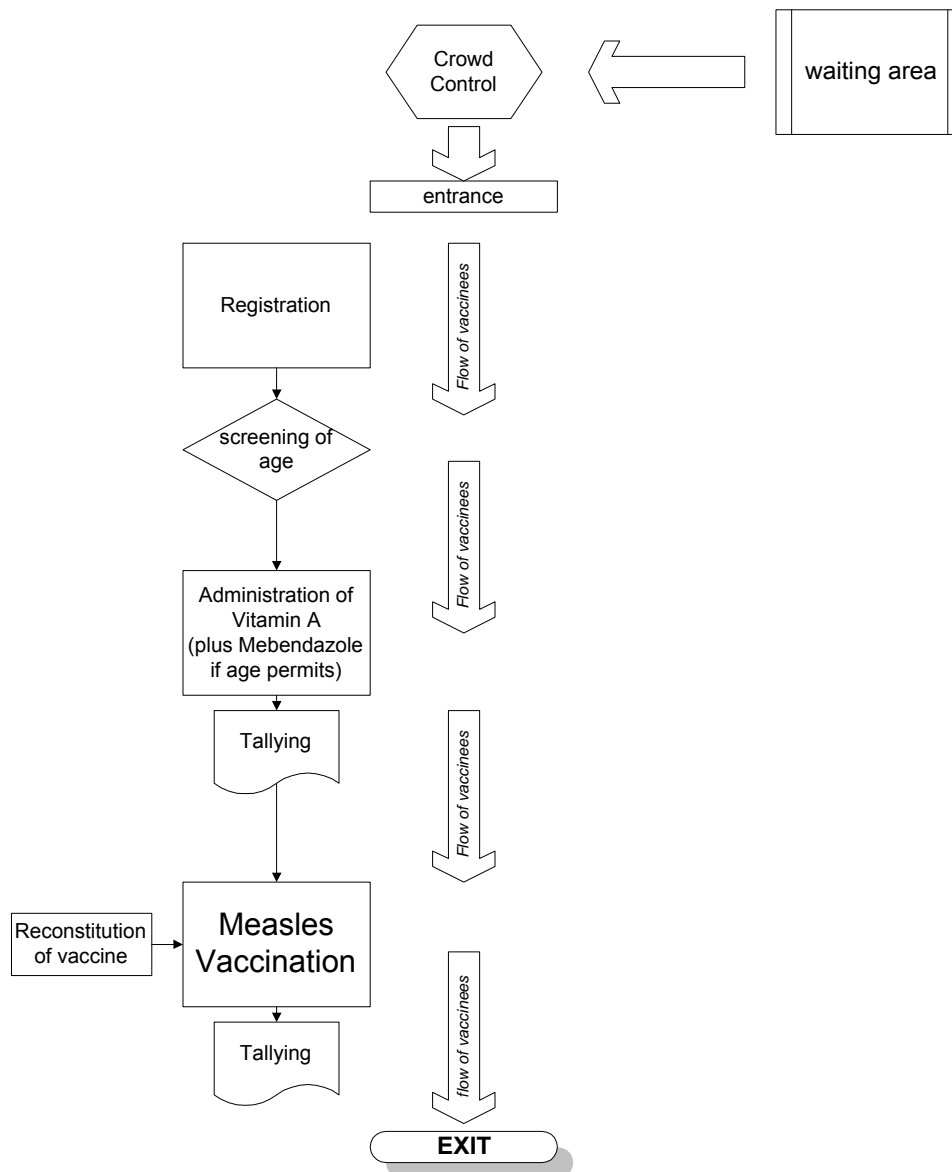


Figure 3. Organisation of a vaccination post; an example from Zambia

A vaccine post, be it temporary or permanent, should at least have:

- A table and some chairs that can be borrowed from the local community
- Possibly some metal trays and plastic sheeting
- Personnel: a minimum of 2 health workers - one each for vaccine administration and for reconstitution (mixing). A variable number of trained volunteers.
- A vaccine carrier, 4 frozen ice packs, or 1 kilogram of ice for each day of SIAs (plus 2 travel days).
- An appropriate number of vials of measles vaccine depending on daily target of the post
- Auto-disable syringes; disposable syringes and needles for reconstitution, safety boxes
- A wide mouthed bottle with G/V paint to mark fingers of immunised children
- Emergency drugs and equipment for treating any case of anaphylaxis.
- Appropriate number of tally sheets to record daily target of post
- AEFI case investigation forms
- 1 bin for non-biologic, non-sharp waste

5.4 Reconstituting measles vaccine

Vaccine reconstitution should be performed by a health worker using the diluents provided by the manufacturer of the vaccine. Reconstituted vaccine must be used within 6 hours of reconstitution. Reconstituted measles vaccine must be discarded at the end of the day; it cannot be put back in the fridge for use the following day. It should also be discarded immediately if sterile procedures have not been fully observed, there is any suspicion that the opened vial has been contaminated, or there is visible evidence of contamination, e.g. a change in appearance, floating particles or the cold chain has obviously been broken.

5.5 Administering measles vaccine

The following steps should be followed to administer measles vaccine

1. The injection site should be cleaned with cotton wool dipped in clean water to remove visible dirt.
2. Hold the child's arm from underneath. Your fingers reach around the arm and pinch up the skin.
3. The dose is 0.5 ml, given subcutaneously in the outer part of the upper left arm.
4. Push the needle into the pinched skin to a depth of not more than 1 cm. The needle should go in at a sloping angle, not straight down.
5. Press the plunger with your thumb to inject the vaccine.
6. Withdraw the needle and press with cotton wool over the injection site. If there is any bleeding, keep pressing with the cotton wool until the bleeding stops.

**DO NOT
Pre-fill vaccine syringes**

Inject a child in the buttocks - this may injure the sciatic nerve and cause paralysis of the legs and acute pain.

The following are not contraindications to measles vaccination

- HIV infection
- Malnutrition: Malnutrition is an indication to immunize. Malnourished children should be referred to the health centre for assessment and treatment after they have been immunized
- Minor illness: Low grade fever, mild respiratory infections, and diarrhoea. Sick children should be referred for treatment after they have been immunized.

5.6 Disposal of injection waste:

Immediately after the injection, all AD syringes should be disposed of into the safety box without any attempt to remove or recap the needle. Do not attempt to reuse the injection syringe, nor the reconstitution syringe and needle. The safety box should be filled about $\frac{3}{4}$ full and then sealed by closing the lid to avoid spillage of the contents.

These filled safety boxes should be turned over to the responsible person for final disposal and destruction. The recommended method of disposal is incineration. Optimally functioning incinerators can generate temperatures up to 800° Celsius, killing micro-organisms and reducing the volume of waste to a minimum. Incinerators built for campaign purposes or already existing ones in health facilities may be utilised if proven to be properly functioning. Otherwise, the incineration facilities in some industries may be borrowed for the campaign. If there are no incinerators available, another alternative is open burning in a pit dug for this purpose. Such pits should be dug in an unused area, as far from buildings as possible. The pit has to be about 1 meter deep, and the waste has to be burnt until the boxes are destroyed. Once the burning is over, the residue has to be buried or covered with soil.

At the end of each day of immunisation, the team should make sure to cross check and sum up the tally sheets and summary forms, that all safety boxes and buckets with cotton wool are collected for safe disposal (burying or incineration), and inspect and clean the surroundings of the immunisation post for the following day's work.

