World Health Organization

Planning and Implementing High-Quality Supplementary Immunization Activities for Injectable Vaccines

Using an Example of Measles and Rubella Vaccines

Field Guide

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FIELD GUIDE

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Using an Example of Measles and Rubella Vaccines

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Abbreviations and acronyms

ABC	Airway, Breathing and Circulation
AD	Auto-disable
AEFI	Adverse event(s) following immunization
CPR	Cardiopulmonary resuscitation
CRS	Congenital rubella syndrome
CSO	Civil society organization
cMYP	Comprehensive multi-year plan
DHS	Demographic and Health Survey
EPI	Expanded Programme on Immunization
FAQ	Frequently asked question
GACVS	Global Advisory Committee on Vaccine Safety
Gavi	Global Alliance on Vaccines and Immunisation
GPS	Global Positioning System
GVAP	Global Vaccine Action Plan
HAART	Highly-active antiretroviral therapy
HCW	Health care worker
HH	Household
HPV	Human papillomavirus
ICC	Interagency Coordinating Committee
IFRC	International Federation of the Red Cross and Red Crescent Societies
IPC	Interpersonal communication
KABP	Knowledge, attitudes, beliefs and practices
LDS	Church of Jesus Christ of Latter-day Saints
M	Monovalent measles vaccine
MCV	Measles-containing vaccine
MICS	Multiple Indicator Cluster Survey
MMR	Measles–mumps–rubella
MMRV	Measles–mumps–rubella–varicella
MoH	Ministry of health
MR	Measles–rubella
MRI	Measles & Rubella Initiative
NCC	National coordinating committee
NGO	Nongovernmental organization
OPV	Oral polio vaccine
PCM	Phase-change material
PIE	Post-introduction evaluation
PQS	Performance, Quality and Safety
RCM	Rapid convenience monitoring
RCV	Rubella-containing vaccine
RED	Reaching Every District
RI	Routine immunization
RUP	Reuse prevention
SAGE	Strategic Advisory Group of Experts
SC	Subcutaneous
SIA	Supplementary immunization activity
SMART	Specific, measurable, achievable, relevant and time-bound
SMS	Short message service
ToR	Terms of reference
UN	United Nations
UNICEF	United Nations Children's Fund
VVM	Vaccine vial monitor
VPD	Vaccine-preventable disease
WHO	World Health Organization
WMF	Wastage multiplication factor
WUENIC	WHO/UNICEF Estimates of National Immunization Coverage

Glossary

Adverse event(s) following immunization (AEFI) – any untoward medical occurrence which follows immunization and which does not necessarily have a causal relationship with the usage of the vaccine.

Advocacy – a set of activities targeted at different levels before the SIA, designed to foster political support, generate and sustain adequate resourcing, build partnerships with national and international agencies, NGOs and with local civil society organizations (CSOs) and influencers, and to ensure community acceptance and support for the SIA.

Catch-up SIA – one time SIA, usually nation-wide, to vaccinate the main target population responsible for disease transmission in order to rapidly reduce the number of susceptible individuals.

Communication for behavioural change – a group of activities designed to influence behaviour and intended to promote vaccination as a norm and duty.

Coolant-pack – a purposely-designed leak-proof container, typically complying with Performance, Quality and Safety specification (PQS/E005/IP01), filled with tap water or phase-change material (PCM).

Fixed permanent vaccination posts – posts located at permanent health facilities and community health posts as a part of the fixed vaccination posts SIA strategy for the entire duration of the SIA.

Fixed post with house-to-house canvassing – SIA strategy with added social mobilization element, which involves a trained volunteer/ community mobilizer ("canvasser") encouraging the population to come to the vaccination post.

Fixed temporary vaccination posts – posts that may be set up at schools, churches, mosques, local administrators' offices, for the time estimated to complete the vaccination of the targeted population of that area (may be less than the duration of the SIA).

Fixed vaccination posts – effective SIA strategy in settings where there is high demand for vaccination, social mobilization is strong and house-to-house visits are not needed; includes permanent and temporary vaccination posts.

Follow-up SIA – periodic SIA, usually nationwide, conducted every 2 to 5 years, targeting children born after the last SIA in order to reach the unreached and those who did not gain immunity after the first vaccination.

House-to-house vaccination – SIA strategy recommended mainly as a mop-up strategy in areas where there is prior evidence of refusal of vaccination.

Ice-pack – a water-pack that has been frozen to a temperature of between –5 °C and –25 °C before use.

Mobile vaccination posts – posts required at distant villages and rural settlements with very small and/or disperse populations, set up for the time needed to complete the task (usually less than one day).

Rapid convenience monitoring (RCM) – an SIA monitoring method specifically focused on finding unvaccinated children, identifying reasons for non-vaccination and taking corrective action.

Social mobilization – a group of broad-scale activities to engage with all segments of society aiming to disseminate information and ensure appropriate awareness.

Speed-up SIA for rubella vaccine introduction – one-time effort to vaccinate children, adolescents and adults in order to reduce the time required to stop the transmission of rubella virus and eliminate rubella and congenital rubella syndrome.

Supplementary immunization activity (SIA) – an effective strategy for delivering vaccination to children otherwise missed by routine services or to older susceptible individuals who are not among the age groups targeted by the Expanded Programme on Immunization (EPI) services.

Water-pack – a coolant-pack, typically complying with PQS specification (PQS/E005/IP01), filled with tap water.

I. Introduction

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1. Background information

One of the strategic objectives of the Global Vaccine Action Plan (GVAP)[1] is to ensure that the benefits of immunization are equitably extended to all people. Achieving this objective will mean that every eligible individual is immunized with all appropriate vaccines – irrespective of age, gender, disability, educational level, socioeconomic level, work condition, geographic location or ethnicity.

GVAP challenges countries not only to reach at least 90% national vaccination coverage and at least 80% vaccination coverage with all antigens in every district but also to sustain these gains over the long term. Some disease control goals require even higher levels of vaccination coverage. Under GVAP, measles and rubella are targeted for elimination in five World Health Organization (WHO) regions by 2020. Achieving interruption of endemic measles transmission requires at least 95% vaccine coverage with two doses of measles-containing vaccine (MCV) in every district.

Strong routine immunization (RI) systems are critical foundations for achieving and sustaining high levels of population immunity to vaccine-preventable diseases. The "Reaching Every District" (RED) strategy with focus on planning and monitoring has been implemented to build capacity and expand the provision of immunization services.[2] However, certain individuals or population groups continue to remain susceptible to vaccine-preventable diseases, either because they are missed by RI programmes or because of primary vaccination failures.

1 WHO (2010). Global Vaccine Action Plan (GVAP) 2011-2020. Geneva: World Health Organization (http://www.who.int/immunization/global_vaccine_action_plan/GVAP_doc_2011_2020/en/, accessed 15 June 2016).

2 WHO (2008). Reaching Every District (RED) approach: a way to improve immunization performance. Bull World Health Organ. 8(3):B. doi: 10.2471/BLT.07.042127 (http://www.who.int/bulletin/volumes/86/3/07-042127/en/, accessed 15 June 2016).

Supplementary immunization activities (SIAs), also referred to as mass-immunization campaigns, are an effective strategy for delivering vaccination to children otherwise missed by routine services (e.g. the hard-to-reach and underserved groups and communities) or to older susceptible individuals who are not among the age groups targeted by the routine Expanded Programme on Immunization (EPI) services. As such, SIAs are a proven strategy for increasing vaccination equity. SIAs also have the effect of rapidly increasing population immunity by reducing the number of susceptible individuals in the population, which can result in protective "herd" immunity.

SIAs provide opportunities for strengthening vaccination services through building national capacity, reducing inequity of service delivery, advocating for RI, improving immunization practices and providing further public health benefits through integration of other public health interventions with the SIA. Strengthening RI programmes is in turn critical for sustaining gains made through the SIA.

1.1 Purpose and operational objectives of this guide

The purpose of this field guide is to provide comprehensive information on planning and implementing high-quality[3] SIAs for injectable vaccines and highlight the opportunities to strengthen RI and surveillance. The guide uses measles–rubella SIAs as the main example throughout, but the information provided aims to be applicable to SIAs delivering any injectable vaccine. It can serve as a reference for the preparation of regional/national SIA field guides and materials.

This field guide is intended to offer immunization programme managers and their partners a methodology and tools to ensure a successful SIA through:

- proper and timely planning and preparation including development of a budget for funding by government and/or donors, and use of the SIA Readiness Assessment Tool;
- implementation of SIAs following best available practices;
- monitoring of SIAs to allow for immediate corrective actions;
- evaluation of the effectiveness of SIA preparation and implementation.

3 For measles SIAs "high quality" is defined as achieving at least 95% national coverage as determined by a coverage survey evaluation.

1.2 What this field guide adds

- This field guide is organized in chronological order and uses the concept of project management to support the effective management of the whole process of planning, implementation and monitoring of an SIA.

- It promotes the use of the SIA Readiness Assessment Tool at national and subnational levels to allow for periodic assessment of the implementation of critical activities associated with the SIA. This allows for timely implementation and follow up of corrective actions as well as the provision of feedback necessary for decisions regarding postponing the SIA, either nationally or in specific areas, should the need arise.

- It emphasizes comprehensive macro- and microplanning and budgeting, to ensure that critical activities which are often overlooked (e.g. pre-SIA readiness assessment, intra-SIA monitoring including rapid convenience monitoring, post-SIA independent monitoring and "mop-up"[4] activities) are accounted for.

- It highlights the importance of addressing inequity and the identification of hard-to-reach and high-risk groups through the microplanning process. It also highlights the need for tailoring vaccination strategies to the needs of each community.

- It stresses the importance of early planning and budgeting, including for mop-up activities, to address gaps identified through intra- and post-SIA monitoring (in particular rapid convenience monitoring, RCM).

- It stresses that SIAs should be conducted within the overall immunization programme and not as an isolated intervention.

- It includes suggestions of activities that can – either in synergy or with little added effort – strengthen RI.

- It is complemented by an e-learning course which will focus on the areas that present the most common problems that impact the quality of SIAs.

4 That is, repeat vaccination to increase the level of coverage when it is found that some children were missed during the SIA.

2. Measles, rubella and CRS: disease characteristics and vaccination strategies for elimination

2.1 Measles disease

Despite the availability of safe, effective and inexpensive vaccines, measles remains an important cause of preventable deaths worldwide among children aged under 5 years. Measles virus is highly infectious and, in the pre-vaccination era, > 90% of individuals were infected by the age of 15 years.

Measles is characterized mainly by fever, rash and cough. Complications of measles include diarrhoea, otitis media, laryngo-tracheobronchitis (croup), pneumonia and encephalitis. Pneumonia, diarrhoea and croup account for the majority of case fatalities. The risk of developing severe or fatal measles is greater in children aged under 5 years in overcrowded living conditions, particularly if they are malnourished or have vitamin A deficiency, and in those with immunological disorders, such as advanced HIV infection. Adults over 20 years of age have a higher risk of severe or fatal measles. In developing countries, case-fatality rates among young children may reach 5–10%. In industrialized countries, deaths from measles, although rare, may occur in previously healthy individuals.

2.2 Rubella and congenital rubella syndrome

Rubella infections generally cause a relatively mild disease in children, but in adolescents and adults they can cause arthritis and encephalitis. Maternal rubella infection in early pregnancy can severely affect the fetus and can result in miscarriage,

fetal death or a combination of disabling conditions collectively called congenital rubella syndrome (CRS). CRS may include heart disease, blindness and deafness. With a global estimate of 100 000 cases of CRS annually, rubella remains a leading cause of preventable congenital defects.

2.3 Vaccination strategies for measles and rubella

The Global Measles and Rubella Strategic Plan for 2012-2020[5] outlines strategies for achieving the measles and rubella elimination goals under GVAP[6]. The first of the five core components of the strategy is to achieve and maintain high levels of population immunity by providing high (≥ 95%) vaccination coverage with two doses of measles- and rubella-containing vaccines.

The primary purpose of rubella vaccination is to prevent the occurrence of CRS. Although rubella vaccine is available as a single-antigen rubella vaccine, WHO recommends the use of combination vaccines, either measles–rubella (MR), measles–mumps–rubella (MMR) or measles–mumps–rubella–varicella (MMRV) vaccine. See Annex 1 for details on recommended vaccines.

A challenge with rubella vaccination is that sustained **low** coverage of rubella immunization in infants and young children could result in an increase in susceptibility among women of childbearing age, theoretically increasing the risk of CRS above levels prior to vaccine introduction (the paradoxical effect). However, if vaccination coverage is sufficiently high, rubella transmission will be markedly reduced or interrupted, thereby removing the risk of rubella exposure for pregnant women. **Prior to rubella vaccine introduction, it is critical that countries achieve and maintain immunization coverage of at least 80% or greater with at least 1 dose of a rubella-containing vaccine delivered through routine services and/or regular SIAs, in order to avoid the potential of this paradoxical effect.**

For more information on introducing rubella vaccine, see *Introducing rubella vaccine into national immunization programmes: a step by step guide*[7] and WHO's position paper on rubella vaccines[8].

5 WHO (2012). Global Measles and Rubella Strategic Plan: 2012-2020. Geneva: World Health Organization (http://who.int/iris/handle/10665/44855, accessed 15 June 2016).

6 WHO (2010). Global Vaccine Action Plan (GVAP) 2011-2020. Geneva: World Health Organization (http://www.who.int/immunization/global_vaccine_action_plan/GVAP_doc_2011_2020/en/, accessed 15 June 2016).

7 WHO (2015). Introducing rubella vaccine into national immunization programmes: a step by step guide. Geneva: World Health Organization (http://apps.who.int/iris/bitstream/10665/184174/1/9789241549370_eng.pdf, accessed 15 June 2016).

8 WHO (2011). Rubella vaccines. WHO Position Paper. Weekly Epidemiological Record. 86:301–316 (http://www.who.int/wer/2011/wer8629.pdf, accessed 30 May 2016).

Measles and rubella vaccination policy and delivery strategies vary among countries. Countries with well-established and high-performing immunization programmes rely on routine services for delivery of both doses of measles- and rubella-containing vaccine (MCV1 and MCV2). Countries with < 95% coverage with both doses should use SIAs to achieve high (≥ 95%) two-dose coverage. This high level of coverage must be maintained uniformly across all districts and all age groups to prevent measles outbreaks. Countries unable to achieve high and homogenous vaccination coverage through RI services should regularly conduct SIAs to rapidly reduce the pool of susceptible children, and must aim to vaccinate all eligible children. WHO recommends that SIAs should be continued until countries are able to reach and sustain ≥ 95% coverage with two doses through RI programmes.

2.4 Integrating measles and rubella elimination

Measles elimination activities (routine and supplementary immunization activities as well as surveillance) provide an excellent opportunity and platform for advancing rubella and CRS elimination. WHO recommends that, according to the eligibility criteria outlined in the WHO rubella vaccine position paper[9], countries switch from monovalent measles (M) to MR or MMR vaccine, and use the contact provided by measles SIAs to target populations remaining susceptible to rubella as well.

When the routine national immunization schedule includes two measles-containing vaccine (MCV) doses, WHO recommends that the same combined MR or MMR vaccine product be used for both doses. This is better than including rubella-containing vaccine (RCV) only with the first measles dose as it will help simplify vaccine procurement, logistics, recording and reporting, and reduce wastage. In addition, this will help increase rubella vaccination coverage.

9 WHO (2011). Rubella vaccines. WHO Position Paper. Weekly Epidemiological Record. 86:301–316 (http://www.who.int/wer/2011/wer8629.pdf, accessed 30 May 2016).

3. Systems approach to SIAs

SIA planning and implementation must be considered within the broader health system context and not operate as isolated interventions outside the routine immunization programme. Important inputs from the RI programme (e.g. target population, health facility session plans, a map of vaccination posts in the catchment area, risk factors for non-vaccination and cold-chain capacity) are necessary for successful SIA planning. The planning and preparation for SIAs may help address major issues within the RI programme. Likewise, programmatic information generated during the preparation and implementation of the SIA will feed back to the RI programme to be used for programmatic improvements. It will thus provide the continuity required to sustain high population immunity for each successive age cohort during the intervals between SIAs. This information should flow in a cycle, from the RI programme to the SIA and back.

3.1 SIAs as opportunities to strengthen routine immunization and other health programmes

Ideally, an SIA is built upon a strong RI programme. A "best practice" SIA can and should build national capacity and strengthen existing immunization service delivery through renewed attention to core components of programme management. Specific activities to strengthen RI are carried out before, during and after the completion of the SIA. At the outset of the SIA, 3–5 objectives to strengthen the RI programme should be identified and agreed upon to include in the SIA, based on countries' RI assessment. A focal person should be identified at each of the national subcommittees to oversee and ensure the implementation of these activities. Resources for carrying out the RI-strengthening activities should be identified and

included in the macroplanning budgeting exercise. For many activities carried out prior and during the SIA, no additional resources will be needed. For some activities, resources from the RI programme and SIA can be pooled together (e.g. for conducting refresher training courses that can improve knowledge and skills of health workers in order to improve both SIA quality and RI). For RI-strengthening activities after the SIA, resource requirements need to be identified and the budget updated along with the updated RI microplans.

The following provides examples of RI-strengthening activities per programme component that can be carried out before, during and after an SIA.

1 Planning

Before SIA

- Include SIAs in national comprehensive multi-year plans (cMYP) as a strategy to achieve disease control and elimination.
- Use RI plans for districts and health facilities and the operational maps of health facility catchment areas as the starting point for the development of microplans and maps for the SIA.
- Include and address RI-strengthening objectives when developing SIA tools (e.g. include zero dose monitoring in tally sheets).
- Review immunization policy as part of SIA planning and update policies as needed.
- Use SIAs as a platform for integrated delivery of public health interventions (e.g. vitamin A supplementation), which can be linked with maternal and child health initiatives that target similar age ranges and use the same strategies as the SIA (e.g. fixed/mobile posts).

After SIA

- Use local head counts from the SIA for RI microplanning when these are more accurate than official estimates.
- Update and revise microplans and maps of catchment areas and RI strategies when previously unidentified target populations are detected during an SIA.
- Use SIA RCM and monitoring data to identify specific obstacles to RI and prepare plans to address them.
- Use SIA data to revise sites of RI outreach locations and identify additional resources needed for the updated activities.

2 Training

Before SIA

- Conduct a training needs assessment at least 6 months prior to SIA and organize competency-based training accordingly.
- Develop SIA training materials and job aids (e.g. videos) that include refresher training for RI based on identified needs and knowledge gaps.
- Discuss status of RI and surveillance during SIA training and reinforce essential skills for proper microplanning, vaccine handling, injection safety and waste management.

During SIA

— Use supervision checklists to review processes and address issues of the RI programme e.g. injection safety and waste management, etc.

After SIA

— Revise training content and supervision checklists for RI to include problem areas identified during the SIA.

3 Logistics, cold chain, vaccine handling and waste management

Before SIA

— Review national cold-chain capacity (e.g. refrigerators, freezers, cold boxes, vaccine carriers and coolant packs) and procure needed equipment.
— Ensure effective maintenance of existing cold-chain equipment.
— Include the needs of the RI programme when assessing waste disposal and construction/ maintenance of incineration facilities for SIAs.
— Expand the introduction of new technologies for SIAs to include the RI programme (e.g. auto-disable syringes and syringes with reuse prevention features).

During SIA

— Use intra-SIA supervision visits to identify and correct injection techniques and safety and waste management.

After SIA

— Reinforce importance of adequate stock levels, accurate forecast of vaccine requirements and wastage reduction.
— Include cold-chain equipment purchased for the SIA in the RI programme equipment inventory and maintenance plan.

4 Vaccine safety surveillance

Before SIA

— Support health workers' knowledge and skills on common adverse events following immunization (AEFI) and AEFI management through training for the SIA.
— Provide sufficient equipment, supplies and reporting forms for the SIA that can later be used in RI.
— Include skill practice and job aids on how to communicate AEFI effectively with caregivers.

During SIA

— Strengthen AEFI reporting, management and proper use of AEFI kits through supervision during the SIA.

After SIA

— Reinforce key message that usual mild adverse events after immunization are much less serious than possible consequences of disease.

5 Advocacy, social mobilization, communication

Before SIA

- Conduct the **knowledge, attitudes, beliefs and practices (KABP)** survey in the community as basis for developing communication messages.
- Develop **standard key messages to promote the SIA and RI** and pre-test for comprehension to minimize confusion about differences between them.
- If SIAs will occur in schools, work with education officials to develop short information sessions on immunization.
- Raise awareness and engage the private sector about the importance of RI (e.g. schedule, global and national goals, reporting, surveillance, etc.).
- Use SIAs to strengthen existing and build new partnerships with partners that play a role during the preparation, implementation and evaluation of SIAs (e.g. nongovernmental organizations, NGOs, community-based programmes, media, schools, cultural institutions, religious leaders and organizations, humanitarian and aid agencies and volunteer groups) and work with them to support the RI programme beyond the SIA.

During SIA

- Emphasize the importance of both the SIA and RI during media briefings and in press releases, and during community education sessions.
- Distribute RI "invitation cards" to caregivers when they come to the SIA post.
- Health care workers (HCWs) and volunteers should inform caregivers that all children of [X] years need at least 2 doses of MCV.
- Have HCWs remind caregivers to bring children back to routine immunization service for second dose of measles-containing vaccine in second year of life (depending on vaccination schedule).
- Use mHealth applications to disseminate information about routine immunization during SIAs.

After SIA

- Build on relationship with media and obtain commitments for communication support for RI.
- Use advocacy and social mobilization activities with interested groups (e.g. women's and youth groups) to promote RI and recognition/reporting of suspected cases of measles and rubella.
- Build on the collaboration with schools and the education system to implement school immunization policies (e.g. school entry RI checks) and the introduction of routine school vaccination activities when feasible.
- Maintain NGO involvement to continue "defaulter"[10] tracing for RI.
- Report to local politicians the results of SIAs and the current RI coverage.
- Use data from spot-check surveys to strengthen communication planning for RI, especially for hard-to-reach populations.

6 Supervision, monitoring and evaluation

Before SIA

- Use field supervisory visits prior to the SIA to assess the performance of the RI programme,

10 Infants who started the routine EPI immunizations (had access to services) but failed to complete the schedule (did not return for subsequent immunization doses).

identify training needs of health workers, and help plan for targeting high-risk districts for additional supervisory support during the SIA and beyond.
- Include the question on dissemination of RI messages in the supervisory checklists. Improve data management practices (e.g. record keeping, data analysis, coverage calculation) needed for RI through the inclusion of data management in the pre-SIA training.
- Use **monitoring checklists** for SIA and routine immunization.

During SIA
- Review and address challenges to the RI programme. Use RCM to identify children being missed by the SIA and RI and the reasons for non-vaccination.
- In areas where routine card retention by parents is high, record zero dose children in SIA tally sheets to help identify low coverage areas for routine immunization.

After SIA
- Conduct coverage surveys that are used to assess both SIA and RI coverage levels and identify high-risk and underserved populations, low coverage districts and reasons for non-vaccination within the RI programme.
- Analyse RCM data and communicate results to stakeholders to address RI weaknesses.
- Immediately use SIA data in the areas of low coverage to rapidly plan and execute vaccination sessions as needed.
- Share SIA results and the current status of the RI programme with local government officials and community leaders.

7 Surveillance

Before SIA
- Train health workers on use of **standard case definitions** of vaccine-preventable diseases (VPDs) and reporting standards.
- **Develop and pre-test materials with visuals of VPDs**, to increase recognition of suspected measles and rubella by HCWs.
- Ask the village leader to help inform the community on recognition and reporting of VPD.
- Utilize social mobilization and family visits to inform the community on how to recognize and report VPDs.

During SIA
- Systematically include in social mobilization to communities information on how to recognize measles and rubella and what they should do if they see cases of fever plus rash.

After SIA
- Use high visibility of SIA to obtain involvement of other government departments and community leaders in reporting suspected VPDs.

The bibliography contains documents on strengthening routine immunization programmes that are available online, among other publications.

4. High-quality SIAs and SIA readiness assessment

4.1 Primary objective of M/MR SIA: reaching the unreached

The primary purpose of measles and/or measles–rubella SIAs is to attain high levels of population immunity by reaching and protecting children unreached by routine immunization services and children who failed to develop immunity after their first dose of measles vaccine. In order to achieve the primary objective of M/MR SIAs, SIAs need to be of very high quality and achieve at least 95% national coverage as determined by a coverage survey.

Experience has shown that late planning and preparation are most often the underlying cause of poor-quality SIAs and that comprehensive and timely preparation for SIAs is a fundamental requirement for achieving high coverage.

4.2 Assessing SIA readiness

To assess and improve preparedness of SIAs, checklists for the district level have been used in many countries, and guidelines for their content and use have been prepared by WHO headquarters[11] and two WHO regional offices.[12,13] While these checklists are

11 WHO (2007). Aide mémoire to ensure the delivery and safety of mass immunization campaigns with injectable vaccines. Geneva: World Health Organization (http://vaccine-safety-training.org/tl_files/vs/pdf/campaigns.pdf, accessed 15 June 2016).

12 WHO Regional Office for Africa (2010). Measles SIAs planning & implementation field guide. Brazzaville: WHO Regional Office for Africa (http://www.measlesrubellainitiative.org/wp-content/uploads/2013/06/WHO-AFRO-Measles-Fieldguide-April-2011.pdf, accessed 15 June 2016).

13 WHO Regional Office for Europe (2004). Field guide for planning and implementing supplemental immunization activities for measles and rubella. Copenhagen: World Health Organization Regional Office for Europe (http://www.euro.who.int/__data/assets/pdf_file/0005/79025/e82636.pdf?ua=1, accessed 15 June 2016).

comprehensive, their usefulness has been limited for a number of reasons. First, such checklists are used primarily by supervisors at the district level and their use is limited to the specific district reviewed. Data are not always aggregated and quantified at higher levels to identify common problems that need to be addressed at these higher levels. Second, the checklists provide only a snapshot of "preparedness" at a specific point in time; they do not monitor ongoing progress in preparation and are not action oriented. Hence, in general, these checklists have not been effective in determining gaps in the preparation of the SIA in a timely manner so that action can be taken to ensure high-quality SIAs.

4.2.1 The SIA Readiness Assessment Tool

To improve the quality of SIA preparation and monitor readiness to conduct a high-quality SIA, the SIA Readiness Assessment Tool was developed to periodically monitor SIA preparation at the national and district levels. This is essentially a management tool that addresses the limitations of the previously used checklists in the following ways.

- It provides a simple-to-use quantitative and periodic assessment of preparedness at both the national and subnational levels.
- It identifies specific strengths and weakness related to SIA preparations over time, identifies gaps and needed actions, and responsible persons at the local level to address those gaps.
- It facilitates reporting of preparedness data to higher-level authorities for timely interventions, including potential decisions to postpone or partially postpone (i.e. in some districts) the SIA until adequate readiness is achieved.

The SIA Readiness Assessment Tool stresses that at any given point in time prior to the SIA, certain critical activities should be completed in order to ensure the quality of the SIA is high.

The SIA Readiness Assessment Tool is aligned with the timeline of this field guide, which describes and provides guidance on the key activities that need to be completed at different time points prior to the SIA. Details of how to use the tool are provided in section 11.3 and Annex 2.

II.
15 to 12 months before SIA: Planning

15 to 12 months prior to the SIA you should do the following activities at national level

Complete situational analysis:

- ☐ Determine the best time and type of SIA to conduct, as well as the target age group.
- ☐ Identify the hard-to-reach populations and decide the strategies for the SIA.
- ☐ Review lessons learned from previous SIAs.

Undertake national level macroplanning:

- ☐ Prepare plan of action and budget estimate.
- ☐ Secure high-level commitment.
- ☐ Revise cMYP or other national health planning documents to include SIA.
- ☐ Plan organizational structure for coordination of SIA, establish national coordinating committee (NCC) and appoint a national coordinator.

5. Key decisions and preliminary planning activities

SIAs aim to immunize large populations over a short period of time, which is often beyond the capacity of existing infrastructure. Proper and specific planning and very careful supervision and monitoring are essential for the success of SIAs. To enable effective planning a number of preliminary activities must be undertaken. The decision to conduct an SIA should be incorporated into an approved national comprehensive multi-year plan (cMYP) (or Multi-year National Measles/Rubella Elimination Plan) and included in the annual immunization programme workplan.

5.1 Lessons learned from previous SIAs

Preliminary planning activities should include a critical review of lessons learned from past SIAs. This review is usually conducted by the national coordinating committee (NCC) and should cover critical activities in a systematic way. For example, the areas evaluated could follow the main headings of the SIA Readiness Assessment Tool: a) planning, coordination and financing; b) monitoring and supervision; c) vaccine, cold chain and logistics; and d) advocacy, social mobilization and communication. All identified issues/challenges that affected the final results should be specified in detail and matched by plans to resolve them. Annex 3 provides examples of common challenges that contribute to low-quality SIAs and suggestions to address them.

5.2 Country situation analysis and rationale

An SIA should be considered if a country has not reached and maintained ≥ 95% coverage with two doses of MCV. In order to conduct a country situational analysis, the following information should be gathered and analysed in order to assess population immunity.

1. **Data on current and historical disease incidence.** This includes the collection and analysis of age-specific disease incidence, vaccination status of cases by age group and the number of cases by place and time. Patterns of disease at different times, in different places and among different populations should also be identified.

2. **Data on vaccination coverage.** Analysis of vaccination coverage data should include routine immunization coverage data (administrative and by survey, as available) by year and geographic region, and previous SIA coverage (administrative and by survey, as available) by areas and age groups covered. It can also include additional estimates of population protection (e.g. from recent serosurveys or outbreak investigations).

3. **Additional data sources.** This includes analysis of reports or documents such as surveillance reviews, EPI reviews, the cMYP, annual immunization plan, new vaccine post-introduction evaluations (PIEs), WHO/UNICEF Estimates of National Immunization Coverage (WUENIC) and coverage surveys such as Demographic and Health Surveys (DHS) or Multiple Indicator Cluster Survey (MICS).

Information gathered should provide a comprehensive overview and should be organized in a concise and easy to read format (for an example of a template see http://www.wpro.who.int/immunization/documents/measles_regional_country_profile/en/). The analysis of this information provides the rationale for the SIA.

5.2.1 Determining the interval between SIAs

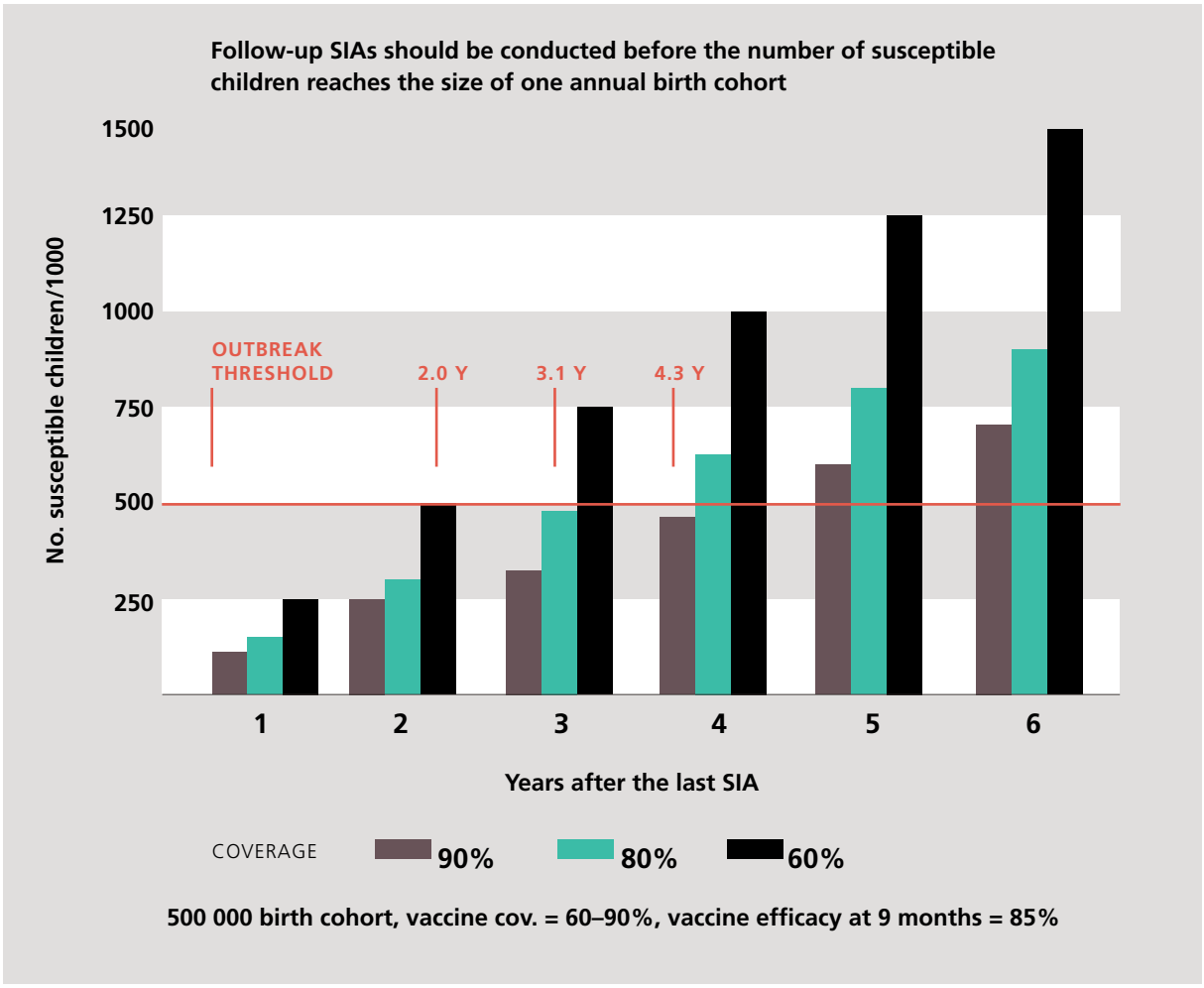
Since vaccines are not 100% effective, and universal coverage is rarely achieved, and as new birth cohorts become eligible for vaccination, susceptible infants and children will accumulate over time. Accumulation of susceptible individuals should be estimated by evaluating both routine coverage data by birth cohort and age-specific coverage in previous SIAs, to inform decisions regarding the interval between SIAs.