5.7 Returning used supplies:

Following the SIAs, remaining supplies including vaccines, un-used syringes and needles, etc, should be returned to the hub station (health facility/District) depending on storage space availability. The district level should specify to all immunization posts and team coordinators **exactly where** all vaccine should be returned. Reconstituted measles vaccine must be discarded at the end of each day. The responsible EPI manager/ officer should count the remaining vaccine and supplies, calculate the vaccine wastage rate, and make sure that vaccines are properly stored at correct temperature

6 Monitoring immunization safety

It may be more difficult to maintain immunization safety standards during campaigns than during routine services. To ensure the safety of injections during campaigns and outbreak control activities, WHO and UNICEF recommend that sufficient quantities of auto-destruct syringes (which cannot be reused) and safety boxes be provided for every fixed or temporary post and every outreach team. Injections must not be given during campaigns if adequate quantities of these syringes are not available. The proper use of auto-disable (AD) syringes in immunization campaigns greatly reduces the risk of person-to-person transmission of blood-borne pathogens.

Ensuring the safety of injections should be one of the top priorities for managers during any mass campaign involving injectable vaccines. Some of the managerial priorities are:

- Developing an injection safety plan including the designation of focal persons at all levels, defining activities, and orientation of health workers
- Assuring safety of injections at the point of use through the provision of appropriate equipment, supplies and training
- Assuring safe disposal of used injection equipment by orienting health workers about the method and location of disposal, assigning a responsible person at each site, and numbering all safety boxes and ensuring their return to destruction points
- Monitoring injection safety during mass campaigns using standardised checklists

In order to ensure immunization safety, health workers must be particularly aware of the need to keep reconstituted measles vaccine cool, to use an AD syringe for every injection, even if this means ending a session early. Proper injection procedures should be observed at all times. Reconstituted vaccine should be discarded after six hours or at the end of a session, whichever comes first. A VVM is not of use after the vial is open.

Health workers should guard against needle-stick injuries by handling syringes and needles carefully. They should be warned against recapping needles after use. Used syringes and needles (including reconstitution syringes and needles) should be placed immediately, without recapping, into a designated puncture-resistant container, which must be disposed of by incineration or burning as soon as possible after it has been filled.

For further reading on this topic, refer to *Safety of Injections: WHO/UNICEF policy statement for mass immunization campaigns, WHO/EPI/HIS/97.04*. This WHO and UNICEF joint policy statement recommends that sufficient quantities of auto-disable syringes (i.e. those syringes designed such that they cannot be re-used), and safety boxes be automatically provided (bundled), together with high quality vaccine, for all mass immunization campaigns.

Health workers should learn to monitor immunization practices by observing each other and immunisation supervisors should cover safety in their supervisory visits. Annexed is a sample rapid assessment tool for injection safety during mass immunization campaigns.

7 ADVERSE EVENTS FOLLOWING IMMUNISATION (AEFIs)

The current measles vaccine is a very safe vaccine. Nevertheless, there are some rare reactions that may occur following immunisation, and these will assume greater significance after mass campaigns. Measles vaccination is normally associated with mild AEFIs including soreness at the vaccination site, transient (2 days) mild fever all of which resolve spontaneously without permanent damage.

Surveillance for AEFIs is a critical component of a strong immunization program in order to monitor the quality of safe immunization practices, to detect and respond to emergencies and to reassure the public about the safety of the immunization program. Every measles immunization campaign should have a list of reportable conditions and a system of tracking and responding to these reports.

Conditions that should be included in an AEFI surveillance system should include:

- 1. High fever**
- 2. Injection site abscesses**
- 3. Toxic shock syndrome**
- 4. Fainting episodes**
- 5. Anaphylactic reactions**
- 6. Any other serious or unusual events**

These conditions should be investigated in order to demonstrate whether the cause of the event was vaccine related. Minimal initial information should include the name of the vaccination site or post, details of the vaccinee (name, age, sex, address), the date and time of vaccination, the time of onset of the first symptoms, and the time of detection or reporting of the symptoms to a health worker.

Supervisors and post coordinators as well as health workers have to be on the alert for any clustering of adverse events of any type during or immediately following vaccination campaigns. AEFIs that occur in the form of a cluster (within a localized area/ facility, within a brief period of time) with unusual frequency, by vaccine or by type of reaction may indicate very serious programmatic errors and need to be managed as a programmatic emergency.

A rare but serious adverse event following immunisation is anaphylactic reaction, occurring at a rate of about 1 per a million doses. Anaphylaxis must be distinguished from fainting which is characterised by sudden pallor, loss of consciousness and collapse. Fainting is managed by placing the patient in a recumbent position, following which patients regain consciousness though pallor and hypotension may remain for some more minutes.

Anaphylaxis is usually noted within 30 minutes of the injection of the vaccine. It is characterised by changes that develop over several minutes and involve multiple body systems. Some of the cardinal features include an itchy urticarial rash, progressive swelling of the face and mouth area (angioedema), respiratory symptoms including sneezing, wheezing, laboured breathing and hoarseness, and hypotension leading to shock and collapse. In cases of presumptive anaphylactic reactions, a detailed investigation is required. Case management and documentation has to be meticulous. An outline of emergency management of anaphylactic reactions is given in the text box below. Please refer to Annex IV for a sample AEFI investigation form. Campaign planning has to ensure that all the necessary medications are made available in order to deal with such emergencies.

Injection site abscess occurs as a result of a suppurative bacterial infection introduced as a result of improper manipulation of the vaccine and devices (esp needles) while extracting diluted vaccine from a multi-dose vial. An increasing, tender and warm swelling at the injection site may be associated with increasing fever and pain noted on the second to third days of the injection. This requires antibiotic therapy and possible drainage depending on the size of the abscess.

Emergency Procedures in case of Anaphylaxis

Anaphylaxis is a rare but severe reaction, which may occur after any injection including after measles immunisation. Characteristically, the patient collapses with signs of shock and difficulty in breathing. Once recognised,

1) Immediately lay the patients down flat or preferably with the legs raised and call for assistance.

2) Set up an intra-venous line

3) Check breathing and pulse or heart beat

4) If the patient is not breathing,

Clear the airway and ventilate (mouth to mouth or with the Ambu-Bag)

Give Oxygen at 4-6 litres per min if available

5) If there's no heart beat, do Cardio-Pulmonary Resuscitation (CPR)

6) Give Adrenaline – 1:1000 concentration

Children up to 3 years: 0.1ml subcutaneously at once

Children 4-7 years: 0.2ml “ “ “

Children 8-15 years: 0.3ml “ “ “

7) Give Hydrocortisone slowly intravenously

Children Under 1 yr. – 100mg

Children 1-3 yrs - 200mg

>3 to 7 yrs - 300mg

> 7 to 9 yrs – 400mg

10 yrs and above 500mg

8) Check blood pressure – if systolic is less than 80 mm Hg

9) Give adrenaline 1: 10 000 (i.e. 1 ampoule diluted with normal saline to make 10 ml) at a dose of 0.1 ml/kg of the child's body weight – slowly intravenously, or via endo- tracheal tube. This can be repeated every 10-20 minutes if necessary until the situation stabilises. Monitor the heart rate so that it does not exceed 160 per minute.

10) Give 0.9 % Saline or Ringer's Lactate at 20mls per kg of the child's body weight fast. Repeat if necessary – if the peripheral pulse is weak or absent.

11) Arrange evacuation by ambulance to a well equipped facility if necessary.

12) Explain and reassure the parents and the community

8 ADVOCACY, SOCIAL MOBILISATION & COMMUNICATION

In order to achieve quality measles SIAs, effective advocacy, social mobilisation and communication need to be planned and implemented to get support of and participation of decision makers, individuals, families and communities. Planned activities should be based on experience as well as an assessment of the best methods of getting across to the community.