When determining the interval between SIAs with measles-containing vaccines, countries are recommended to monitor the accumulation of susceptible preschool children and conduct an SIA when the number approaches the size of **one birth cohort**. This takes approximately 2 to 5 years to occur, with this interval being shorter in settings with low routine vaccination coverage.

Because coverage data are often unreliable, programme managers should use the best quality data available, such as data from WUENIC, to determine the minimum interval between SIAs so as to prevent outbreaks.

Fig. 5.1 demonstrates how the optimal interval between follow-up SIAs increases with increasing routine MCV1 coverage. The figure indicates the relationship between routine immunization coverage in the years following the last SIA and the year in which the number of susceptibles reaches the size of one annual birth cohort (500 000 children in this example). In the graph, if the routine vaccination coverage is 90% per year, assuming conservatively a vaccine efficacy of 85% (for children vaccinated at age 9 months), the number of susceptibles will reach the size of one birth cohort in 4.3 years. Therefore, in this example, an SIA will be needed every four years. In contrast, in the case where routine coverage is 60%, the accumulation of susceptibles is much faster and will reach the size of one birth cohort in just two years. In this case, follow-up SIAs should be conducted every two years. In settings where the subnational coverage data are available, this analysis can be carried out at district/regional level and the interval of the SIA should be based on the worst-performing districts/regions.

FIG. 5.1
Timing of follow-up SIAs based on accumulation of susceptible children over time



5.2.2 Determining the geographical scope of the SIA

National versus subnational SIAs

In general, implementing a high-quality nationwide SIA is the optimal approach to achieve the greatest impact on disease burden. However, in some settings, subnational SIAs targeting geographic areas may be more programmatically feasible and can be considered. These settings include the following.

- Settings where, due to limited programme capacity, achieving high-quality SIA is a challenge: subnational SIAs, targeting geographical high-risk areas that can achieve high coverage and interrupt disease transmission may be an option.
- Settings where there is substantial heterogeneity in the immunity profiles within a country: specific subnational SIAs targeting high-risk or accumulating susceptible populations may be a more economical option.
- Settings where small, localized outbreaks are occurring: implementing smaller, area-specific SIAs can be an effective option as these SIAs can be prepared and executed in a shorter time with fewer resources than nationwide SIAs (see WHO guidelines *Response to measles outbreaks in measles mortality reduction settings*[14]).

Rolling SIAs

Conducting a "rolling" or phased SIA may be needed in countries with very large territories, sizeable populations, and/or with decentralized governments, or limited health worker capacity. When phasing SIAs, the aim should be to have the smallest number of phases possible, to cover the whole country within the shortest possible time, and to ensure the shortest time between the phases. For example, a country may decide to do SIAs targeting all children in the eligible age group in half of the total districts in the country during the first SIA phase, and the other half one month later. All phases should be completed within less than 12 months. However, for very large countries this may not be possible, and the phases can only be completed over more than one year.

5.2.3 Determining type of measles and rubella SIAs

SIAs may be a one-time occurrence or a periodic effort. They can take the following forms.

14 WHO (2009). Response to measles outbreaks in measles mortality reduction settings. Geneva: World Health Organization (http://apps.who.int/iris/bitstream/10665/70047/1/WHO_IVB_09.03_eng.pdf, accessed 15 June 2016).

- **Catch-up SIAs:** one-time effort, usually nationwide, to vaccinate the main target population responsible for disease transmission in order to rapidly reduce the number of susceptible individuals (non-vaccinated and primary vaccination failures). M and MR catch-up SIAs should include at a minimum children aged 9 months to 14 years.

- **Follow-up SIAs:** periodic, usually nationwide, conducted every two to five years, targeting children born after the last SIA to reach the unreached and those who did not gain immunity after the first vaccination. Follow-up SIAs should include at a minimum children aged 9 to 59 months.

- **Speed-up SIAs for rubella vaccine introduction:** one-time effort to vaccinate children, adolescents and adults in order to reduce the time required to stop the transmission of rubella virus and eliminate rubella and CRS.

5.2.4 Determining the target age group

Susceptible age groups targeted for measles and rubella SIAs should be determined based on the assessment of data on national vaccination coverage together with historical use of MCV and RCV, surveillance, analysis of incidence by birth year, available seroprevalence surveys, population immunity profiles and WHO recommendations.

Targeted age groups can be described using lower and upper age limits.

- **Lower age limits:** 9 months or older for measles SIAs. In countries with significant incidence among children less than 9 months of age, or in outbreak situations, the SIA should include infants as young as 6 months of age, despite the expected lower vaccine effectiveness. This decision should be made on a case-by-case basis and be based on epidemiological information (for more details see http://www.who.int/wer/2015/wer9050.pdf?ua=1[15]).

- **Upper age limits:** should be determined for measles and rubella SIAs based on disease epidemiology (e.g. age distribution of measles/rubella cases) and the estimated susceptibility by age, using whichever is the higher target age. For rubella vaccine introduction, the decision regarding upper age limits for a rubella catch-up or speed-up SIA may sometimes require a serological analysis of rubella immunity in thepopulation by age group, and/or an evaluation of the local epidemiology of rubella and CRS, age-specific fertility rates, and information about the age of mothers of CRS-infected infants. It is important to conduct a

15 WHO (2015). Meeting of the Strategic Advisory Group of Experts on immunization, October 2015 – conclusions and recommendations. Weekly Epidemiological Record.90:681-700.

high-quality SIA to close the rubella immunity gap at the time of rubella vaccine introduction. SIAs targeting gaps in rubella (or measles) immunity in adults should include both males and females.

Size of the targeted group should be taken from official sources (e.g. last census). In case of multiple sources, the larger figure should be used and the source clearly specified.

During SIAs**, all eligible children in the target group should be vaccinated**, regardless of their vaccination status, date of last vaccination or history of measles and rubella disease. A recent prior vaccination does not increase the risk of adverse events related to measles or measles–rubella vaccine.

5.2.5 Duration, timing and place of SIAs

SIAs should take place within a brief time frame (4–7 days to one month) based on available human resources. It is recommended that week-long SIAs include the weekend to allow working parents and caregivers to bring their children for vaccination. If school-based vaccination will be used during the SIA, the vaccination should first happen at schools and then move into the community to allow those missed at school to be reached. When deciding on the best time to schedule an SIA, the following factors should be considered.

- Disease epidemiology: for disease with seasonal peaks in transmission, the best time to schedule SIAs is during seasons of low transmission. This will provide an opportunity to interrupt existing chains of transmission.
- School year: implementing SIAs during the school year will facilitate both social mobilization and school/preschool vaccination activities.
- Community activities and celebrations: implementation of SIAs that overlap with local events such as religious festivals, key agricultural activities or political activities should be avoided.
- Weather conditions/climate: rainy seasons or winters with heavy snowfalls may affect accessibility of populations during SIAs.
- Availability of resources, including vaccine: budget cycles and vaccine-ordering timelines must be considered.
- Convenience for the local population: in collaboration with local community groups, dates, times and locations when the target population and their

caregivers are accessible need to be identified and taken into account (e.g. hold sessions either before or after the caregivers return from work and at convenient sites for specific target populations and age groups such as schools, universities, military facilities, marketplaces, factories, transit and border crossings, trade routes, internally displaced person (IDP) camps, food distribution points, etc.).

Information from intra-SIA supervision and monitoring may require adjustments to the duration, timing, and/or SIA strategies used in order to reach the target population. See Chapter 13 for information on intra-SIA monitoring and Chapter 14 for post-SIA activities.

Efforts should be made to avoid disruptions to routine immunization activities during the SIA, especially if the campaign lasts more than a week. **Whenever possible, routine immunization services should continue during the SIA**.

5.2.6 Determining special populations and high-risk groups

Special populations are populations that are missed by routine vaccination services and include the hard-to-reach and underserved among others. **The primary goal of SIAs is to find and immunize populations missed by routine vaccination services.** Special populations include:

- urban poor and migrant populations;
- remote, difficult to reach (e.g. inhabiting terrain difficult to access, such as mountainous) and nomadic populations;
- persons living in areas of civil conflict or insecurity;
- populations resisting vaccination and anti-vaccine groups (e.g. affluent communities and religious and fundamentalist groups);
- undocumented urban settlers/squatters;
- migrant workers;
- populations in areas near international and internal borders;
- refugees, internally displaced persons and other transient populations;
- politically and/or socially marginalized populations or minority groups;
- populations known to have a disproportionate share of the disease burden.

These populations are likely to miss vaccinations even in the presence of robust routine immunization programmes. Unfortunately, these populations are likely to be missed with SIAs as well, unless special considerations are made and effective strategies are developed to reach them.

In addition, high-risk groups such as persons with known HIV infection and health workers need to be identified and appropriate strategies for their vaccination agreed upon (see below).

Main approaches to reaching the underserved and hard-to-reach populations

1. Identify the underserved and hard-to-reach populations. Identifying and reaching underserved and hard-to-reach populations require special planning and the use of informal channels and collaboration with community leaders (traditional healers, religious and opinion leaders, others), local volunteers, and NGOs active in the community. An equity assessment is a helpful approach and should be used to identify the communities most affected by inequities. The equity assessment expands the traditional analysis of immunization administrative coverage and draws on wider sources of information such as immunization

coverage surveys, DHS, MICS, EPI reviews, RCM data including reasons for non-vaccination, analysis from previous SIAs, knowledge, attitude, practice research where available and poverty reports. For example, review of DHS, EPI coverage surveys and MICS data, where available, shows that children living in the poorest households (including urban slums), rural remote areas as well as those with mothers with minimal education level have the lowest immunization coverage. The output of the equity assessment is a list of categories of community characteristics that are associated with inequities in immunization, and barriers that affect those communities' ability to access and use immunization services in order to define the best strategies to reach them during the SIA.

The equity assessment should be started through discussion and team work at the national level. However, equity assessments must be included at the district level during the microplanning process using more detailed local knowledge. At the health centre-level underserved groups need to be identified, located and maps showing their location within each catchment area prepared. **Local ethnic and religious leaders should be involved to help understand and overcome barriers (cultural, educational, logistical, political, language, or religious) that prevent caregivers from bringing their children for immunization (e.g. adjustment of time for daily immunization activities) and to help in planning and social mobilization.** For an example of equity assessment see the experience in Cambodia at http://heapol.oxfordjournals.org/content/28/5/526.full.pdf+html.[16]

Linkage with other programmes such as malaria control, dengue control and similar other community initiatives can also help identify underserved populations.

2. Decide on the most appropriate vaccination strategy to reach the underserved and hard-to-reach populations. When looking at the most appropriate vaccination strategies, considerations must be made in cases where there is a need to vaccinate different age groups than those agreed upon in some of the identified target age groups for the SIA.

3. Include efforts/strategies to reach these groups in district microplans to ensure resources are available for social mobilization, cold chain and vaccine logistics, transportation (vehicles and fuel) and security for specific situations. For this, detailed maps need to be developed to plan the additional logistics and social mobilization needed. These maps should be subsequently used for the routine immunization programme. (See Chapter 7 for details on microplanning.)

16 Soeung SC, et al. (2013). From reaching every district to reaching every community: analysis and response to the challenge of equity in immunization in Cambodia. Health Policy and Planning. 28(5):526-535.

4. Enhance supervision: one to two weeks before SIAs, supervisors should visit the most underserved areas to verify that caregivers are aware of the upcoming SIA and understand the importance of routine immunizations. During the SIA, the supervisors should actively and frequently oversee preparations and efforts aimed at reaching these underserved populations.

5. Include robust, intensive and individualized social mobilization activities that draw on local knowledge and community participation.

Although intensified and targeted efforts are needed to reach underserved or hard-to-reach populations during SIAs, care must be taken to avoid stigmatizing or antagonizing them.

Considerations for reaching some of the underserved and hard-to-reach populations

a) Vaccination of urban poor and migrant populations

Accelerated urban migration of the rural poor affects measles epidemiology in concentrated urban centres. Young migrant workers raised in small rural places have often been less exposed to both vaccination and wild measles infection than otherwise similar individuals born and raised in urban environments. In addition, the lack of developed community structures for these migrant populations and their frequent distrust of outsiders and government institutions increase the difficulty to mobilize these groups to come to the traditional fixed vaccination posts used in the SIA.

To achieve high vaccination coverage in these populations, an intensified house-to-house canvassing (or in certain settings house-to-house vaccination strategy) may be necessary (see section 5.2.7). Gaining the support of religious and other community leaders, and of schools and day care centres for the social mobilization and education of the target population will be critical for the success of SIAs and will help spread the message about the importance of routine immunization in these areas.

b) Vaccination of remote, difficult-to-reach and nomadic populations

Reaching areas with difficult access (e.g. areas inaccessible during the rainy season) often requires earlier start/prolonged travel by teams trained and equipped to cope with difficult conditions. Reaching these areas can be costly and therefore trips should be timely and precisely planned and adequately budgeted.

When accessing such remote areas, it is efficient to deliver all routine preventive health services at the same time: rotating public health teams that deliver services

(including vaccination) at least once every three months may be a useful routine vaccination strategy that complements the SIA.

To ensure reaching nomadic populations, nomadic community members should be included and trained as team members.

c) Vaccination in areas of civil conflict or insecurity

High measles vaccination coverage in countries with civil conflict or insecurity is difficult to achieve. In these situations negotiation of tranquillity agreements (for example, the Days of Tranquillity used in Latin America, and the Middle East for polio eradication efforts) has sometimes helped the implementation of an SIA. Otherwise, delaying the nationwide SIA, while implementing interim outbreak control strategies, may be the only approach available.

If the population and local leaders in areas experiencing conflict or localized insecurity are sufficiently concerned by the disease, SIA implementation can be negotiated with the local leaders and/or other authorities. In situations of high insecurity, non-local teams and supervisors can become targets of aggression. Therefore, it is advisable that implementation of all or most local activities, including vaccination and supervision, be carried out by local personnel who are properly trained. For more information on securing support and operational strategies to reach populations in security-compromised areas, see the Polio Eradication Programme's experience and lessons learned in Annex 4.

d) Populations resisting vaccination, anti-vaccine groups

There are two categories of resistance/opposition to vaccination: individual resisters, and block refusals. The strategies to overcome them are different.

Individual vaccine resisters may be difficult to identify prior to the SIA. When identified, they usually need "one-on-one" interaction with SIA supervisors, who should try to understand the reasons for refusal (fear of adverse event, distrust of the effectiveness of vaccination, etc.) and provide appropriate information.

For communities that resist vaccination, it is important to understand the underlying reason(s) for their resistance. Vaccine hesitancy (delay in acceptance or refusal of vaccines despite availability of vaccination services) may be due to lack of confidence in vaccines, mistrust of the health services or complacency. The appropriate way to address concerns will depend on the nature of the concern and the strength of beliefs. Longer-term educational approaches to change misconceptions about vaccination are often needed. These may include: community and school-based education, regular open dialogue and exchanges of relevant information with religious or community leaders, patient/caregiver reminders, incentives, promotion of home-based records and educational programmes for health care providers. In addition, visits to

schools to improve students' knowledge about both the vaccination schedule and the benefits of vaccination should be encouraged. These efforts should be undertaken well in advance of the SIA, depending on the cause and setting.

For detailed information and advice on how to address vaccine hesitancy and its determinants, please refer to a dedicated WHO webpage: http://www.who.int/immunization/programmes_systems/vaccine_hesitancy/en/. Core resources found there include a web-only report of the WHO SAGE Vaccine Hesitancy Working Group, a special issue in *Vaccine*[17] on vaccine hesitancy, a systematic web-only review on strategies to address vaccine hesitancy[18] and tools such as the *Guide to Tailoring Immunization Programmes (TIP)*[19].

Considerations for reaching high-risk groups

a) Vaccination of persons with known HIV infection

Given the high risk of severe course of measles disease in persons with HIV infection and the limited side-effects to measles vaccine found in these persons, measles vaccination should be routinely given to potentially susceptible, asymptomatic HIV-positive children and adults who do not have evidence of severe immunosupression. Testing asymptomatic persons for HIV infection is not necessary before administering measles or other measles-containing vaccine. Vaccination may be considered for those with symptomatic HIV infection if they are not severely immunosuppressed. The available evidence supports the use of MCV before 9 months of age, and WHO recommends that infants from 6 months of age known to be HIV positive receive a dose of MCV[20]. HIV-infected children receiving highly-active antiretroviral therapy (HAART) are at increased risk of measles because of poor antibody responses following vaccination prior to initiation of HAART. While HAART does not restore measles immunity from previously-received vaccine doses, it enables higher and more prolonged antibody responses following revaccination. It is recommended that an additional dose of MCV be administered to HIV-infected children receiving HAART following immune reconstitution. More detail on WHO recommendations for revaccination of HIV-infected children on HAART can be found at http://www.who.int/wer/2015/wer9050.pdf.[21]

17 WHO (2015). WHO recommendations regarding vaccine hesitancy. Vaccine. 33(34):4155-4218 (http://www.sciencedirect.com/science/journal/0264410X/33/34, accessed 15 June 2016).

18 http://www.who.int/immunization/sage/meetings/2014/october/3_SAGE_WG_Strategies_addressing_vaccine_hesitancy_2014.pdf?ua=1.

19 WHO Regional Office for Europe (2013). The Guide to Talioring Immunization Programmes (TIP). Copenhagen: WHO Regional Office for Europe (http://www.euro.who.int/__data/assets/pdf_file/0003/187347/The-Guide-to-Tailoring-Immunization-Programmes-TIP.pdf, accessed 15 June 2016).

20 WHO (2009). Measles vaccines. WHO Position Paper. Weekly Epidemiological Record. 84(35):349–360 (http://www.who.int/wer/2009/wer8435.pdf, accessed 30 May 2016).

21 WHO (2015). Meeting of the Strategic Advisory Group of Experts on immunization, October 2015 – conclusions and recommendations. Weekly Epidemiological Record. 90:681–700.

b) Vaccination of health care workers

Susceptible HCWs who work in patient care are at risk of becoming infected and transmitting the disease to patients. Numerous measles outbreaks occurring in health institutions, affecting both health workers and patients highlights the importance of vaccinating HCWs. For the list of the vaccines recommended for health workers, please refer to the WHO Summary Table 4 available online: http://www.who.int/immunization/policy/Immunization_routine_table4.pdf?ua=1.[22]

Where possible, vaccination of HCWs involved in patient care should be part of SIA planning and included in the budget. The best opportunity for vaccination of HCWs is during the weeks **preceding** the formal launch of the SIA and it is usually performed at their place of work. Ensuring that health care workers are already protected during the SIA will decrease disease transmission, as well as decrease the workload.

Considerations for reaching wider age groups

When the SIA is targeting wider age groups, special strategies for reaching older age groups need to be applied and key decisions need to be made as described below.

a) Vaccination of adolescents and adults

In countries with a history of low vaccination coverage, and in remote, isolated communities, adolescents and some adults may be susceptible to measles. For vaccines not previously part of the routine schedule, such as rubella vaccine, catch-up/speed-up immunization of older adolescents and young adults (besides vaccination of children) will be needed to close the immunity gap.

When including adolescents and adults in SIAs, vaccination strategies must be adapted accordingly. These should include vaccination at high schools/colleges/universities, markets, the work-place and other settings where these target age groups are likely to access the services. In all such cases, a line list should be prepared of all relevant institutions where the target groups study or work, so they can be visited prior to the SIA in order to make preparations for vaccination.

b) Vaccination of pregnant women

Decisions on whether to include pregnant women in SIAs will depend on the specific antigen and the goals of the particular SIA. Based on available evidence, immunization with inactivated/conjugated bacterial or toxoid vaccines during pregnancy is not expected to be associated with any increased risk to the fetus.

22 WHO (2015). Table 4: Summary of WHO Position Papers – Immunization of health care workers. Geneva: World Health Organization.

On theoretic grounds, live viral vaccines, such as measles vaccine alone or in combination with other vaccines should not be administered to pregnant women. Inadvertent administration of M, MR, or MMR vaccines is not considered an indication for termination of the pregnancy, as there is no evidence of harm for the fetus. For the Global Advisory Committee on Vaccine Safety (GACVS) review of evidence of safety of immunization during pregnancy, see *Safety of immunization during pregnancy.* [23]

5.2.7 Determining the appropriate SIA strategy to achieve high vaccination coverage

The strategies used in an SIA need to reach every individual in the selected target age range. SIA planners should categorize the population to be vaccinated according to the appropriate SIA strategy:

- fixed or mobile posts alone
- fixed or mobile posts with house-to-house canvassing
- house-to-house vaccination.

During the initial SIA planning an approximation of the distribution of strategies (e.g. % of target population to be reached by each strategy) should be made at the national level (see Chapter 6 on macroplanning). Determining the type of vaccination strategy to be used in each area/community has a direct impact on the number of teams and volunteers to be deployed, on the duration and the cost of the SIA. This distribution can be modified during the microplanning stage (Chapter 7), in which geographic areas of responsibility for each team and for each day of the SIA will be clearly defined. Generally, the composition of vaccination teams varies among settings and depends on expected number of children to be vaccinated per day in a given geographic location.

Target population assessment should include identifying and defining the underserved and hard-to-reach populations as described in section 5.2.6. The choice of vaccination strategies for each population group is then based on available information on each group such as the location and the risk of resistance or indifference to vaccination (see Table 5.1). Strategies that focus on community engagement through the use of village health committees, village/neighbourhood chiefs and other local institutions and authorities, should always be considered. During the SIA, the strategies chosen for each community should be evaluated daily through supervision and monitoring to determine if they should be maintained or modified.

23 Global Advisory Committee on Vaccine Safety (2014). Safety of immunization in pregnancy – A review of the evidence. Geneva: World Health Organization (http://www.who.int/vaccine_safety/publications/safety_pregnancy_nov2014.pdf, accessed 15 June 2016).

TABLE 5.1
Considerations for determining SIA strategy

SIA STRATEGY	COMMUNITIES FOR WHICH THE STRATEGY WILL BE MOST EFFECTIVE	IMPACT ON SIA BUDGET AND PERSONNEL REQUIREMENTS
Fixed post (permanent and/or temporary)	Communities that accept vaccination, can easily access the vaccination post, show concern about the disease, and have shown willingness to seek vaccination at a fixed post in the past.	**Team members needed:** at least 1 vaccinator + at least 1 trained volunteer + at least 1 announcer. This strategy may require fewer personnel and is easiest to implement.
Mobile post	Communities accepting vaccination that are located in villages and/or rural settlements which are too distant or too small in size to have a health facility/community health post.	**Team members needed:** at least 1 vaccinator + at least 1 trained volunteer + at least 1 announcer. The composition of the vaccination team depends on expected number of children to be vaccinated in one day in a given geographic location. Transportation to rural and difficult-to-reach areas and travel expenses may increase the cost.
Fixed or mobile post with house-to-house canvassing	Communities that accept vaccination but for which the concern about the disease and the willingness to seek vaccination at the fixed post are unknown or may vary.	**Team members needed:** at least 1 vaccinator + at least 1 trained volunteer + at least 1 trained canvasser. This strategy uses fixed posts but it requires the addition of at least one trained canvasser per team, which may increase the cost of supervision and will increase the overall cost.
House-to-house vaccination	Communities that are not concerned about the disease, do not easily accept vaccination, show undue concern about the safety of vaccination, reject anything they consider "government interference" including vaccination, or have shown through intra- or post-SIA RCM that they are not willing to actively seek vaccination. In general, this strategy is used as a mop-up strategy if SIA monitoring data show that high coverage in the above communities could not be achieved with other strategies during the SIA.	**Team members needed:** 1 vaccinator + 1 trained volunteer and one community leader. This strategy provides the best SIA coverage, but requires considerably more time and resources: more teams may be needed to cover the designated area (increasing costs). Ensuring safe vaccination practices may increase the costs as well.

Fixed and mobile vaccination posts

Fixed and mobile vaccination posts are effective SIA strategies in settings where community demand for measles vaccination is high, where community has no significant concerns about the safety or effectiveness of the vaccine, there is awareness about the disease, and when social mobilization and interpersonal communication are fully implemented.

Ideally, each vaccination team should include two health care workers (one for reconstitution, one for vaccination), and one or two additional community-based volunteers as announcers who engage the community to come to the vaccination posts. To maximize their effectiveness, announcers should begin their activities a few days prior to the start of the SIA.

a) Permanent vaccination posts

These posts are located at permanent health facilities and community health posts. Immunization services are provided at the health facilities the whole day for the duration of the SIA. These sites also serve as depots for storage and distribution of vaccine to temporary vaccination sites and mobile teams. Permanent vaccination posts are particularly useful in urban areas and in rural areas with concentrated populations. During the initial days of an SIA when high demand for vaccination is expected, two separate vaccination teams are normally available at these posts. When demand decreases, one of the vaccination teams can be dispatched to a temporary post.

b) Temporary vaccination posts

These posts are identified in advance and may be set up at schools, churches, mosques, local administrators' offices, bus depots, roadblocks, market areas, border crossing points, village squares, etc. Posts used as outreach clinics can also be used to establish temporary vaccination posts. Villages and settlements with small populations may also be served through such temporary sites. At these posts immunization is provided for the time estimated to complete the vaccination of the targeted population, which may be less than the full duration of the SIA. Usually, one vaccination team is assigned to each post. For SIA planning purposes, school vaccination teams, health care workers, vaccination teams, and teams for vaccination of special populations are considered for staffing temporary posts.

c) Mobile vaccination posts

Mobile vaccination posts are required for villages with very small and/or dispersed populations and rural settlements which are too remote or too small in size to have a health facility or community health post. Each mobile vaccination team is composed of two people who work at the post (one vaccinator, one trained volunteer) and an

additional volunteer acting as an announcer (ideally equipped with a loudspeaker) who announces the vaccination activities to the community. The mobile teams set up the mobile vaccination post for the time needed to complete the task (usually less than one day) before moving on to the next location. Mobile teams usually have their own independent transportation (motorcycle, 4-wheel vehicle, boat, etc.), the type of which depends on the access and distance required to reach each location.

Fixed or mobile posts with house-to-house canvassing

House-to-house canvassing as a social mobilization element added to a fixed or mobile post vaccination strategy is only recommended in areas where the communities may be hesitant about vaccination or need additional motivation in order to seek vaccination. It relies on vaccination teams operating at permanent, temporary or mobile vaccination posts. A trained volunteer/community mobilizer referred to as "canvasser" is added to the vaccination team who goes house-to-house to identify all eligible children in each household in selected neighbourhoods and to encourage the population to come to the vaccination post. Canvassers are typically used to work in specific high-risk neighbourhoods within the community. The aim of the canvassing strategy is to create an opportunity for interactive and interpersonal communication between an informed party (trained canvasser) and members of the household (parents, caregivers). The strategy also provides household members with factual information about vaccination and the opportunity to ask questions and resolve concerns that other channels have not addressed. The canvassers can be members of the neighbourhood or village health committee, village/neighbourhood chiefs, health workers or other community volunteers. If well chosen, trained and supervised, they can help improve not only SIA coverage but also the community's overall demand for vaccination. See Annex 5a for a detailed description of the house-to-house canvassing strategy.

House-to-house vaccination

The house-to-house vaccination strategy is an approach to consider in areas where demand for vaccination has decreased and in which there is prior evidence of refusal of vaccination. This strategy has been extensively used in countries in the Region of the Americas and it is usually used as a mop-up strategy for areas with communities refusing or hesitant about vaccination (as determined through programmatic information, data from intra-SIA RCM or post-SIA independent RCM). In this strategy, the vaccination teams (and a prominent member of the community or community leader where available) visit all individual households in a designated neighbourhood or area and vaccinate eligible children. House-to-house vaccination creates an opportunity for informative dialogue between the vaccination team and the head of the household. When house-to-house vaccination is not logistically possible, then

house-to-house canvassing can be used instead. For such populations, a long-term strategy to increase community involvement in vaccination activities will also be needed, and should be included in plans for post-SIA activities.

House-to-house vaccination involves intensive work, and because teams must move from house-to-house, they can only visit a limited number of houses per day. The vaccination team must be especially well trained in order to avoid immunization-related errors (earlier called programmatic errors). See Annex 5b for a detailed description of the house-to-house vaccination strategy.

Vaccination at schools, preschools and day care centres

This strategy is advised in most communities. Depending on the age range targeted by the SIA, preschool and/or school vaccination should be implemented. Mapping of the preschools/schools and day care centres in the community should be complete and up to date, and should include the approximate size of the student population, and contacts with school managers to obtain their full collaboration.

The SIA coordinator should fully collaborate with educational authorities to undertake the following activities.

- Develop and maintain a complete list of all educational institutions (public, private, religious) in each area of responsibility – for the SIA itself, for facilitating the post-SIA push to strengthen routine vaccination, or for the introduction of new vaccines in the routine schedules that will be delivered to school-aged children such as human papillomavirus (HPV) or booster doses of diphtheria–tetanus vaccine (with reduced diphtheria toxoid content, Td).

- Prepare and implement school and preschool vaccination of all age-appropriate students.

- Build strategies to involve school and preschool children (and their parents/caregivers) as active participants in social mobilization for the SIA and RI.

a) Role of school personnel

A person from the school should be enrolled to provide space/table/chairs, and help control the flow of students. Teachers should keep order, arrange children for vaccination, calm students to prevent fear of injection in other children and assist the team in the event of an emergency. See an example of a school-based strategy in Annex 5c.

Given schools' potential for population-based delivery of vaccinations, for vaccination status verification and for social mobilization, all efforts should be made to improve

the sustainability of this partnership. For this purpose, it is important to assess the readiness of the school and health systems to support vaccination efforts. Information about the school readiness assessment can be found at: http://www.who.int/immunization/hpv/plan/school_readiness_assessment_tool_who_2013.pdf.[24]

See Chapter 9 and Annex 5c for more information on the advocacy and social mobilization elements of this school-based strategy.

5.2.8 Vaccine options – recommended measles and rubella vaccines

Measles and rubella vaccines are available as monovalent measles and monovalent rubella, or in combination as measles–rubella (MR), measles–mumps–rubella (MMR), and measles–mumps–rubella–varicella (MMRV) vaccine. When choosing vaccines, countries should consider objectives and targets for disease control, national priorities, vaccine costs and other real or potential impacts to the long-term sustainability of the immunization programme. More information on recommended measles and rubella vaccines is provided in Annex 1.

5.2.9 Integration with other health interventions

SIAs provide an excellent platform to deliver additional public health and nutrition interventions, including vitamin A supplementation, deworming medicines and additional vaccinations (Table 5.2). Although integration of multiple interventions may raise additional logistical challenges, studies have concluded that integrated health SIAs are cost-effective and save more lives[25].

The decision to integrate other health interventions in a measles/measles–rubella SIA should be made on a case-by-case basis and will mainly depend on whether the added activities contribute to the SIA's main objective of reaching the unvaccinated, and do so at an affordable cost.

24 WHO (2013). School Vaccination Readiness Assessment Tool. Geneva: World Health Organization.

25 Verguet S, et al. (2013). Supplementary immunization activities (SIAs) in South Africa: comprehensive economic evaluation of an integrated child health delivery platform. Global Health Action. 6:20056 (http://www.globalhealthaction.net/index.php/gha/article/view/20056, accessed on 15 June 2016).

TABLE 5.2
Examples of interventions that may be integrated in an SIA

INTERVENTIONS THAT MAY BE INTEGRATED IN AN SIA	
Oral and inactivated polio vaccines	**Vitamin A supplementation**
OPV: easily administered at the fixed or mobile vaccination posts and during house-to-house visits by properly-trained volunteers. **IPV:** should be administered only by qualified and well trained HCWs.	Vitamin A deficiency is a major contributor to delayed recovery and to the high rate of post-measles complications. Vitamin A supplementation is a useful, synergistic addition to SIAs. Vitamin A is easily administered by trained volunteers.
Anti-helminthic treatment	**Other vaccines**
Worm infections can be treated with highly effective, safe (chewable) drugs at a very low cost per child. Anti-helminthic drugs are easily administered by trained volunteers.	Other injectable vaccines (e.g. HPV vaccination at schools) should be integrated **only after careful consideration**, as this requires an increase in logistical, training and financial (and often cold-chain needs) both at the periphery and at the central level.

Information about interventions that have successfully been integrated during vaccination campaigns is available at http://www.who.int/immunization/programmes_systems/interventions/en/. This information can be used to enable countries to make informed decisions about integrating other interventions with an SIA.

6. Undertake national-level macroplanning and estimate budget

Macroplanning is a process at the national level which outlines the activities and budget for the SIA. The specific objectives of macroplanning are listed as follows.

- Develop a macroplan consisting of:
  - objectives, targets and justification for the SIA based on the findings of the country situation analysis/key preliminary assessments and lessons learned (section 5.1);
  - description of other interventions to be potentially integrated with the SIA (section 5.2.9);
  - description of RI-strengthening activities (section 3.1);
  - realistic plan of action with specified timeline of activities (Annex 6);
  - realistic budget estimate with outlined available and needed funds as basis for resource mobilization (section 6.1 and Annex 6).
- Obtain political commitment from the government and policy-makers.
- Obtain commitment and support from key partners.
- Establish framework for the SIA (organization and coordination).