8.1 General organisation

The management of SocMob activities is a key factor to success. In this respect, having a hierarchy of SocMob focal persons working with committees through the various administrative levels has been found to be effective in securing community and leadership participation in mass campaigns. As much as possible, committees should come from pre-existing structures such as those established in the polio eradication initiative. Ideally, the committees should be multi-sectoral but with clearly defined responsibilities and resource allocation regarding the measles campaigns.

8.2 The social mobilisation plan

Planning for social mobilisation should be done at least 6 months in advance as part of the overall SIAs micro-planning. At each level (national, district and community), a work plan with objectives, activities, responsible persons and budget should be prepared.

Planning for social mobilisation should answer the following questions: -

- Who should be involved?
- What information or messages need to be given to the various groups?
- What are the most effective available channels of communication?
- What activities should be planned for?
- What should be the roles of the various actors?
- What will it cost?

The objectives of program communication/ social mobilisation/ advocacy targeting different groups need to be designed and specific messages as well as activities planned in advance. It will also be important to consider other issues such as hard to reach populations and resistant groups.

8.3 Advocacy activities

During the preparatory phase, MOH should obtain high-level commitment early from national authorities and major partner agencies to support the SIAs. Advocacy with various leaders at all levels must also be conducted for building community acceptance and support. Early support from the health practitioners is also very crucial. Target groups for advocacy may include Heads of State and government, parliamentarians, religious leaders, donor agencies, MOH decision makers and community opinion formers. Advocacy may also involve the recruitment of popular celebrities or goodwill ambassadors. Enlisting the support of media will also be important for the success of the SIAs

A variety of advocacy activities will therefore need to be implemented at various stages including

- preparation of convincing briefs e.g. impact of SIAs on morbidity and mortality reduction, success stories from other countries or other Districts
- briefing with health practitioners, key groups and individuals
- using goodwill ambassadors
- using the ICC to lobby with the policy and decision makers
- using the mass media for advocacy and re-enforcing commitment of decision makers
- launching of SIAs by eminent persons

Key advocacy messages will have to be drawn up and may include the burden of the disease in the community, the effectiveness of SIAs in reducing measles morbidity with examples from other countries or Districts, social and economic benefits of measles elimination, and the safety of the vaccines and the injection during vaccination.

The launching (opening) ceremony

The launching (opening) ceremony can be an important occasion if attended by eminent personalities such as Heads of State, celebrities, etc. It is therefore crucial that any launching ceremony be planned in advance and conducted extremely well. Key public figures should be contacted well in advance to ensure their participation. During the launching ceremony, such eminent personalities should give Vitamin A drops. In view of injection safety precautions, measles injection should only be administered by a trained health provider. The event should be well covered by the media. The launching ceremony should also be used as an informational opportunity and simple 'take away' fliers with key information can be distributed.

8.4 Social Mobilisation activities

The roles of different partners

Social mobilisation activities should be planned so as to enlist all feasible support from various groups, institutions, organisations etc. These may include health committees, religious and community groups, NGOs, women's clubs, and any other organizations that are in the area. When making initial contact with individuals and groups, ask for their views and allocate specific tasks for their participation, which may include

- Announcing SIAs at key meetings, at cultural and sporting events;
- Providing human, financial and other resources
- Materials development such as banners, armbands, T-shirts, caps
- Providing cold boxes and making ice during the campaign
- Providing meals/snacks/drinks or other incentives for volunteers
- Allowing safe passage and/or accommodation in areas of insecurity
- Sponsoring radio and television announcements

Mobilising the community

SIAs should reach all eligible children and particularly those whose parents are doubters, the unknowing or those simply busy. Clear messages therefore need to be designed and disseminated through methods that are suitable for reaching such parents and others who can influence or motivate them. While these methods include the traditional media, experience has shown that interpersonal communication or "word of mouth" plays a major role in informing and convincing parents to bring out their children. Therefore, SocMob plans should give due prominence and resources to this method of communication.

Social mobilisation activities in the districts and communities should start 2 months before and be intensified in the last 2 weeks before the SIAs. While actual activities will depend on each country/community these may include door-to-door canvassing, media campaign (esp. through the use of radio programmes and spots), and announcing measles immunisation days at all community meetings, religious gatherings.

Informational and promotional materials such as posters, brochures, letters, T-shirts, caps, post banners and street banners should be designed, prepared, ordered and distributed about a month in advance before SIAs.

In addition to local social mobilization activities, the mass media is very effective in mobilizing for SIAs. The national and provincial/regional Social Mobilisation Committees (SMCs) should work closely with media executives to plan dates, time, frequency and content of media messages and press releases. Before and during SIAs, the SMC should continuously feed the press with fact sheets and regular well-written updates. Town criers and local community groups (especially youth's and women's groups) have been used effectively in urban areas to disseminate information about the SIAs. Some countries have utilised mobile phone companies successfully to mobilise communities through the mass dissemination of text messages advertising measles SIAs.

Efforts should be tailored to reach under served populations or special populations. These may include minority groups or marginalized populations, religious communities that may resist public health interventions, nomadic/migratory groups, refugees, elite groups and their staff. Such efforts might include:

- The SMC holding preliminary meetings with opinion leaders of those communities,
- Intense house-to-house visits by local volunteers from the same minority group,
- Working closely with leaders of the minority communities, and ensuring that members of the group who speak the same language are working at the immunization post.
- Working with local NGOs that provide assistance to the groups

Budgeting for social mobilisation activities

The social mobilisation budget should be reflected in the overall plan. Any social mobilisation funds from the national level need to be disbursed to districts early so that social mobilisation activities can be conducted in good time ahead of the immunisation days. Nevertheless, local activities should not wait for funds from elsewhere. Resources should be mobilised at all levels to support feasible activities.

The budget may include the following: -

- Cost of briefing meetings for leaders and community groups
- Small incentives for local mobilisers and announcers
- Cost of informational and promotional materials, megaphones etc
- Cost of radio and TV spots
- Cost of transportation for socmob activities
- Cost of launching activities

8.5 Messages On Measles Vaccination And Vitamin A Supplementation

Key messages on measles and vitamin A should be developed, pre-tested and disseminated. They should be adapted to suit particular groups through the use of local language. Some key messages are given in the text boxes below.

- **Measles** is a dangerous disease which kills children
- Measles is a disease caused by a germ (the measles virus). The signs include a red, blotchy rash over the whole body, fever and a runny nose, red eyes or a cough.
- Children with measles must be taken to a health centre immediately. If not treated, a child with measles can develop problems such as pneumonia, eye infections, ear infections, sores or thrush in the mouth and other complications, sometimes leading to death.
- Measles can be prevented by giving measles vaccine. A single dose is given when the child is 9 months or soon afterwards. An extra dose is given during the campaigns to all children aged 9 months to under 5 years (or 14 years depending on the target age of the campaigns)
- Take your child 9 months to 5 years/ 14 years to the nearest health centre or vaccination post for vaccination during measles immunisation days taking place on **(dates)**
- All children 9 months to 14 years should be vaccinated against measles during measles immunisation days even if they were vaccinated before or whether or not they had measles.