6.1 Estimating resource requirements

Financing for the SIA should take into account the budget cycles of the government, especially when the government funds need to be made available. When donor funds are needed, consideration must be given to the application deadlines and the processing time needed by donors to approve funding. Annual vaccine forecasting should include the required amounts of vaccine and injection equipment for both

routine and SIAs that are planned for that year. If the SIA is not included in annual forecasting either modification of the annual forecast is needed or a separate forecast for the SIA must be completed.

After the target population (age group, size) is confirmed, the ministry of health/ national immunization programme manager should develop a preliminary budget estimate for discussions with partners and donors to secure financial and political support. Ideally, this planning should start 15 to 12 months before the SIA.

The preliminary budget is a mixture of concrete data, estimates and approximations, and represents initial calculations of logistics and financial requirements for the SIA at the central level for the entire country ("top-down"). To avoid shortfalls the budget can be developed by programme components or critical activities using national budget and district data (a "crude microplan") to closely estimate peripheral needs (see Table 6.1). For countries with no tax/duty fee exemptions, the cost of materials/ equipment to be imported should include amounts for those tax/duty fees in the appropriate budget line.

Because of unpredictability of field conditions and the frequent need for rapid response to unpredicted circumstances, it is important to have a budget line for contingencies which would be allocated to districts according to specific circumstances. Depending on the country and the uncertainties within the country, this could be between 5 and 10% of total operational costs (costs of personnel, transportation and supervision), or the cost of an additional day of the campaign.

TABLE 6.1
Suggested budget outline based on programme components

PROGRAMME COMPONENT	ITEMS	COST
Planning and preparations	ICC meetings, meetings with district leaders (before, during and after SIA): Number of meeting days × number of participants + per diem amounts (as necessary). Meeting materials (standard set) + venue cost (if required) × number of meetings.	
Programme management and coordination	Meeting materials, venue cost (if required), standard office supplies: Number of meeting days × number of participants + per diem amounts (if travel is included).	
Vaccine and injection equipment, immunization session supplies	Vaccines, diluents, auto-disable (AD) syringes and needles, reconstitution syringes, safety boxes. AEFI kits. Indelible marker pens for finger marking, vaccination cards.	
Cold-chain equipment	Cold rooms, generators. Purchase/repair of freezers/refrigerators, thermometers and spares. Vaccine carriers, coolant-packs, cold boxes.	
Waste management	Pit construction (to include incentives for digging). Construction of incinerators. Cost of transport and burning per team × number of teams.	
Personnel/technical assistance	Incentives/per diem amounts per team × number of teams (estimate, based on campaign duration), and estimated value/cost of hiring national and international consultants for technical assistance.	
Training (to include necessary materials production and meetings)	Developing and printing SIA guide, training guides. Number of meeting days × number of participants + per diem amounts (if travel is included) + venue cost (if required). Meeting materials (standard set).	
Document production (materials for the vaccination post)	Printing of forms (tally sheets, summary sheets, logistic forms, SIA readiness, RCM, supervision checklists/ forms, AEFI forms, etc.). Pens, clipboards, folders, etc.	

PROGRAMME COMPONENT	ITEMS	COST
Transportation for implementation	Distribution cost for vaccine/supply and cold-chain hardware. Average cost of transportation per team × number of teams (to include fuel and maintenance).	
Transportation for monitoring and supervision	Average cost of supervisory and monitoring visits × number of visits (fuel and maintenance).	
Supervision, SIA readiness assessment, monitoring (including RCM)	Number of supervision/assessment days × number of supervisors + per diem amounts (as necessary). Number of monitoring days × number of monitors × incentives for monitors + per diem amounts (as necessary).	
Advocacy, social mobilization and communication	Meeting materials, venue cost (if required) × number of meetings. Developing/printing of leaflets/posters/street banners/ media spots. Developing Q&A brochures for health professionals. Public service announcements (newspapers, radio, TV). Opening ceremony costs.	
Mop-up activities	Estimated number of vaccination teams needed × average cost of team × estimated number of repeated sessions.	
Contingency funds	5–10% of operating costs (personnel, transportation, supervision).	
Total:		

Some of the SIA activities and equipment may be a part of the regular immunization programme and as such would not require additional budgetary funds. Tables A6.1 and A6.2 provided in Annex 6 include activities and items for budget planning at the national level.

Once support is secured, a more precise detailed budget should be prepared based on national, district and local-level planning. District planning follows a schedule of activities similar and complementary to national level planning but with greater operational detail (see Chapter 7). To assist countries with detailed vaccine forecasting and cold-chain requirements, WHO has developed a number of vaccine management and logistics support tools which are available online at: http://www.who.int/immunization/programmes_systems/supply_chain/resources/tools/en/index5.html.

6.2 Advocacy for securing high-level commitment and consensus

The ministry of health and/or national immunization programme manager should obtain a high-level commitment from national authorities and major partner agencies to participate in and support the SIA. This is done through advocacy, a deliberate process of informing and motivating decision-makers usually during Interagency Coordinating Committee (ICC) meetings, or, where no such structure exists, an established equivalent. Advocacy should be supported with demonstrated evidence: country situation analysis (to include age-specific incidence, prevalence of unvaccinated cases, anticipated outbreaks and estimated disease burden) and SIA impact data if available. Preliminary cost estimates, including opportunities to present strengthening of the RI programme through the SIA (e.g. renewing cold-chain equipment) can be discussed with the authorities and partner agencies along with access to technical assistance and expertise. The objectives of this high-profile meeting are to endorse the country plan for the SIA by reaching consensus on vaccine requirements, SIA strategy and date, and identify available resources so that more detailed planning can commence.

Commitment from policy-makers involves recognizing the importance of disease control or elimination (which may allow the use of government resources such as human resources, utilities, funds), authorizing the ministry of health (MoH) to assume leadership of the SIA, nominating the national coordinating committee (NCC) and its chairperson and/or secretary, and being open to partnerships.

Early intersectoral coordination is needed to secure commitment and support at all levels to ensure a high-quality SIA (Table 6.2).

6.3 Establish organizational structure and coordination of the SIA

6.3.1 National coordinating committee

It is suggested to establish the NCC at least 12 months before the SIA. While the composition of the NCC varies among countries, it typically consists of a national coordinator, representatives from different government ministries and/or partner agencies (see Table 6.2) and leaders/coordinators of national subcommittees. The national SIA coordinator (often the EPI manager) should be an ex officio member of the NCC and should report to it.

TABLE 6.2
Examples of areas/activities where intersectoral support and coordination are needed at both national and local levels to support SIAs

RELEVANT AGENCY OR ORGANIZATION	AREA FOR COORDINATION
Ministry of health	• Coordination with other health activities/events (e.g. HIV screening, deworming, child health days, etc.) for alignment with other planned health events. • Integration with other health interventions where synergies exist. • Availability of health workers.
Ministry of finance	• Timely financial resources made available to the MoH. • Streamline customs procedures along with tax/duty fee exemption for SIA materials including vaccines and equipment.
Ministry of education	• Alignment with academic calendar (school breaks). • Joint planning with school health personnel. • Awareness and understanding by teachers. • Engagement of students for social mobilization.
Local government	• Support of regional and local authorities in oversight and distribution of resources to the local level, and ensuring accountability/reporting.
Ministries of culture, social affairs and development	• Support for identifying and reaching ethnic minorities and disadvantaged populations. • Appropriate language choices for printed materials and advertisements. • Assistance with logistics and distribution channels.
Environmental protection agency	• Awareness of waste disposal regulations and adaptation for SIA needs.
Ministry of interior	• Security assurance for field teams and health ministry property. • Joint planning for reaching prison populations.
Ministry of foreign affairs	• Support with identifying immigrants, migrants and refugees.
Ministry of defence	• Joint planning with the military for the provision of personnel, logistical support.
Ministry of energy	• Arrangement of uninterrupted power supply for the entire SIA in all peripheral health centres.
Ministry of communications	• Use of broadcasting time for SIA messages: television, radio. • SMS advertising through mobile networks.
Religious leaders, community leaders, local NGOs	• Advocate and facilitate access to the community especially the hard-to-reach and high-risk groups. • Support with microplanning. • Consideration for prayer times, religious gatherings, ethnic holidays. • Provision of volunteers. • Support for social mobilization (use of community-tailored messaging).
UN agencies, other international organizations	• Funding/resource mobilization. • Provision of assessment and technical assistance. • Procurements of goods/services internationally. • SIA monitoring.

As the NCC makes most of the final decisions regarding essential SIA-related activities, it is important to have regular meetings throughout the planning and implementation phases. The NCC chairperson/secretary is responsible for ensuring that meetings are scheduled and conducted. These meetings can initially be organized monthly and become more frequent as the SIA preparation advances, with all discussions and decisions recorded. The NCC should organize and manage various functions before, during and after the SIA, as shown in Table 6.3.

TABLE 6.3
Example of terms of reference (ToR) for national coordinating committee

Liaise with national and international partners for coordination and resource mobilization (human, technical, financial), obtain the necessary intersectoral support
Establish and oversee the SIA subcommittees
Validate and oversee detailed plan of action, budget, timelines, management of funds, personnel and communication
Regularly monitor SIA preparedness at both national and subnational levels and ensure that preparedness gaps are adequately addressed
Approve and oversee implementation (logistics, training plans, social mobilization, etc.)
Address gaps in SIA implementation and ensure that needed mop-up activities take place
Inform stakeholders on progress of activities
Validate SIA results, collate and analyse data
Oversee coverage survey planning and implementation
Approve and sign off on the final SIA report, including lessons learned and next steps
Ensure post-SIA routine immunization-strengthening activities are completed

III.
12 to 9 months before SIA: Planning

12 to 9 months prior to the SIA you should do the following activities

At national level:

- ☐ Establish SIA subcommittees with ToR and appoint coordinators.
- ☐ Develop microplanning forms, initiate microplanning meetings with districts, update logistics spreadsheets.
- ☐ Place order for vaccines and injection devices.
- ☐ Initiate planning for programme components: advocacy, social mobilization, communication, logistics, training, monitoring (including AEFI, RCM, independent monitors) and supervision.

At district level:

- ☐ Establish district coordination committee and relevant subcommittees.
- ☐ Prepare targeted group size, inventory and human resources information for the national level.

6.3.2 National subcommittees

It is suggested that the NCC determines the number, type and membership of subcommittees (technical working groups or task forces) at the latest 9 months before the SIA. The national subcommittees report to the NCC according to a pre-established schedule. A chairperson and/or secretary of each subcommittee is responsible for calling meetings and ensuring that the discussions and decisions are properly recorded in meeting minutes or similar document for the record. Meetings may become more frequent as activities intensify and implementation begins.

There are at a minimum three core subcommittees:

1. Technical/implementation (includes monitoring and evaluation, training, AEFI)
2. Logistics (includes vaccine, cold-chain management)
3. Advocacy, social mobilization and communication.

Depending on the setting, waste management can be a part of the technical or logistics subcommittee. In some countries the monitoring and evaluation subcommittee may be independent while in some cases a finance subcommittee may also be established. Unless it already exists, countries may consider establishing a separate subcommittee for AEFI risk management and media relations.

The terms of reference and deliverables for each subcommittee should be clearly defined. Table 6.4 provides an example of what these terms of reference can include, but are not limited to.

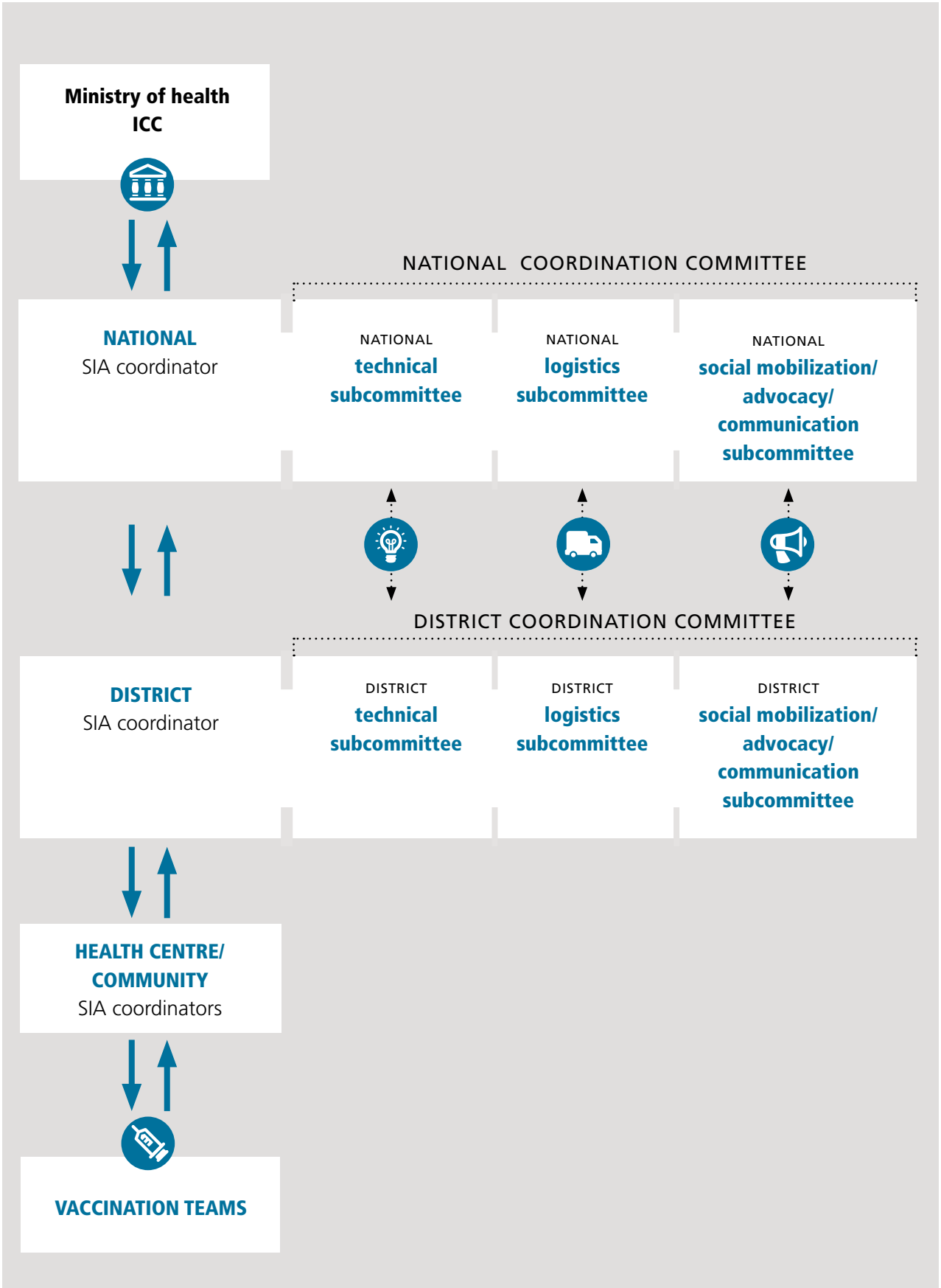
Strengthening the routine immunization programme as part of the SIA may not receive adequate attention unless responsibility is assigned to at least one member of each subcommittee. The assignment of responsibility and adequate authority should be made at the beginning of SIA planning since strengthening activities may be carried out during planning, implementation and after completion of the SIA.

Depending on the country, subcommittees established at the national level may be replicated at the district level either as specific subcommittees or as one integral committee with roles and tasks clearly designated to specific members. Terms of reference for district-level subcommittees can be adapted from the national subcommittee ToR listed in Table 6.4. An operational management structure of the SIA is shown in Fig. 6.1.

TABLE 6.4
Example of ToR for national subcommittees

SUBCOMMITTEE TERMS OF REFERENCE		
Technical/implementation	**Logistics**	**Advocacy, social mobilization and communication**
• Follow up on task and recommendations of the NCC to ensure smooth implementation of SIA. • Develop the SIA field guide, including data collection tools/forms, and adapt tools to country situation (e.g. SIA Readiness Assessment Tool, tally sheets, AEFI monitoring forms, RCM forms, etc.). • Oversee the progress of SIA readiness and maintain the dashboard for SIA readiness. • Ensure all necessary preparations for the SIA, address issues and postpone (certain) activities if necessary. • Ensure effective microplanning with involvement of all stakeholders (state/local government, local NGOs, etc.) from the early stages of planning. • Coordinate microplanning activities including identification of high-risk areas/populations. • Identify specific training needs, oversee development of training guidelines and training of trainers. • Ensure that supervisors are identified, trained and engaged (ToR developed). • Develop supervision plans. • Coordinate with AEFI committee if it has been established. If not, develop an AEFI protocol for monitoring, responding to and investigating AEFI. • Identify activities that can be carried out before, during or after the SIA to strengthen RI.	• Assess the cold-chain system, and ensure timely and appropriate maintenance. • Order vaccines and devices and monitor their receipt at the national level. • Plan for timely distribution of vaccines and other supplies to the different levels. • Develop detailed distribution plans for vaccine carriers, cold boxes, vaccines, injection equipment and finger markers. • Plan for deployment of logistics officers to support lower levels as needed. • Develop waste management plans (to include collecting and transport plans taking into account the capacity for dealing with increased volume of waste in addition to that of the RI programme). • Print and distribute data tools, forms and field guides. • Oversee logistics-critical activities. • Identify activities that can be carried out before, during or after the SIA to strengthen RI.	• Develop communication plan. • Design channels and strategies in a timely manner to ensure highest level of advocacy, based on communication needs assessment. • Coordinate social mobilization activities at all levels including social mapping and ensure designated in-country resources are mobilized. • Develop and release clear and brief messages using multi-channel communication and oversee translations if needed. • Prepare high-quality information on vaccine safety and in case of serious AEFI for public and health care professionals. • Develop and disseminate promotional materials. • Oversee social mobilization- and communication-critical activities, and ensure process is intensified as needed. • Prepare opening ceremony (mobilize leaders, celebrities, donors etc. to promote SIA). • Ensure that messages to strengthen RI are included at all levels.

FIG. 6.1
Operational management structure of SIA



IV.
9 to 6 months before SIA:
Planning

9 to 6 months prior to the SIA you should do the following activities

At national level:

- ☐ Finalize plans for programme components: advocacy, social mobilization, communication, logistics, training, monitoring (including AEFI, RCM, independent monitors), supervision, and SIA evaluation (including coverage survey).
- ☐ Finalize SIA guidelines.
- ☐ Meet with district health officials.
- ☐ Assess SIA readiness.

At district level:

- ☐ Complete microplanning spreadsheets in coordination with health centre levels.
- ☐ Define SIA strategies for underserved, hard-to-reach and special populations.
- ☐ Provide cold-chain capacity information as part of logistics assessment before SIA.
- ☐ Verify modes of transport availability.

At health centre level:

- ☐ Attend microplanning meeting at the district level.

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7. Microplanning and logistics

Microplanning is a "bottom-up" process of detailed planning carried out to determine the local needs for the SIA and to identify what is available and what is missing in order to ensure smooth and satisfactory SIA implementation. Good microplanning practice entails making special efforts to identify underserved and hard-to-reach populations using findings from equity and other programmatic assessments. Furthermore, it entails the inclusion and engagement of the communities affected by inequities in the microplanning process (e.g. through estimation of population size, mapping of communities, social mobilization, canvassing, etc.). The key to successful microplanning is to allow enough time for in-depth planning and consolidation of plans.

Preparation for microplanning at the national level should ideally start 9 months before the SIA with the specific objectives to:

- develop a final operational plan which should include a budget;
- complete resource mobilization activities;
- order and ensure delivery of all materials needed for SIA implementation.

The national logistics subcommittee with input from the technical subcommittee regarding identification of underserved and high-risk groups should provide guidelines for microplanning at the district level. The same format of planning forms/ sheets should be used in all districts to ensure easy and accurate consolidation of information. Information obtained from the local (health centre) level microplanning should be collated sequentially upward to the next level to adjust the planning data and on up to the national level. The SIA microplanning should be considered final once the local-level planners have finalized preparation of their health centre plans, and these plans are incorporated up to the national level. This however may not represent the final microplan: it is important to clarify to the districts that the revisions

of microplans may take place at the national level in order to keep consistency, address any unforeseen factors and take into account available funding and resources. These revisions should always take place in consultation with the lower level. The final operational plan should be validated by the national logistics subcommittee.

Plans for other specific programme components such as training (Chapter 8), advocacy, social mobilization and communication (section 9.1), AEFI monitoring (section 10.1) supervision and monitoring (Chapters 11 and 13), and SIA evaluation (Chapter 14), developed by respective subcommittees, can be fine-tuned for each district based on the information contained in the operational plan. These plans should be validated by the respective national subcommittees and endorsed by the NCC.

The microplan should address and budget for all components important for SIA preparation and implementation including the following.

- Ensure that underserved, hard-to-reach and high-risk groups (see section 5.2.6) are identified (accuracy of population numbers are based on latest census or local validation).
- Decide on the appropriate vaccination strategies to reach the target population (see section 5.2.7).
- Ensure equal distribution of vaccination posts taking into account type of terrain, distances, special populations, etc.
- Ensure that the number of health facilities identified as vaccination posts is correct.
- Identify gaps in cold-chain capacity.
- Identify number of health workers, supervisors, volunteers and other personnel available and identify gaps.
- Ensure availability of transportation for personnel and identify gaps.
- Develop a plan of action to address the identified gaps.
- Identify AEFI referral sites.
- Ensure availability of elements for successful social mobilization.
- Estimate poorly-performing areas which may need mop-up, taking into account lessons learned from past SIAs to avoid repeating the same mistakes.

It is important that microplans get validated at each level as data are collected. This calls for effective supervision of the development of each microplan. Once microplans from the health centre-level reach the district, they get aggregated and the district coordinators add district-specific costs (supervision, meetings, transport) before forwarding the information up to the national (or provincial/regional) level.

An overview of the current status of routine immunization and surveillance can be used to identify RI-strengthening objectives. These objectives may be addressed through the SIA preparation and ultimately incorporated into the SIA planning. Some of the potential RI-strengthening activities are highlighted in section 3.1.

7.1 Information needed for microplanning

Each district microplan should include an operational plan for the following SIA components: 1) vaccine, cold chain, transport and logistics management; 2) waste management; 3) AEFI monitoring; 4) training; 5) social mobilization and communication; 6) implementation; and 7) daily data aggregation, reporting and analysis. Responsibility for each component should be assigned to a specific person.

In preparation for the microplanning workshop at the district level, the participants should collect the following background information for their catchment area:

- target population estimates, broken down by subdistricts/health centres;
- percentages of population in rural and urban zones;
- lists and descriptions of underserved, hard-to-reach areas and special populations, and suggested strategies to reach them (this is critical as it is often these groups that are missed by the RI programme and in most need of vaccination);
- names and locations of schools and day care centres, and if possible the approximate number of students enrolled in each school within the target age groups;
- list of hospitals, in-patient clinics and orphanages in the district;
- district maps, showing subdistrict levels and major access routes (when possible, Google maps or other electronic mapping systems should be used to create precise operational maps of health facility catchment areas to clearly define the areas of responsibility for each health centre, for both routine and SIA activities);

- a detailed cold-chain inventory showing functional and non-functional equipment with respect to numbers, locations, storage capacities, gaps and possibilities of support stocks from other sources e.g. the private sector;
- needed and available waste disposal facilities in each subdistrict/health facility;
- needed and available transportation in each district including potential sources for filling the gaps (e.g. borrowing from other government institutions, NGOs, etc.);
- list of transit points, major markets and border crossing points;
- number of staff needed, available and staffing gaps (health staff, volunteers, supervisors, monitors, drivers);
- identification of potential venues for fixed site vaccination;
- list of community leaders to proactively engage in advocacy/social mobilization;
- list and description of resistant/hesitant groups, and suggested strategies to reach them.

7.2 Estimating the target population

The EPI managers should obtain population data from official sources. Both official statistics and local data can be used to establish realistic population figures (e.g. local community head count or community registers from local authorities, previous polio or measles SIA data).

For countries where accurate figures are not available, the target SIA population size may be estimated based on the percentage of total population by age range, or if available, by the number of children vaccinated with bacille Calmette–Guérin (BCG) and/or with the first dose of diphtheria–tetanus–pertussis-containing vaccine (DTPCV1). In any case, if different population figures are available, the highest should be used to avoid possible shortages of resources.

Experience with polio eradication has shown that population estimates and official census data are not consistently reliable for vaccination purposes. For measles elimination, SIA national coverage must be at least 95%; therefore, efforts to improve estimates of the denominator are important for ensuring that all eligible children are identified. When feasible, local SIA managers and supervisors can work with communities, particularly women's groups and leaders, and ask them to line-list the children in the target age range by household.

7.3 Estimating requirements and cost for vaccine and supplies

For SIAs, the following immunization session supplies are required:

- vaccine and diluents
- auto-disable (AD) syringes (0.5 ml)
- disposable mixing syringes with reuse-prevention (RUP) features (5 ml)
- safety boxes for sharps disposal
- clean gauze swabs/cotton wool
- indelible marker pens for marking vaccinated children
- SIA vaccination cards
- AEFI treatment kits (see Annex 7a for contents)
- AEFI reporting forms (see Annex 7b)
- tally sheets, pens, chalk
- supervisor summary sheets and checklists, including SIA readiness forms
- reporting/summary forms for each appropriate reporting level.

7.3.1 Vaccine

Vaccine needs are estimated based on the target population and the vaccine wastage rate. SIA managers should determine the wastage rate based on wastage rates from previous SIA experience. If no previous vaccine wastage rates are available, a rate of 10% may be used as an estimate. The wastage rate is used to calculate the **vaccine wastage multiplication factor (WMF)**, defined as **100 / (100 – wastage** rate). For a wastage rate of 10%, the WMF is 1.11. This in turn is used to calculate the required number of vaccine doses:

Target population × WMF = required number of vaccine doses

As M/MR vaccine is usually supplied in ten-dose vials, the number of doses to be given should be divided by ten in order to obtain the required number of vials.

7.3.2 AD syringes for injection

WHO policy is that SIAs must exclusively use auto-disable (AD) syringes and apply "bundling", i.e. ordering sufficient doses of vaccines with adequate quantities of relevant safe injection equipment (AD syringes, reconstitution syringes and safety boxes). The use of AD syringes increases safe vaccination practices by preventing the re-use of injection syringes. For injections, the same amount of AD syringes and doses of vaccine should be considered (one dose, one AD syringe). For AD syringes, the same wastage rate as for vaccines (10%) is considered. This means that the wastage multiplication factor will be 1.11.

7.3.3 Disposable syringes (with RUP) for vaccine reconstitution

One 5-ml disposable syringe (with needle) is required for every multi-dose vial of vaccine for reconstitution (e.g. one reconstitution syringe for one 10-dose vial of MR vaccine). Health care workers should **NOT** use the same reconstitution syringe to reconstitute multiple vials, as this increases the risk of contamination leading to adverse events. Syringes with RUP features (self-locking mechanisms that allow only one use) are the recommended choice for reconstituting vaccines.

7.3.4 Safety boxes

Each 5-L safety box (filled to approximately 80%) can hold at least 100 syringes and needles. Therefore, the required number of safety boxes is obtained by adding the number of AD vaccination syringes to the number of disposable reconstitution syringes and dividing it by 100. Note that additional boxes may be needed for vaccination teams assigned to remote, underpopulated rural areas in which one team cannot reach 100 vaccinated children per day.

Immunization session supplies can be estimated using the following calculation norms:

IMMUNIZATION SESSION SUPPLIES	
Wastage multiplication factor (WMF) for vaccines	1.11[a]
Wastage multiplication factor (WMF) for AD syringes	1.11
Vaccine doses required	Target population × WMF
Vaccine vials required	Vaccine doses / 10 (for 10-dose vials)
Diluent vials required	1 per vaccine vial
AD syringes required	Target population × WMF (1 per vaccine dose)
RUP reconstitution/mixing syringes required	1 per vaccine vial
Safety boxes (5 L)	(Total syringes) / 100
Clean gauze swabs	0.5 roll per team per day
Soap	1 bar per vaccination team
Trays	1 per vaccination team
Indelible marker pens	1 marker pen per vaccination team per day
AEFI treatment kits	1 per health centre

[a] 100 / (100 – wastage rate), with wastage rate 10%.

7.4 Estimating cold-chain capacity, requirements and cost

The most serious challenges of inadequate cold-chain space tend to occur at the provincial or district level when mass supplies of vaccines and syringes arrive at storage centres. Storage space can be adequate when there is a functional refrigerator at the peripheral level. One third of the space in a refrigerator should remain empty to allow for adequate air circulation, and space for routine vaccination programme needs should be taken into consideration during assessment and planning.

Functional cold-chain capacity assessment and inventory should be completed at least 9 months prior to the SIA. Cold-chain assessments at district level should include the following actions.

1. Inventory refrigerators and freezers specifying model, manufacturer, number and energy source, and the net vaccine and coolant-pack storage capacities.

2. Check electrical systems for reliability, accessibility, quality and security. Check the power and voltage and note any fluctuations during the day. Compile a list of available generators and type of fuel used.

3. Evaluate the number of cold boxes, vaccine carriers and coolant-packs. Conduct an inventory of existing equipment at each health care facility. Verify the condition and indicate number and size/capacity. To determine the total requirement for coolant-packs, estimate the number of coolant-packs needed in a single day, and double it (more may be needed if there is insufficient freezing capacity).

4. Assess the number and condition of thermometers/temperature monitoring devices, temperature monitoring sheets, etc.

The storage volume for vaccines will depend on the manufacturer and vial size. As a general rule, each litre of cold storage space can hold approximately 400 doses of measles or measles–rubella vaccine (at 2.5 cm^3/dose) and 250 doses of the diluent (at 4 cm^3/dose). For more detail, see WHO tools on cold chain and logistics available online at: www.who.int/immunization/programmes_systems/supply_chain/resources/tools/en/index5.html.

In order to meet the additional demand required during SIAs, cold-chain space may be temporarily borrowed/rented from the private sector, and/or other ministries or NGOs. In cases when more cold-chain space is still needed, temporary cold storage can be created using additional portable cold boxes in place of refrigerators. These can keep vaccines sufficiently cold for up to 6 days, provided they are not opened and are kept away from the sun. All available temporary space should be used before refrigerator rental is considered. While using passive containers (cold boxes and vaccine carriers) for temporary storage of vaccines, the temperature should be monitored to ensure the maintenance of the cold chain.

Another way to free up the available cold-chain space is to temporarily delay the delivery of vaccines for routine immunization as long as it does not interrupt the programme.

7.4.1 Cold boxes, vaccine carriers and coolant-packs

If there is no vaccine storage facility nearby, each district and health centre supervisor should carry additional vaccine for the day, either in a cold box or in vaccine carriers, depending on availability.

In general, each team should have **at least** one vaccine carrier and four frozen water-packs per day of work. **Use of ice blocks is strongly discouraged**. Vaccine carriers must be able to store the required daily amount of vaccine **and diluent**. To determine

the storage capacity of each vaccine carrier place four ice-packs inside and count the number of 10-dose vials of M/MR vaccine and diluent that can be comfortably stored. Temporary, mobile and house-to-house vaccination teams need to have two vaccine carriers: one for vaccine in use and the second to keep unopened vials and diluent.

The number of coolant-packs required will be 4 per vaccine carrier and 24 per cold box, multiplied by 2. Remember that it takes 24 hours to refreeze water-packs, and the used packs will need to be replaced by frozen ones the following day.

Cold-chain equipment needs can be estimated using the following calculation norms:

COLD-CHAIN REQUIREMENTS	
Cold-chain space required for vaccine (in litres)	Vaccine doses required / 250[a]
Cold-chain space required for diluents (in litres)	Diluent doses required / 400[b]
Refrigerator	1 per health centre
Vaccine carriers	1 per team (permanent posts) 2 per team (temporary posts) 2 per team (mobile posts) 2 per team (house-to-house vaccination) 1 per team supervisor
Portable cold boxes	1 per district and health centre supervisor
Daily coolant-packs required	4 frozen water-packs per vaccine carrier × 2 24 frozen water-packs per cold box × 2

[a] 1 litre of cold-chain space for vaccine storage can hold approx. 400 doses of measles vaccine considering 2.5 cm³/dose).
[b] 1 litre of cold-chain space can hold approx. 250 doses of measles diluent (4 cm³/dose).

7.4.2 Maintaining the cold-chain system

Provincial and district programme managers and logisticians must ensure that the cold chain is working both at the district- and health centre-level during SIAs. Back-up capacity should be organized for national and provincial cold rooms, including generators and spares. Reliable power supply must be assured at all times.

Cold-chain maintenance includes the following actions.

1. Ensure that cold-chain technicians visit all the health centres at least four weeks before the SIA and ensure at least one refrigerator is working in each health centre.

2. Take temperature readings twice a day (refrigerators must maintain temperatures between +2 °C and +8 °C).

3. Refer to vaccine vial monitors (VVMs) to ensure vaccine has not been exposed to excessively high temperatures. A VVM is not of use after a vial is opened, therefore on lyophilized vaccines the VVM is put on the caps.

4. Ensure that batteries for solar refrigerators are in good condition and that solar panels are clean.

5. Ensure that there are enough cold boxes, vaccine carriers and coolant-packs in good working order. Freezing of water-packs should begin one week to 10 days before the first day of the SIA. The water-packs should be loaded in the freezer in progressive manner. In case the freezing capacity is limited, the frozen water-packs may be removed and stored in long-range cold boxes.