- **Vitamin A** is necessary for healthy growth and development of the child, It promotes good eyesight, and helps children to defend themselves against infections such as diarrhoea and measles.
- Deficiency of vitamin A can cause night blindness and other eye problems
- To reduce vitamin A deficiency in(area), vitamin A drops will be given to all children from 6 months up to 5 years of age during the measles immunisation days which will be conducted on(Dates)
- Take all children 6 months and under 5 years of age to receive vitamin A drops
- Every child should receive an additional dose of Vitamin A 6 months after the last dose
- Vitamin A deficiency can be prevented by administering Vitamin A supplements to all children aged 6-59 months. It is also very important to eat foods rich in Vitamin A, such as breast milk, whole milk, liver, green vegetables, carrots and foods with yellow/orange/red colour e.g. paw paws, mangoes, sweet potatoes, pumpkins, palm oil and yellow maize.

Key messages targeting health workers will provide technical information aimed specifically at addressing concerns about procedures and dosage. Their understanding of some concerns will help them address parents' concerns.

- There are no contraindications for measles vaccine
- The measles vaccine given during SIAs is considered an extra dose. All children who turn 9 months during SIAs should still receive their routine measles vaccine one month after the SIAs dose
- During SIAs, health workers or volunteers may encounter children who have had a dose of measles less than four weeks previously. These children should still receive a dose of measles during SIAs
- Children 9 months to 14 years admitted in hospital should also receive measles vaccination during the SIAs

8.6 Anticipating and dealing with negative publicity & AEFIs

Experience from polio eradication has shown that program managers must anticipate some negative publicity during campaigns and develop pro-active strategies of dealing with them so that they will not play a prominent role in hampering immunisation activities. Some tips of dealing with these rumours include:

- Providing training and accurate information to the media
- Preparing appropriate media materials in advance to facilitate a rapid response to such negative claims
- Having a trained focal person in the media who responds to questions and reviews materials before publishing
- Health personnel must respond to rumours. Guidance on this must be given to them especially on dealing with media and the public
- Using a credible spokesperson in the ministry/community to quell the rumours and reassure the community

9 SUPERVISION, MONITORING AND EVALUATION

9.1 Supervision before and during SIAs

Supervision is necessary to ensure quality of planning and implementation. The success of a campaign will largely depend on the work of motivated and hard working supervisors who assist in the campaign preparations, support training and who identify and solve problems or refer issues to the next management level. Supervisors should be equipped with transport in order to bring extra and essential supplies with them, such as forms, social promotion materials, guides, (vaccine when appropriate) and any needed funds for activities.

Staff from all administrative and technical levels are expected to participate in supervisory activities in the preparatory and implementation phases of the SIAs. Supervisors from the central level should visit all Districts five weeks before SIAs and again three weeks in advance to selected districts. Selected Districts would be those with particular difficulties or questionable preparations for logistics or socmob. Supervisors from the district should pay visits two weeks before SIAs to all post coordinators or mobile team coordinators, and one week in advance to selected post coordinators. Additional supervisory visits from the central and/or district levels may be needed as the situation dictates particularly in difficult areas.

During all phases of the campaign, supervision must focus on quality, effectiveness, and safety. Supervisors must be familiar with what is expected and what is happening in order to detect any harmful practice and to be able to recommend and enforce appropriate changes. They should be systematic, thorough, reliable problem solvers, and need to motivate and encourage local staff. Good supervisors understand the planning of SIAs and are fully knowledgeable with the task lists, logistics, and all other SIAs forms. Supervisors should discuss plans with coordinators and observe teams in action. This requires travelling early in the morning and visit different places.

In the last 4 weeks of preparation before the start of the SIAs, supervisors at all levels need to pay visits to selected sites at the next lower level to verify the smooth course of the preparation stage. Some of the program elements that need to be included in the verification of the preparation include:

- Quality of planning to access the target groups (maps, drawings, lists...)
- Timely receipt and distribution of the various inputs including vaccines, devices, safety boxes, drugs, recording and summary forms
- Cold chain capacity
- Plans for safe injection practices and safe disposal of injection waste
- Coordination of social mobilisation activities and community awareness about the SIAs
- Strategies to address for hard-to-reach populations
- Transportation resources for the period of the SIAs
- Local supervision

This pre-implementation supervisory activity may include house-to-house visits in selected hard-to-reach areas or populations in order to verify if parents know about the campaign, the dates, the target population and the location of the nearest vaccination post. If this spot check indicates that social mobilization efforts are inadequate or ineffective, these must be intensified or messages changed immediately.

During the implementation stage of the SIAs, the supervisor should verify that campaign personnel at various levels understand their tasks, identify any constraints and work with SIAs committee members and the local community to overcome the constraints. During these visits, supervisors must ensure that teams are replenished in case they run out of vaccine; gaps are identified, problems solved, and the strategy revised as necessary; problems with regards to vaccination technique and community acceptance are solved immediately (e.g. if a community refuses vaccine, the supervisor should intervene); and that results are collected and reviewed with teams at the end of each day.

Using the supervision checklists, campaign managers should review and discuss the logistical, soc-mob and operational problems that may have impeded the vaccination efforts. The successes should be documented

and any lessons applied towards future SIAs. The findings and actions taken during all supervisory visits should be properly documented using the provided supervisory checklist. Sample supervisory checklists for the verification of preparations and to be used during the implementation phase have been annexed.

Using the simple but comprehensive supervisory checklists, campaign managers should be able to extract key information and calculate performance according to a set of indicators agreed upon at National level. This would help to pinpoint problems and compare performance across districts. Some of these indicators are outlined below.

Some Qualitative monitoring indicators for Pre-campaign preparations:

- proportion of districts with plans for supervision
- proportion of districts with plans for waste disposal
- proportion of districts with plans for social mobilisation
- proportion of districts with operational funds available at least 7 days before the start of SIAs
- proportion of districts with planned quantities of vaccine and devices at least 2 weeks before the start of SIAs
- proportion of caretakers who can identify the target disease, campaign dates, venues and age groups

Some Qualitative monitoring indicators for Campaign implementation:

1. Proportion of vaccination sites with no shortfalls of vaccines and devices
2. Proportion of sites with proper cold chain (refrigerators monitored daily and temperatures between 2 – 8 °C)
3. Proportion of vaccinators giving the vaccine subcutaneously
4. Proportion of sites where used syringes are placed in safety boxes
5. Proportion of sites where tally sheets are filled correctly
6. Proportion of sites where vaccinators know AEFI reporting procedures
7. Proportion of districts that are conducting at least five 20-household rapid convenience monitoring tools in high risk areas

9.2 Weekly monitoring of preparations

In the last three months preceding the dates of the SIAs, the technical and managerial body responsible for the coordination of preparatory activities at national level should organise weekly monitoring meetings that include all the major players. These meetings are supposed to track the preparatory activities and look into all aspects of the SIAs including micro-planning, financial and human resources, advocacy and social mobilisation, cold chain and transportation logistics and training.

9.3 Monitoring during the campaign

Monitoring during SIAs should involve both qualitative/process findings based on the results of the supervisors' reports and analysis of checklists as well as quantitative coverage results. Monitoring of the qualitative aspect of SIAs involves mainly observation of the vaccination post and the teams in action. Some of the campaign elements to be monitored include the cold chain and handling of vaccines, injection practices, registration and recording, monitoring of AEFIs, and post organisation.

Good quality intra-campaign monitoring should include:

1. Conducting Rapid Convenience Monitoring daily as part of the monitoring activities,
2. Daily monitoring and supervision (using a supervisory checklist) of the quality of vaccination services; identification of target age group children, recording and tallying, cold chain system, safety of injection practices, monitoring for Adverse events following Immunization, ...
3. Appropriate documentation of Rapid Convenience Monitoring results and of supervisory findings.
4. Action taken to improve quality of services and to reach children who would have otherwise been missed.

9.4 Daily summary of administrative vaccine coverage:

The district level administrative coverage data is an important quantitative indicator of the performance of SIAs. However, administrative coverage data may not reflect the reality in cases where the denominator used for the target population is inaccurate. The latter is a common problem in situations where there is substantial population movement (eg., internal displacement, rural-urban migration) that may not be factored when projecting population figures, using old census data, or when there are political concerns regarding population size figures. It is therefore mandatory to do intensive and organized monitoring of campaign activities in order to ensure that large pockets of unvaccinated children do not remain undetected and un-reached.

At the end of each day, supervisors can estimate accomplishments by reviewing the tally worksheets of the teams under their supervision, comparing the number of children vaccinated against the micro-planning and community line listing targets established for the various teams. These figures are plotted against the targets set for the area on a daily basis and the cumulative in the first few days can be used to assess the rate of progress and, if need be to re-strategize. (See figure 4) The administrative coverage figures are summarised for each administrative level on a daily basis and information used to make decisions regarding re-allocation of resources, and possible extension of the duration of the campaign in some areas.

In the example below (figure 4), it is obvious by the third day of the SIAs that the pace is quite slow in Province 2 (only 30% of eligibles vaccinated as compared to nearly 60% in Province 1). A proactive EPI management team would at this point ask why, and work to improve logistics, resource allocation, social mobilisation... to ensure that the target coverage of 100% is reached much sooner than the 20 days it took Province 2 to cover all eligibles as in the example.

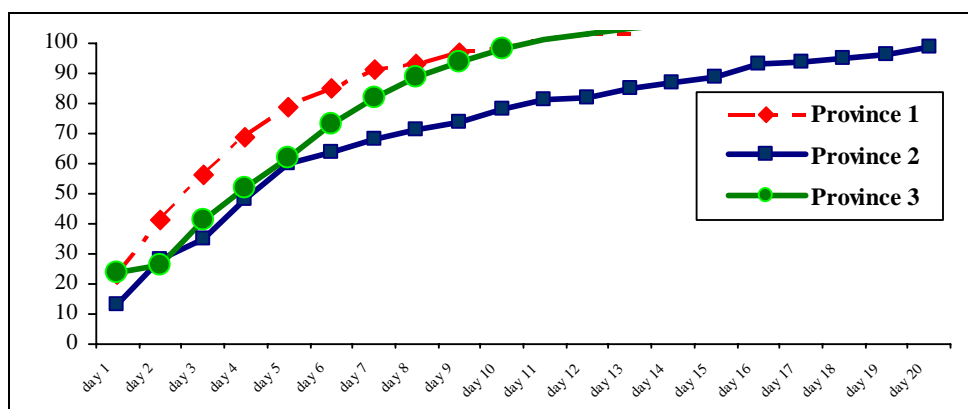


Figure 4. Daily charting of administrative coverage during SIAs

If the tally sheets include provisions for identifying “zero-dose” children, i.e., children receiving measles vaccination for the first time during the SIAs, the proportion of zero dose children is a strong indicator of the quality of the routine programme, and of the “reach” achieved by the SIAs.

9.5 Rapid Convenience Monitoring (RCM):

During the course of the vaccination campaign, especially starting on the second or third day of the campaign, all supervisors should conduct daily systematic monitoring of coverage by randomly selecting some 20 houses in each of the areas under supervision. In conducting this type of mini-survey, care should be taken to include as many sections of the catchment community as possible and to particularly seek out hard-to-reach populations already covered by the vaccination teams. The only piece of information needed during these monitoring visits would be the age and vaccination status of the eligible child in the selected household, and if not vaccinated, the reasons thereof. As the fingers of children vaccinated would have been marked with GV paint during the vaccination sessions, it should be possible to objectively determine whether or not the child had received the campaign dose with some certainty. A simple tool consisting of a tabulation of the child’s age, vaccination status and reasons for non-vaccination should be adequate to generate the

information needed for this monitoring. (See annex VI) RCM often takes no more than 2 hours of the supervisor's time to cover an area, and is technically easy to conduct.

The results of RCM are used to ensure that any group of unvaccinated children is immediately identified and addressed before the vaccination team moves out of the locality. (Figure 5) A team of vaccinators accompanied by supervisors should in due time organise to return to the pockets and vaccinate any pockets of unvaccinated children. By looking into the reasons for non-vaccination, the rapid monitoring also helps to identify negative publicity and resistance groups early in the campaign and manage them accordingly.

The results of Rapid Convenience Monitoring are used to ensure that any group of unvaccinated children is immediately identified and addressed before the vaccination team moves out of the locality.

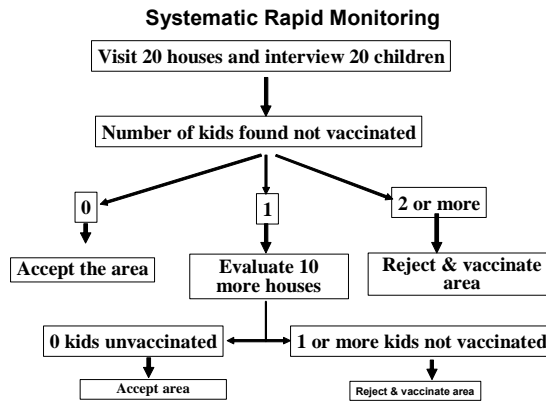


Figure 5. Flow chart for rapid convenience monitoring during measles SIAs.

9.6 Post campaign coverage surveys:

An immunization coverage survey is a survey of small numbers of individuals to determine their immunization status. It includes visiting homes in a systematic way so that only a small proportion of homes need to be surveyed in order to obtain valid results for a larger population.

Post campaign coverage surveys provide an opportunity for validation of the administrative coverage results. These coverage surveys should be led by an independent team not closely linked to the campaign, and should be conducted within one month of the completion of the campaign. The initial campaign plan should include provisions and budget for the post-campaign coverage surveys.

The traditional EPI cluster survey methodology (30 clusters of 7 each) or a modification of this method (e.g., 40 clusters of 10 each) is often used for this purpose. The first step in doing such a cluster survey is to know the total population of the area to be surveyed and the population of the cities, towns and villages in the area. The selection of districts in this kind of survey has a probability proportional to the size of each district. Thus, districts with larger populations would have a greater chance of being selected.

This survey provides the vaccination coverage within 10 percentage points of the true value. In addition the survey may be used to determine a number of other factors related to the campaign like social mobilisation, routine coverage, adverse events, etc.

A survey using the cluster sampling technique will only allow conclusions to be drawn about the population surveyed as a whole. It will not permit comparisons among different clusters or subsections of the population surveyed. However, comparisons of coverage in different parts of the population may be done if separate surveys are done in each part of the country.

10 Mop-up immunization in low coverage districts

10.1 Administrative vaccine coverage:

Once the districts level administrative coverage is compiled and completed, it will be possible to look at the proportion of target group covered as compared to the target. The goal of measles campaigns being to vaccinate 95% of the eligibles, any figure below this is a cause for concern. This coverage data is best reviewed against the monitoring and supervision reports since there may be some issues with the denominator population data, esp if the denominator used comes from an old census data, if there have been significant population movements, etc.

Children not reached during vaccination campaigns are often the same children that are not benefiting from routine services as a result of geographic isolation, or marginalization due to socio-economic or other factors. Therefore every effort has to be made to reach these populations. One way of doing this is to extend the duration of the SIAs by a few more days once the cumulative daily administrative coverage charting and the rapid convenience monitoring results indicate the need for such an action. Such an extension should only be based on data and supervisory findings, and calls for making quick decisions to pool resources.