6. Ensure that the vaccine store-keeper/manager knows how to properly condition water-packs prior to packing. In order to condition water-packs, they need to be fully frozen, then removed from the freezer and allowed to sit at the room temperature until ice begins melting and there is some liquid water in the container (check by shaking and listening for the sound of water moving inside the water-pack). Conditioning is important as it prevents the water-packs freezing the vaccines inside a cold box or vaccine carrier, and damaging freeze-sensitive vaccines.

7. If necessary, ensure that cold-chain space has been borrowed/rented from other sectors (private, NGOs).

8. Ensure establishment of contingency plans at all levels with bulk or central stock of vaccine supplies: verify ability and capacity of personnel to use the plan, including providing contact information for the logistics experts in charge of the contingency plan.

7.5 Estimating personnel requirements and costs

A sufficient number of teams with dedicated personnel are essential for success of the SIA. Only qualified and well-trained health workers should perform injectable vaccinations and vaccine reconstitution. Qualified health workers should be drawn carefully from hospitals and/or health facilities to cause the least possible disruption of essential services. See Chapter 12 for roles of personnel at vaccination posts.

The number and distribution of teams and vaccination posts depend on the population and setting.

A permanent or temporary vaccination team can vaccinate between 100 and 400 children per day, depending on the size of the population expected at the vaccination post, composition of the vaccination team and the location of the vaccination post (i.e. urban or rural setting). Mobile teams in rural settings often have to cover long distances. Where numbers are smaller and population is sparse, the number vaccinated per day may be smaller (around 100 per vaccinator per day).

A house-to-house vaccination team with one vaccinator should be able to vaccinate an average of 75 children per day, although in sparsely populated areas the numbers could be even lower (50 per day). Variations may occur depending on the setting. In highly populated areas, two vaccination teams can be placed at the same post.

Each vaccination team will include:

- one or ideally two vaccinators for vaccination and vaccine reconstitution;
- one or more trained volunteers (depending on the vaccination strategy used and on the vaccination post needs) for:
  - screening, registration and dispensing any non-invasive interventions – e.g. OPV, vitamin A, deworming tablets, etc.;
  - finger marking, tally sheet marking and filling vaccination card;
  - assisting in crowd control and social mobilization activities;
  - acting as announcer, continuously communicating the schedule of dates/times/locations of the vaccination posts to the respective communities;
  - acting as canvasser for the house-to-house canvassing strategy.

Personnel requirements, with added staff specific for each level (district, regional or provincial, national), can be estimated using the following calculation norms:

PERSONNEL REQUIREMENTS	
Vaccinator (permanent post)	= 100–150 children per vaccinator per day in urban areas = 75–100 children per vaccinator in rural areas
Vaccinator (temporary post)	= 100–150 children per vaccinator per day in urban areas = 75–100 children per vaccinator per day in rural areas
Vaccinator (mobile post)	= 100 children per vaccinator per day
Vaccinator (house-to-house vaccination)	= 50–75 children per vaccinator per day
Volunteers	2 per each permanent and temporary post team 1 per each mobile and house-to-house vaccination team
Announcers (volunteer)	1 per each vaccination team
Canvassers (volunteer)	For 5% of permanent, temporary and mobile teams

PERSONNEL REQUIREMENTS	
Number of vaccination team supervisors	1 supervisor for up to 4 vaccination teams (rural areas: up to 4; urban areas: 4 or more)
Health centre coordinator	1 per health centre
District supervisors	At least 3 per district (approx. 1 per 4 health centre coordinators)
District coordinator	1 per district
National/regional SIA coordinators	1 national coordinator + 1 coordinator per national subcommittee
National/regional supervisor	1 to be deployed to each district
National/regional AEFI supervisor	1
National/regional stockroom manager	1
Drivers	1 per car (see transport requirements below)

7.5.1 Per diem amounts and incentives

Per diem amounts for supervisors, vaccinators and volunteers should be determined before the microplanning at the lowest level is carried out, according to government or local practice standards. Per diem allowances may vary by location. As daily allowances, per diem allowances cover expenses for meals, lodging and incidentals, and are the same for all personnel in a given area. The amounts to be paid as incentives should equally be standardized, decided and budgeted in advance. Incentives vary according to the level of responsibility (volunteers vs health workers, other support personnel involved in the SIA such as drivers).

To save time and/or resources, the central level team may raise unreasonable expectations regarding the number of vaccinees that can be reached per team per day, the number of teams that can be supervised by a single supervisor, or may decrease the number of canvassing teams, eliminate/reduce social communication budgets, remove SIA monitoring or reduce training days. Such modifications to the microplan should not happen without consultation with the lower levels as they may decrease the likelihood of a high-quality SIA and increase the risk of adverse events and programmatic errors.

7.6 Estimating transport requirements and costs

Although there is no simple formula for calculating transport requirements, as they vary widely between areas, the following are suggested steps.

1. Identify transportation needs. Depending on the nature of the terrain, use of motorcycles and alternative modes of transport such as aircraft, boats, rafts and animals may be required. As a first step, identify the transportation modes needed before and during the SIA. Activities requiring transportation include:
   - transportation of vaccines and related supplies from the central to the peripheral levels;
   - distribution of social mobilization and communication materials, guidelines, tools;
   - deployment of vaccination teams;
   - transportation of personnel involved in the monitoring and supervision of SIA planning, training, implementation and independent monitoring.
2. Conduct an inventory of all available transportation resources at the local level.
3. Identify additional sources of transportation to fill the gaps (e.g. vehicles from other government departments, NGOs, and from private and religious sectors or rented vehicles).
4. Estimate fuel needs based on average consumption per vehicle and estimated mileage per day.
5. Estimate costs: calculation of costs should include costs of car rental if needed as well cost of fuel. Calculations of the latter should take into account possible variations in fuel prices within a country and of field conditions, e.g. road conditions, mountainous terrain and water barriers, which affect the distance covered per litre of fuel. One possibility is to calculate fuel costs on the basis of an average number of kilometres of travel allocated to each team in a district. Operational costs, whether for transport or personnel, should be estimated in local currency.

7.7 Estimating costs for planning and training sessions

Costs associated with planning and training sessions should be estimated at all levels. Cost estimates for these sessions should include:

- materials and refreshments for planning meetings and training sessions at the specific level;
- materials for training (including printing costs, pens, paper and chalk);
- per diem allowances for trainers and trainees (if travel from their local area is required);
- rental for training venue, if applicable.

7.8 Estimating costs for communication and social mobilization activities

The budget should cover costs for the following:

- briefing meetings for leaders and community groups;
- small incentives for local mobilizers and announcers;
- informational and promotional materials, banners, posters, pamphlets;
- megaphones, speakers, batteries, etc.;
- radio and television spots (both national and local);
- transport for social mobilization activities such as visits to schools, launching activities, opening ceremony, etc.;
- SIA launch events.

7.9 Estimating costs of mop-up activities and contingencies

A budget line for post SIA mop-up activities in areas not well vaccinated during the SIA should be estimated and included in the overall SIA budget at the national level (see section 6.1), either as a separate budget line or as a part of the contingency. The national level estimate of mop-up activity costs (estimated as the operational cost of

an additional SIA day or 5–10% of operational costs in the high-level budget) may be revised based on the local knowledge of poorly-performing areas that are likely to require mop-up activities, as well as the operational costs determined in the microplanning.

V.
6 to 2 months before SIA: Preparation

6 to 2 months prior to the SIA you should do the following activities

At national level:

- ☐ Revise budget based on validated microplans and feed information back to the districts.
- ☐ Distribute SIA guide to the districts.
- ☐ Finalize training materials and training guides/ tools/monitoring forms.
- ☐ Transfer funds for preparation activities.
- ☐ Prepare SIA promotional materials and media announcements.
- ☐ Print developed supervisory checklists, tally sheets and other forms.
- ☐ Confirm participation at launching ceremony.
- ☐ Assess SIA readiness at 6, 4, 3 and 2 months prior to the SIA.

At district level:

- ☐ Validate microplans and feed them back to the health centre level.
- ☐ Plan advocacy meetings.
- ☐ Prepare posters and street banners.
- ☐ Invite supervisors, health workers and community volunteers to attend training.
- ☐ Assess SIA readiness at 2 months prior to the SIA.

At health facility level:

- ☐ Attend meeting at the district level for validation of microplans.

Concrete efforts to prepare for the SIA should ideally take place from 6 to 2 months before the SIA. Based on the finalized and aggregated microplans (Chapter 7), the overall SIA budget should be confirmed, and at the latest 4 months before the SIA initial funds should be ready and transferred in order to start preparation activities on time. These involve the activities for training (Chapter 8), social mobilization (Chapter 9), immunization safety and AEFI monitoring (Chapter 10) and verification of preparedness through the use of the SIA Readiness Assessment Tool (Chapter 11 and Annex 2). The specific objective of the preparation phase is to complete all SIA preparation activities to ensure successful SIA implementation.

8. Training

Detailed planning for training should start by 6 months before the SIA, with determining the training needs by assessing the knowledge and skill gaps of the health workers. The technical/implementation subcommittee should elaborate a plan for training that includes: general learning objectives, priority topics, a training workplan (dates, places and trainers), participants and a budget. The training materials should be developed 3 months before the SIA to allow time for printing and distribution to lower levels.

In most countries, a cascade training approach is used, i.e. central-level trainers train the regional/provincial-level staff, who then become trainers for the district-level staff, and so on, down to local SIA vaccinators and volunteers. Experience has demonstrated, however, that such an approach reduces training quality as it gets to lower levels.

In order to ensure high-quality training of health workers and volunteers it is therefore important to take the following steps.

1. Limit the number of cascade levels to **two** (i.e. national-level master trainers train the mid-trainers 4 weeks before the SIA, and mid trainers directly train the supervisors, health workers and volunteers 2 weeks before the SIA). Therefore, all target trainees should be trained 2 weeks before the SIA.

2. Have a standard agenda and training materials (guidelines and specific training hand-outs, updated electronic training materials/videos) in order to ensure the consistency of information and training at all levels.

3. Closely monitor and evaluate the training quality as it moves down the levels in order to maintain the strength and consistency of key messages.

4. Carry out tests before and after the training to evaluate its effectiveness.

Training methods must emphasize the practical aspects of the SIA field activities, and address specific needs at different levels. Practical hands-on training should be included whenever possible. Training may be extended to include additional EPI topics not directly related to the SIA to take the opportunity to strengthen the overall knowledge and skills of the health care worker. Partners (UN agencies, local NGOs, academia, etc.) can be involved in training especially when there are insufficient numbers of trainers in the health care system. When supervisors are involved as trainers, training sessions can be used as an opportunity to additionally assess the level of readiness.

Every SIA is unique and there will always be new information to convey and lessons learned from previous SIAs to be discussed. In situations where there was a recent SIA, a one-day refresher training instead of a complete training may be practical. Given that measles and measles–rubella vaccine SIAs are usually years apart, it should be assumed that a complete training is needed. In countries with high staff turnover, additional attention may be required to ensure a solid understanding of basic immunization practices.

In most countries, there are four main groups requiring training (Table 8.1). All four groups should have a basic orientation about the SIA including its objectives and justification; dates and target age-group(s); and facts about measles and rubella control and vaccinations. Each group should have very clear terms of reference outlining their roles and responsibilities. Training topics should be adapted to the main responsibilities of these groups during the SIA (see Table 8.1).

At the end of the training, everyone involved in SIAs must understand:

WHAT:	The objectives and targets of the SIA
WHY:	The rationale for the SIA
WHERE:	The geographic coverage of the SIA
WHEN:	Dates and times of vaccination post operation
HOW:	Strategies and operational elements
WHOM:	Target groups for vaccination and other interventions
WHAT TO DO:	Individual roles and responsibilities

TABLE 8.1
Training topics according to the four groups involved in SIAs and their main responsibilities

GROUP AND MAIN RESPONSIBILITIES	MAIN TOPICS TO COVER
Vaccinators: Planning, administering of vaccines and reporting	1. Microplans and maps of catchment areas. 2. Social mobilization activities and communication. 3. The preparation and management (organization) of an immunization post. 4. Safe vaccine administration and waste management practices, and reasons for safe practices. 5. AEFI reporting and management, including recognition and treatment of (or referral procedure for) anaphylaxis. 6. Maintaining cold chain, use of VVMs and vaccine carriers, and reasons for safe practices. 7. Filling in tally sheets and vaccination cards. 8. Distribution of integrated interventions (e.g. vitamin A supplementation, deworming tablets, etc.). 9. RCM and house-to-house canvassing. 10. Positive routine immunization messages to ensure appropriate awareness.
Supervisors (provincial and district coordinators, team supervisors): Planning and supervising activities both before and during SIA	1. Management of SIA operational funds. 2. The importance of the SIA Readiness Assessment Tool to assess and ensure preparedness. 3. Planning and conducting supervision during SIA, including SIA supervision checklists (use of forms, points that trigger actions, etc.). 4. Microplans and maps of catchment areas. 5. Detection, investigation of serious AEFI or AEFI clusters, response to AEFI. 6. Techniques for dealing with populations resisting vaccination and anti-vaccine groups, and of addressing their concerns appropriately. 7. Management and operations of the vaccination posts. 8. Responsibilities of the vaccination team members and volunteers.

GROUP AND MAIN RESPONSIBILITIES	MAIN TOPICS TO COVER
	9. Logistics arrangements at each level. 10. Appropriate supportive supervision techniques. 11. Conducting RCM. 12. Interpreting and using administrative and RCM data. 13. Daily management of the SIA (process of reporting administrative coverage results daily, results of monitoring during SIA - RCM, end-of-day meetings of supervisors, troubleshooting challenges, etc.). 14. Plans for training of lower levels. 15. Use of all reporting forms at the local level and summary of daily tally sheets. 16. Chain of command for reporting of data.*
Volunteers: Supporting of health workers at the vaccination posts as well as acting as announcers, canvassers, community mobilizers	1. Social mobilization techniques, key information to convey to households and communities. 2. Details on house-to-house canvassing method being used in the country (how to mark houses, when to return, etc.). 3. Techniques for dealing with populations resisting vaccination and anti-vaccine groups, and of addressing their concerns appropriately. 4. Crowd control and techniques to maintain order. 5. Organization of vaccination post to ensure an efficient flow of vaccinees. 6. Tally sheet marking, vaccination card, finger marking. 7. Distribution of integrated interventions (e.g. vitamin A supplementation, deworming tablets, etc.).
Independent monitors: Verifying communities are reached, with special attention to finding children that were potentially missed. They can also visit vaccination posts to help assess the quality of vaccination.	1. RCM 2. Identifying high-risk groups in the country. 3. If independent monitors are visiting vaccination posts, they need to be trained in correct and safe vaccine administration and waste management practices, cold-chain management and the various forms being used.

* In addition to these topics, supervisors at all levels must be familiar with what is expected during the SIA (i.e. agreed policies, strategies and practices).

9. Advocacy, social mobilization and communication

Advocacy, social mobilization and communication along with community engagement and behaviour-change activities can be conducted in relation to the SIA within the overall "communications" function. Successful implementation of these activities will help generate the support and acceptance necessary to achieve high coverage.

The effective engagement of political and local leaders, communities and individuals is critical to the success of each SIA and routine immunization in general, not only for building broad support, but also for inviting their input to decisions about service delivery.

There are several (often interlinked) approaches to communication, based on the evidence that people go through a process to adopt new knowledge, make a decision or change behaviour. This process mostly begins when a person is not aware of an intervention, becomes aware (through communication), considers the intervention, then takes the action and repeats (demands or seeks) it. Normally this is an iterative process that is influenced by a number of factors – not only the communication and engagement activities, but also the provision of accessible and effective immunization services.

The communication approaches discussed below have been well documented. Countries may adapt these approaches to their national setting, or may use their own unique approaches. The various types of communications strategies are summarized in Table 9.1. While each approach to the communication plan proposes different methods and ways of thinking about communication, they all should contain the same basic elements.

TABLE 9.1
Summary of communications strategies that support the success of an SIA

ADVOCACY	SOCIAL MOBILIZATION	COMMUNITY ENGAGEMENT	COMMUNICATION FOR BEHAVIOUR AND SOCIAL CHANGE
Activities targeted at different levels prior to the SIA, designed to foster political support, generate and sustain adequate resources, build partnerships with national and international agencies, NGOs and with local CSOs and influencers, and enable key programme staff to make an evidence-based case for immunization.	Broad-scale activities to engage with community, aiming to disseminate information and generate demand, often utilizing community groups and leaders to assist the programme in tasks needed to maximize the reach of the immunization programme.	A participatory dialogue with community leaders to understand and resolve barriers to access and uptake, facilitate involvement in microplanning, and establish local mechanisms for tracking and follow-up of eligible infants. Activities are often context specific and therefore ideally designed and owned by the local communities themselves.	Activities are intended to promote vaccination as a norm and duty, and inform and motivate all caregivers to fully vaccinate every eligible child. Efforts here should be informed by a research-based process of addressing knowledge, attitudes, behaviours and practices (KABP survey).