On the other hand, very good administrative coverage results, as reassuring as they are, may partly be due to some children out of the target age group receiving services and being misclassified as belonging to the target age group. Therefore all coverage reports have to be critically evaluated alongside monitoring reports in order to determine SIAs coverage and quality.

10.2 The decision to do mop-up vaccination:

In the immediate post-campaign period, once all the administrative coverage data has been tallied and summarized at district level, districts with low administrative coverage should be addressed appropriately and immediately. The decision to do further mop-up vaccination is based upon the finding of sub-optimal coverage suggestive of a sizable number of un-reached children.

The proposed decision matrix shown below (Table 6) takes into account the district level SIAs administrative coverage and the district level routine immunization coverage figures in order to decide whether mop-up vaccination should be considered or not. The cut off point of 90% administrative coverage during SIAs has been used for immediate decision to mop-up because of the need to ensure that the highest possible coverage is attained. The availability of resources is a critical factor in the decision to go ahead with mop-up efforts.

Table 6. Decision matrix for conducting mop-up vaccination after the completion of SIAs.

District level administrative coverage during SIAs	Latest* Routine immunization coverage figures for the district	Decision to do "mop-up" vaccination
≥ 95%		Accept result; no need to mop up
90- 95%	≥ 60%	Accept result; no need to mop up
90- 95%	< 60%	Consider mop-up vaccination in low performing sub-districts
< 90%		Do mop-up vaccination in low performing sub-districts

* Coverage figures for the preceding calendar year.

10.3 Planning and implementing high quality mop-up vaccination activities:

The National plan for the SIAs should have some provisions for the possibility of mounting a mop-up operation should coverage results justify the need for such an activity. Contingency plans have to be made in order to access resources if and when mop-up is needed. The implementation of mop-up vaccination efforts has to be a focused activity to reach the un-reached target group as much as possible. Since district level coverage rates may hide some inconsistency in coverage at lower levels, it is best to disaggregate data and review coverage by sub-district level.

The following steps will help guide action once the decision to do mop-up has been reached.

- Review administrative vaccination coverage figures by sub-district
- Review daily cumulative vaccination charting for each sub-district
- Review results and reports from Rapid Convenience Monitoring activities
- Disaggregate data by age group, geographic area and see if there has been any under-representation of a specific age group...
- Meet with the district program managers to review data and brainstorm on reasons for low coverage
- Review the logistic inputs and organization in the sub-district (manpower, supplies, transportation..)
- Review the micro-plans and reports of supervisory teams
- Identify the sub-districts where mop-up vaccination activities should take place
- Review available resources and prioritize areas to cover with the mop up vaccination
- Hold a consultation with potential supervisors and opinion leaders in the community
- Decide on the dates and select the vaccination and supervisory teams
- Organize personnel, supplies, transportation and other logistics for the mop-up activities
- Conduct further intensive and targeted social mobilization in the area
- Address any resistant groups or rumours
- Set-up temporary fixed vaccination posts or use mobile teams to address un-reached settlements / populations
- Do intensive qualitative and quantitative monitoring, and review of activities on a daily basis
- Calculate the administrative coverage figures for the whole district by including the number of un-reached children vaccinated during the mop up efforts

11 Post-Campaign Review Meetings

At the end of the campaign, the committee members, supervisors, observers and coordinators at each level should conduct review meetings, and prepare a summary report of the results based on their checklists as well as their own impressions and experiences. These results should be used to evaluate the preparations and implementation of the campaign. The lessons learned should be properly documented and used to improve subsequent campaigns.

The discussion agenda for the post-campaign review meeting and subsequent reports may include the following:

- Pre-campaign activities
 - Quality of micro-plans and the planning experience
 - Quality of training
 - Social mobilization
 - Appropriateness and quality of mobilisation materials/ media used and the impact on the community
 - Coordination with other sectors for social mobilisation
 - Logistics and cold chain
 - Timeliness and adequacy of logistic inputs
 - Coordination at different levels
 - The quality of pre-campaign monitoring and subsequent response
- Implementation
 - Coordination between district operations, vaccination and supervisory teams
 - Flow of information
 - Transportation and quality of communication between the different levels
 - Decision making and execution of responsibility at each level
 - Organisation and quality of service delivery at immunisation posts
 - Availability of supplies at the posts
 - Vaccine wastage
 - Monitoring and evaluation
 - The cold chain status
 - Injection practices and observance of safe practices
 - Identification and management of AEFI
 - Waste management
 - The documentation of supervisory findings using the standard checklists
 - Rapid convenience monitoring and subsequent actions
 - Social mobilisation
 - Resistance groups and negative publicity
 - Efforts to reach hard-to-reach populations and areas
 - Recording of activities, daily summary and data flow
- Achievements
 - Administrative coverage
 - Mop-up activities
 - Partnership issues
 - Spin off for the routine immunisation services
- Constraints, lessons learnt and recommendations

Finally, health workers, and all partners should be congratulated for their efforts. The results of the campaign should be publicised and used as a motivational tool to show all what can be accomplished with good planning and hard work. Within 5 weeks after the campaign, EPI managers are expected to forward a technical (see sample outline in Annex VII) report to UNICEF and WHO. The technical report is as much a documentation of experiences as it is an official report, and so should, as much as possible, contain informative narratives of the SIAs experience as compared to the thinking and assumptions in the macro and micro-plans.

12 ANNEXES

1. Sample Micro-planning spreadsheet formats
2. Supervisory checklist for the preparation and implementation of SIAs
3. Sample tally sheet
4. AEFI Case investigation form
5. Injection safety checklist
6. Rapid Convenience Monitoring tool
7. Measles SIAs Technical report outline
8. Essential outlines of measles strategic and activity plans of actions
9. Mind map chart showing factors determining the quality of measles SIAs

ANNEX I. Sample micro-planning spreadsheet formats for planning resources needed at district level

Microplanning spreadsheet for determining strategies for SIAs and for personnel planning

district/ health areas	total population	target population	urban				rural				human resources				
			target number	number of health facilities	number of temporary posts	number of teams	target number	number of health facilities	number of temporary posts	number of teams	target population to cover with mobile teams	number of mobile teams	total number of teams	total number of health staff	number of volunteers

Sample format 1. Sample micro-planning spreadsheet for personnel planning.

Microplanning spreadsheet for planning vaccines and supplies

district/ health areas	target population	vaccine doses	vaccine vials	AD syringes	5 ml syringes	safety boxes	emergency aid kits

Sample format 2. Sample micro-planning spreadsheet for planning amount of vaccines and supplies needed.

Microplanning spreadsheet for planning cold chain equipment and space

district/ health area	number of vaccine carriers			number of ice packs			number of cold boxes			vaccine storage space in liters			ice pack storage space in liters		
	requirement	available	additional required	requirement	available	additional required	requirement	available	additional required	requirement	available	additional required	requirement	available	additional required

Sample format 3. Sample micro-planning spreadsheet for planning cold chain and cold space needed.

ANNEX II: Sample Pre-campaign preparation Supervision checklist:

Date of visit:	Observer:	
Region:	District:	
Clinic:	Clinic Coordinator:	
	Yes/ No	Comments
Planning and Coordination		
Microplans developed and complete?		
High-risk areas & populations identified? Special strategies defined?		
Mechanisms for effective partner/inter-sectoral coordination in place?		
Coordinating committees organised?		
Campaign guidelines in place?		
All required funds available?		
Supervisory structure in place?		
Enough vaccinators allocated to posts so that no vaccinator must inject >200 children/ day?		
Social Mobilisation		
Social mobilization committee functions?		
High-level advocacy given for the campaign?		
Effective mobilization strategies in place to generate demand?		
Community members know the campaign dates and targets?		
Logistics and Supplies		
Measles & OPV vaccine, diluent distributed?		
Vitamin A distributed?		
Health workers & volunteers trained?		
Adequate transport organized?		
Adequate cold chain supplies in place?		
Adequate copies tally sheets, forms?		
Injection Safety and AEFI		
Health workers understand how to use and dispose of AD syringes?		
Adequate supplies of safety boxes?		
AEFI procedures understood and reporting forms in place?		
Waste Management Practices		
Procedures in place for disposal of used needles, syringes and other wastes?		

Other observations:

continued: Sample Supervision checklist for campaign implementation:

Date of visit:	Observer:	
Region:	District:	
Vaccination Post:	Post Coordinator:	
	Yes/ No	Comments
Social Mobilization and interaction at Service delivery point		
Population aware of campaign dates, purpose and post locations?		
Hard-to-reach populations/areas identified and targeted for special strategies?		
Post clearly identified by banner or other means?		
Health workers or volunteers actively searching for un-vaccinated children, and directing them to vaccination post?		
Health workers explain to caretakers about the vaccine, possible side effects?		
Parents informed that routine immunization should continue?		
Cold Chain		
Vaccines stored in vaccine carriers with at least 2 frozen ice packs?		
Refrigerator temperature is 2-8°C with up-to-date temperature monitoring form?		
Diluent cooled before reconstituting the vaccine?		
Reconstituted vaccine discarded after 6 hours?		
Availability of Vaccines & Supplies		
Sufficient measles vaccine and diluent?		
Vaccines bundled with enough reconstitution and AD syringes?		
Enough cold boxes?		
Enough safety boxes?		
Post Organization		
Post well organized, with good client flow?		
Sufficient vaccinators and volunteers?		
Every child vaccinated is tallied?		
Coverage estimated daily? Action taken if coverage low?		
Immunization Safety Practices		
Measles injection given correctly?		
Used syringes inserted into safety boxes without recapping?		
AEFI reporting procedures applied, reporting forms in place?		
Waste Management Practices		
Filled safety boxes are incinerated/ disposed of according to National guidelines?		
Recording and Use of Data		
Are health workers tallying every child vaccinated?		
Does post staff calculate coverage daily?		
Does post staff increase efforts to mobilize the population if coverage appears low?		

ANNEX III: Sample tally sheet for use during SIAs:

District:		Name of Immunisation Post:				
Date:		Name of Supervisor:				
Age	Number Immunised					Total
< 9 months	00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000				
	Zero dose	00000 00000 00000 00000 00000 00000				
9 mo to 1 yr	00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000				
	Zero dose	00000 00000 00000 00000 00000 00000				
>1 yr to <5 yrs	00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000			
	Zero dose	00000 00000 00000 00000 00000 00000				
5 – 15 yrs	00000 00000 00000 00000 00000 00000	00000 00000 00000 00000 00000 00000				
	Zero dose	00000 00000 00000 00000 00000 00000				
TOTAL						
Overall % Zero dose						
Team Leader's Remarks						

This design of a tally sheet allows for:

1. Identification of children vaccinated <9 months – who may have been targeted for SIAs during special circumstances, and who would later need a second dose when they reach 9 months of age.
2. Determination of which age group (if any) may not have been effectively reached in that community for SIAs evaluation comparing with the community line list
3. Identification of the numbers in the age categories that will be targeted for follow-up SIAs after 3-5 years
4. Possibility to compare absolute numbers reached in the age category 9 mo. – 1 year with those vaccinated with BCG or preferably DPT1 in routine EPI.

ANNEX IV: Sample AEFI case investigation form (Zambia)

Case number			
Patient's last name		First name(s)	
Address			
Date of birth		Sex	Parent's names
IMMUNIZATION HISTORY AND PROCEDURES			
Date of vaccination	Vaccination post (if applicable)	Health facility	Name of vaccinator
Vaccines given that day to the patient	Manufacturer	Batch number	Expiry date
1.			
2.			
3.			
Were the vaccines stored and handled correctly at all times? Yes / no If no, please explain:			
Was the vaccination technique adequately sterile? Yes / no If no, please explain:			
How many other people received vaccine from the same batch?			
MEDICAL HISTORY (tick which applies:)			
Local reaction		Systemic reaction	
Injection site abscess		Anaphylaxis	
Severe local reaction (swelling extending >5cm from injection site, or redness and swelling for more than 3 days)		All cases of hospitalisation thought to be related to vaccination	
		<ul style="list-style-type: none"> • Collapse/shock-like state within 48 hours of vaccination • Encephalopathy within 7 days • Fever of >40.5° within 48 hours of vaccination • Seizures within 3 days • All deaths thought to be related to vaccination • Other (describe): 	
Details of symptoms			
Date and time of onset of symptoms			
Laboratory findings			
Any history of reactions to previous vaccinations, drug allergies, etc			
Treatment given and outcome			
Information given to parents/caretakers			
CLUSTER DETAILS			
Is this AEFI part of a cluster? Yes / no? If yes, how many people who received vaccine from the same batch, post or vaccinator fell ill?			
How many people fell ill at other immunization posts?			
AEFI investigated by (name)	Health facility/district	Designation	Date

ANNEX V: Injection safety checklist for mass campaigns

This questionnaire is limited to a series of observations of compliance with safety procedures, without seeking background information or causal relations. Depending on the result of the observation, each box should be marked with **Y (YES)** if the procedure is safe (i.e. according to recommendations) or **N (NO)**. There is place for 5 observations for each indicator. An attempt should be made to apply this questionnaire to as many vaccination **teams** as possible, representing the various regions/districts and different types of health workers.

Province/Region: _____ District/Block: _____ Name _____ of Supervisor: _____

<u>O</u> BERVE / <u>E</u> NQUIRE:		THE CORRECT WAY:	OBSERVATIONS: YES (Y) or NO (N)				
			Tea m 1	Tea m 2	Tea m 3	Tea m 4	Team 5
12.1.1.1 Preparation procedures							
12.	What types of syringes are used for administration?	1. Auto-destruct syringes (which cannot be re-used should be provided for all elective and emergency mass immunization campaigns	1	1	1	1	1
12.	Storage of syringes before administration and preparation of syringes for administration	2. Syringes should be filled immediately before administration (i.e. not pre-filled before the session	2	2	2	2	2
<u>O</u>	Administration technique by observing at least one injection administration in each vaccination team	3. Measles vaccine should be administered subcutaneously. 4. The administration site is usually the right upper arm 5. One syringe should be used for each dose administered. 6. The sterile parts of the syringe should remain untouched by a finger or non-sterile object	3 4 5 6	3 4 5 6	3 4 5 6	3 4 5 6	3 4 5 6
<u>E</u>	Knowledge on injection safety by asking team members some questions	7. Health workers should have received information on safety injection practices. Use the “ <i>key steps to ensure injection safety</i> ” at the back of this form to formulate 4 questions. Write Y if they answer correctly to all of them.	7	7	7	7	7
<u>O</u>	Distribution of supplies and availability of syringes according to the target population in each team	8. Adequate amounts of syringes and needles for every dose of injectable vaccine should be provided. (auto-destruct syringes required = target population X 1.1) 9. A disposable syringe for reconstitution should be available for each vial.	8 9	8 9	8 9	8 9	8 9

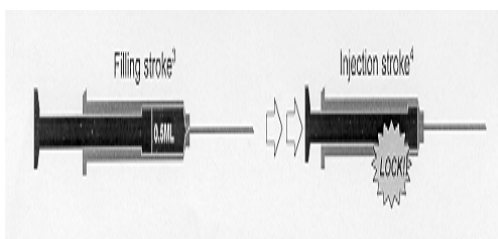
WHO AFRO Measles SIAs field guide

12.1.1.1.2.1.1.1 Vaccine handling								
O	Reconstitution of vaccine and the temperature of the diluent at the time of reconstitution	10. The diluent provided by the manufacturer should be use. 11. The diluent should be refrigerated	10 11	10 11	10 11	10 11	10 11	10 11
12.	Handling of reconstituted vaccine vials at the end of the working session	12. Reconstituted doses should be discarded at the end of the session or after 6 hours whichever comes first	12	12	12	12	12	12
Disposal of used syringes and needles								
12.	Procedures followed with used syringes and needles after use	13. Used needles and syringes should be dropped in a safety box or puncture resistant container immediately after use (e.g. needles should not be recapped after use). 14. Each vaccination team should have sufficient safety boxes to dispose all the sharps. Each team should have a safety box for each 100 syringes. 15. The safety boxes should not be overfilled or wet	13 14 15	13 14 15	13 14 15	13 14 15	13 14 15	13 14 15
12.	Existence of guidelines to transport, store and incinerate used sharps	16. Guidelines to transport and store used syringes and needles were distributed and are known by health workers (timing, supervision, storage sites).	16	16	16	16	16	16
12.	Provisions for incineration/destruction of syringes: How syringes and other sharps were stored and transported after use? Whether or not the syringes were incinerated after the campaign?	17. Used syringes (auto-destruct for administration and disposable for vaccine reconstitution) should be stored in a safe place and protected from the public before collection/incineration 18. There should be a designated site for destruction. 19. Incineration should be conducted in a close place avoiding dispersion and protected from the public.	17 18 19	17 18 19	17 18 19	17 18 19	17 18 19	17 18 19

Please, use the back of this page to write any additional information that you found especially relevant.

INJECTION SAFETY

Key steps during mass campaigns



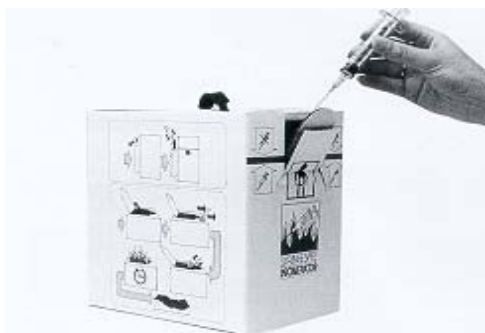
Step 1

Auto-destruct syringes should be provided, together with high quality vaccine, for all elective and emergency mass immunization campaigns



Step 2

One syringe should be used for each dose administered. Measles vaccine should be administered subcutaneously.



Step 3

Used syringes should be dropped in a safety box or puncture resistant container immediately after use.



Step 4

Used disposable and auto-destruct syringes should be stored in a safe place and incinerated soon after.

ANNEX VII: Rapid Convenience Monitoring Tool

Household no.	Age	Vaccinated? (Y/N)	If no, what were the reasons for non-vaccination?
TOTAL			

Guidelines:

- Complete at least 3-5 assessments in each high-risk area or population.
- Direct all unvaccinated children to the nearest vaccination post (during the campaign), or to the near health facility (for routine services).
- If more than 2 children are unvaccinated, conduct mop-up or other intensive follow-up in the area immediately.
- Use the reasons given for non-vaccination to strengthen social mobilization.
- Remind all caretakers to take their children for all routine immunizations.
- Submit all completed sheets to the district or national campaign coordinators to summarize for the final evaluation report.

ANNEX VII:

Recommended AFRO measles SIAs technical report outline

(To be completed by the National EPI Manager and Submitted to UNICEF & WHO within 5 weeks after the campaign.)

Among other details, the final technical report should include the following elements:

- Dates of the SIAs
- Target population (No. and type: Nationwide or partial and Age Group)
- Overall Campaign administrative coverage²
- Number of immunization posts³
- Number of vaccination teams, and supervisory teams
- Number of health workers and volunteers who participated in the SIAs
- Results of other integrated child survival Interventions
- Experience regarding pre-campaign and campaign monitoring
- Comments on vaccine quality, injection safety and any AEFIs observed or reported
- Comments on the experience with injection safety and Immunization waste management
- Estimated vaccine wastage
- Some qualifying comments about high-level political commitment
- Were any hard-to reach children immunized? Give details of the areas and characteristics of the populations. Explain strategies employed.
- Were SIAs used to improve measles surveillance? Explain
- Were SIAs used to improve routine immunization? Explain.
- Who were the major national/local partners
- Local resource mobilization (in cash and in kind)
- Resources utilization; cost/child immunized
- Mop up immunization planned or completed? Give details
- Coverage evaluation surveys planned/ completed? Briefly give details of methodology and results.
- Highlight major problems encountered
- Highlight major achievements
- Highlight major lessons learnt

² Please attach relevant spreadsheets and maps of sub-national vaccination level coverage, if not already part of the report.

³ Please quote actual figures and not figures from micro-plans for this and subsequent rows requesting number of posts, teams and participants.

ANNEX VIII: Essential outline of measles strategic and activity plans of actions

EPI managers responsible for drawing up strategic and activity plans for measles control need to ensure that the following elements are included in the plan documents:

- Plan consistent with WHO/UNICEF-recommended strategies
- Plan consistent with or incorporated into other EPI/GAVI plans
- Plan consistent with WHO/AFRO 5 year strategic plan for measles control
- Strategies complement but not deter from polio eradication efforts
- Routine immunization and campaign strategies defined and are complementary
- Endorsement and definition of the role of the ICC in the planned activities
- Adequate background on measles epidemiology and measles control activities as well as on the National EPI program (mortality, morbidity, coverage)
- Adequate analysis of surveillance data and quality as well as description of investigated outbreaks in the past
- High risk areas and populations identified (age range, geographic)
- Experience from past SIAs well thought out and indicated in planning for the present one
- Realistic objectives given measles epidemiology, available resources, proposed length of campaign, type of campaign, and available time allocated for planning, procurement, training and implementation
- Detailed description of other interventions to be integrated with measles SIAs
- Partners – including NGOs and CBOs - identified (for funding, volunteer staff)
- Local resource mobilisation considered and included
- Micro-planning for campaigns programmed
- Staff identified (technical, management, logistics)
- All key components addressed and described in detail:
 - Vaccination posts distributed to facilitate access
 - Cold chain status and needs
 - Injection safety and waste disposal
 - Adverse event monitoring
 - Record-keeping
 - IEC/social mobilization
 - Reaching the previously un-reached
 - Transportation
 - Needs for technical assistance (epidemiologist, logistician, external monitors, laboratory support...)
 - Pre-campaign monitoring and evaluation
 - Campaign supervision and monitoring
- Surveillance plans articulated in detail including:
 - Nationwide case-based measles surveillance
 - Outbreak investigation
 - Laboratory component
 - Data management
 - Linkage with AFP active surveillance
- Post-campaign evaluation plans described, are technically sound and feasible
- Detailed timeline of activities included
- Budget clearly shows government and partner contributions and shortfalls

ANNEX IX: Mind map chart showing factors determining the quality of measles SIAs