9.1 Effective communication planning: the critical components

Planning for any communication or engagement activity starts at the national level, after political commitment and consensus on the core programmatic aspects of the SIA are agreed upon.

There are four critical components of communications planning:

1. establishing a national advocacy, social mobilization and communications subcommittee (and district level equivalent);
2. developing a communications plan;
3. preparing for management of issues;
4. monitoring and evaluation of communications activities.

9.1.1 National advocacy, social mobilization and communications subcommittee

At the beginning of the planning process, countries should convene a team to plan, implement, monitor and evaluate the communication programme or interventions, either through a subcommittee or standing group. This should be carried out approximately 9 months before the SIA. It is the role of the national subcommittee to develop an overall plan for the design and implementation of the communication activities. (For draft terms of reference for the subcommittees, see section 6.3.1.)

This subcommittee should ideally include communication experts from government and relevant partner organizations, as well as representatives from the different sectors involved in the programme (e.g. community leaders, or CSOs). Where applicable, representation from the ministry of education may be important to coordinate communication activities at schools. Lastly, it should be noted that core members should be part of the larger planning team.

Similar to the advocacy, social mobilization and communications subcommittee at the national level, further subcommittees may be replicated at regional and/or district levels and if appropriate at the health centre level. These committees can come from any pre-existing structures, e.g. those established for previous SIAs or vaccine introductions.

The subcommittees at each level should be responsible for:

- providing overall direction to the communication activities;
- ensuring that the coordination of communication activities are implemented by appropriate entities;
- reviewing, testing and approving information materials;
- monitoring the effectiveness of communications activities and making any adjustments where required.

9.1.2 Communications plan

The communications plan should be based on a needs assessment or situation analysis, and specific, measurable, attainable, relevant, time-bound (SMART) criteria. It can draw on existing knowledge and observation (e.g. best practices, lessons from past SIAs including review of reasons of non-vaccination from previous RCM data, etc.) and on formative research e.g. focus groups and/or surveys on knowledge, attitudes, beliefs and practices (KABP) in order to provide information about:

- the effectiveness of past and current communication and social mobilization strategies used in the area;
- the culture and prevailing beliefs about the disease, the vaccine and immunization in general;
- the media environment and media used by the various target audiences, and available appropriate communication channels;
- the effectiveness of specific communication materials and messages;
- the resources required to implement communication activities.

The following basic elements should be included in a communication plan for the SIA:

- technical programme objective(s);
- communication objective(s);
- target audiences (primary and secondary[26]), including the specific role of each;
- messages for each audience;
- the creation of any specific branded materials;
- strategies, activities and channels to reach each audience;
- framework of activities (timeline, actions, messages, budget, responsible individuals);
- crisis communication plan;
- monitoring and evaluation.

Given that a key objective of an MCV SIA is to reach those that have been missed by routine services, it is critical to address the following questions within the planning process:

- Who and where are the hard-to-reach, hard-to-vaccinate populations and zero dose children? How can the communications messages be best adapted for these populations?

26 Primary target audience refers to individuals who are targeted for vaccination and those who make the actual decisions on whether or not to vaccinate (these include caregivers and parents of minors, and health care workers as active promoters of vaccine uptake).
Secondary target audience refers to individuals or groups who influence target group's perceptions and attitudes, and possibly their decision whether or not to proceed with vaccination (these include religious and/or ethnic minority leaders, childcare personnel, teachers, media professionals, general and/or paediatric practitioners and networks/organizations related to hard-to-reach and high-risk groups). More information about these target audiences can be found in: ECDC (2010). Conducting health communication activities on MMR vaccination. Stockholm: European Centre for Disease Prevention and Control (http://ecdc.europa.eu/en/publications/Publications/1008_TED_conducting_health_communication_activities_on_MMR_vaccination.pdf, accessed 18 July 2016).

- Are there any resistant groups? How should they be reached?
- What specific messages should be designed to address any hesitant groups?
- What are common perceptions/rumours in the community about immunization?

9.1.3 Preparations for management of issues: negative publicity, rumours, AEFI, etc.

The public is often exposed to inaccurate information about immunization. It is important to anticipate rumours that may occur during SIAs and to develop proactive strategies for addressing them so that they do not derail the SIA or routine immunization more broadly.

Early engagement and consultation with key immunization stakeholders and community leaders are essential to help maintain a favourable environment, mitigate any potential issues and ensure the accuracy of information disseminated through networks. Such collaboration will be a critical factor to the success of the programme.

In the case of any event that may have negative implications, a crisis communication plan should be ready and available to inform a rapid, coordinated and effective response.

Activities within a crisis communication plan should include:

- advance training of credible and informed spokespeople, at appropriate levels, who will be available to speak to the media rapidly and regularly during crisis situations;
- briefing of key media reporters, sharing clear and concise information prior to the SIA to facilitate a rapid response to any negative or inaccurate claims;
- providing guidance to health personnel so that they can respond adequately to rumours or questions;
- regularly disseminating up-to-date information through channels most used by the target audiences.

See section 10.5 for crisis management and section 9.6 for more information on communication regarding serious AEFI.

9.1.4 Monitoring and evaluation of communication activities

It is important to monitor the effectiveness of communication activities, particularly among populations at highest risk of not being vaccinated. As a part of assessing SIA readiness, once SIA communications activities have been launched, supervisors should carry out rapid assessment among high-risk communities (e.g. by visiting a selection of households, or by interviewing caregivers at the local market, etc.) to determine if caregivers are already aware of the SIA and their main sources of information. The findings should be immediately reported to the communications supervisor, in order to inform the revision of any methods and materials, where applicable. A sample monitoring survey form that can be used to assess the effect of the social mobilization efforts is included in Annex 8.

During the SIA, reasons for non-vaccination obtained through RCM data analysis or other sources should be rapidly analysed and reported to the communications supervisor in order to allow for rapid action to address any gaps in communication efforts while the SIA is still ongoing. Other methods for monitoring communication efforts includes periodic reviews of programme action plans, regular audits of materials to ensure they are being distributed and used correctly, spot checks at public places where target audience members are found (to confirm their recall of key messages in the media), exit interviews at routine immunization sessions, group discussions, etc. It is essential to prepare a monitoring schedule for the communication activities prior to the commencement of the SIA.

9.2 Advocacy

At the beginning of the SIA planning, target groups for advocacy activities may include heads of state and government, parliamentarians, religious leaders, donor agencies, decision-makers in various ministries (including health, education, finance, other) and community leaders, for their role in helping to secure high-level commitment from national authorities and major partner agencies in support of the SIA (see section 6.2). Further in the process, advocacy activities may include relevant authorities and stakeholders at the district and health centre levels. Advocacy activities to be carried out by the national advocacy, social mobilization and communications subcommittee include the following points.

1. Development of key messages in support of the SIA. These messages should be simple, clear and easy to understand for the entire population, and pre-tested before dissemination in local languages (see examples of key messages in Annex 8b). Key messages can include information on:
   - the scientific rationale for conducting an SIA and the added value it is expected to bring (ideally this should be country driven where the scientific body in the country (e.g. NITAG) reviews the evidence and makes recommendations for the SIA);
   - the effectiveness of SIAs and strong routine immunization in reducing measles and rubella morbidity, with examples;
   - the importance and the need of supplementary doses of measles and rubella vaccines including an explanation of the difference between supplementary and routine vaccine doses;
   - the social and economic benefits of measles and rubella elimination;
   - the safety of vaccines and injection procedures;
   - the importance of following a routine immunization schedule.

2. Engagement and briefing of good-will ambassadors and local celebrities to influence opinion leaders about the need for action and to raise awareness of both SIA and routine immunization.

3. Use of appropriate influential media channels to reinforce the commitment of decision-makers for the SIA and routine immunization (state and government officials).

4. Briefings of target audiences.

9.3 Social mobilization

Groups such as health committees, professional associations (e.g. nursing, public health, paediatric associations), religious and community groups, NGOs, private

sector, women's clubs, youth groups and school programmes may also be invited to participate in efforts to build support for the SIA.

National, provincial and district social mobilization committees should organize meetings to which various important people/groups/agencies will be invited, helping to ensure local community acceptance and support for the SIA. Specific tasks can be assigned to members of the community (should they agree to participate in specific promotional activities), which can include:

- announcement of SIAs at key meetings and cultural and sporting events;
- provision of human, financial and other resources;
- creation of promotional materials (e.g. banners, T-shirts and caps) by private industry;
- sponsoring of radio and television announcements.

Such meetings should always be planned and well prepared to ensure participation by the majority of key leaders, their active involvement and the dissemination of pre-tested materials and messaging.

9.3.1 School involvement in social mobilization

When children are the target for vaccination in an SIA, the active participation of schools is important in educating pupils about the SIA. This requires agreement between the ministries of health and education. Schools should be approached in advance by health and education authorities to discuss how the schools can help in providing information to pupils about the campaign. See Annex 5c for examples on involving schools in social mobilization activities.

9.3.2 The opening ceremony or launch event

The opening ceremony is an opportunity to increase visibility of the SIA and routine immunization. Key public figures should be contacted as early as possible in order to ensure their participation in the ceremony. These persons may participate by, for example, administering vitamin A drops, or receiving M/MR vaccine; it should be stressed, however, that **only trained health providers should administer injectable vaccines.** Efforts should be made to ensure media coverage, and participating groups and individuals should be acknowledged in speeches. The opening ceremony should also be used as an opportunity to provide information on routine immunization. Consideration should be given to holding opening ceremonies or launch events in areas in which immunization coverage is low, to help increase awareness of the SIA in these areas.

9.3.3 Using media effectively

The national and regional communication committees should work closely with media outlets to plan dates, times, frequency and content of media messages and press releases. Ahead of and during SIAs, these committees should provide the press with regular updates following the strategy set at the national level in the early planning phase.

Holding workshops for the media prior to the SIA is a useful way to inform and sensitize the media about issues around immunization (including information about potential AEFI), so that information is conveyed to the public accurately and objectively. See section 9.6 for information on communication with the media about vaccine safety/AEFI.

Folk media should also be considered for its interface with specific (sometimes high risk) groups, and may include roadside shows, locally generated drama, community events, places of worship, etc.

In areas where social media channels are widely used by target populations, social media can be used to disseminate information and messages about the SIAs, and answer questions from the general public.

9.4 Community engagement

Close engagement with local communities will contribute to resolving any context-specific barriers to access and uptake. This may be particularly relevant but not limited to underserved or high-risk populations (e.g. minority groups or marginalized populations), religious communities that may resist public health interventions, nomadic or migratory groups, refugees and elite urban groups. The aim of community

engagement efforts is to establish a two-way dialogue that serves to empower the communities to identify and adapt solutions that are specific to their local situation.

Specific engagement and communication strategies should be tailored to each group. Such efforts might include:

- communication committees holding preliminary meetings with community opinion leaders;
- working with local NGOs and faith-based organizations that provide assistance to the groups;
- working closely with leaders of minority communities and ensuring that volunteers who are members of the minority groups are the appropriate age and gender, speak the same languages as the target communities and are trained to support the SIA. Community volunteers can support the SIA by informing families about the SIA and immunization in general and responding to questions and concerns; ensuring understanding of side-effects and need for follow-up visits; helping with crowd control; completing registers; acting as announcers (sometimes called criers, or community mobilizers) who by using the megaphone and loudspeakers engage and mobilize the community to come to vaccination posts; carrying out house-to-house canvassing visits; and providing important feedback from community members which can help improve vaccine acceptance and uptake.

9.5 Communication for behaviour and social change

Communication for behavioural change is a strategic use of communication to promote positive health outcomes at the individual, community and societal level, based on proven theories and models of behavioural change.

Communication efforts towards communities known or suspected to resist vaccination **should be carefully researched, designed and adapted to specific populations**. Multiple efforts using different communication methods targeting specific segments of the population may be needed. Well-planned and implemented communication activities for behaviour change are a strong interface between routine immunization and SIAs, as they offer important opportunities to reinforce critical information about the value of immunization and offer reminders on the timing of routine vaccinations.

Communication activities in the districts and communities where the SIA is to be held should begin 1 month before and be intensified in the 2 weeks prior to the SIA. They should be tailored to each community and may include:

- production and dissemination of materials such as posters, banners, pamphlets and flyers;
- public broadcasts by megaphones and loudspeakers;
- engagement of media, e.g. radio and television outlets;
- information campaigns using SMS and social media channels, announcements at community meetings and religious gatherings;
- door-to-door messaging by volunteer announcers/community mobilizers.

Informational and promotional materials such as posters, brochures, letters, T-shirts, caps, post banners, school letters to parents, and street banners should be designed based on a needs assessment and consistent with key messages developed earlier at the national level. They should be prepared, ordered and distributed no later than 1 month before the SIA.

9.5.1 Interpersonal communication

Interpersonal communication (IPC) is the process of exchanging information, ideas, thoughts and feelings between two people (one-to-one communication) or among a group of people (group communication) using verbal and non-verbal messages.[27] Such an exchange allows receiving immediate response or feedback that can lead to mutual understanding, agreement and action. In the context of an SIA, IPC involves face-to-face communication between the health worker(s) and potential vaccinee or caregiver, local leaders and other community workers (e.g. using house-to-house canvassing) and can aim to inform, educate or remind, provide support, facilitate decision-making and enhance community ownership of the SIA. Though labour intensive, IPC is important in hard-to-vaccinate areas (urban slums, communities opposed to immunization).

Staff/volunteers need to be adequately trained to provide accurate information, motivate parents to vaccinate their children, respond to common questions and address rumours. All effective communication principles (respect, politeness, encouragement, motivation, good listening skills, empathy, use of appropriate local language, checking for understanding, good body and facial language – eye contact and proper hand movements) apply in IPC. Additionally, conversation may be supplemented with visual and printed tools (posters, pamphlets, counselling

27 Facilitators guide: Strengthening interpersonal communication (IPC) skills of health workers for the Expanded Program on Immunization. WHO-UNICEF Training of Trainers on Pneumococcal Vaccine (PCV10) Introduction and Immunization Basics. Version 23 August 2012 [web-only publication] (http://www.unicef.org/cbsc/files/UNICEF_3-hr__IPC_Session_FacilGuide_for_PAK_TOT-PCV10_Introduction-23-08-12.pdf, accessed 18 July 2016).

cards and similar materials) for better understanding and recall. If well planned and implemented during the SIA, IPC efforts can contribute to strengthening of RI as well.

9.6 Communication regarding serious AEFI

Given the devastating effects that misinterpretation and miscommunication of vaccine safety issues can have on vaccination programmes, it is crucial that in the preparatory phase national technical and social mobilization committees develop strong training and communication materials. Although serious AEFI due to measles or measles–rubella vaccination are extremely rare, coincidental occurrence of a serious event and sensational media coverage has the ability to seriously undermine immunization activities. Moreover, vaccine administration error-related reactions can also occur and can negatively affect the programme if not addressed immediately and effectively. It is therefore critical to prepare a strategy for communicating about serious AEFI. See Chapter 10 for more detail on AEFI.

As mentioned in section 9.1, communication committees at each level should be formed to oversee the planning, implementation and monitoring of the communication programme for the SIA, including communication for vaccine safety and AEFI. Depending on the resources and personnel available, this may be a subcommittee of the broader communication committee.

Be prepared

- Risk communication involves building trust. This involves including information on possible adverse events when communicating with parents and the community. Develop a fact sheet on AEFI.
- Awareness among health workers will facilitate early recognition and treatment of possible adverse events. This should include what AEFI are expected, their observed rates and what AEFI need to be reported immediately. Train health workers specifically on how to communicate with parents and the public about AEFI and safety concerns.
- Develop a crisis communication plan to allow for rapid and effective response to serious AEFI (see below). An insufficient response by the vaccination programme to a real or presumed serious AEFI can rapidly lead to a loss of public confidence and trust that can take years to rebuild.
- Develop links and maintain lines of communication with community leaders and local health workers so that information can be rapidly disseminated in the event of an AEFI investigation.
- Designate well-trained, well-respected spokespersons at all levels.

Communicate with the media

The media (newspapers, radio, television, internet, etc.) play an important role in influencing public perceptions. In the event of a vaccine safety issue, sensational media coverage can quickly raise public concern, but media can also be helpful allies in communicating public health messages. A proactive approach with the media is important to ensure access to credible sources for the dissemination of accurate and evidence-based messaging.

- Maintain a database of journalists who cover health issues in print and electronic media. Building personal relationships with key health reporters who understand the public health perspective can facilitate balanced media coverage.
- Develop information packages for the media that contain FAQs on immunization in general, specific vaccines, and for AEFI (e.g. background rates and expected rates for an SIA). Include contact information for designated spokespersons the media can reach for questions and statements.
- Regular workshops and technical briefings are a useful way to inform and sensitize the media to issues around immunization and AEFI so that information is conveyed to the public accurately and objectively.
- Press conferences and media releases – if prepared properly – are effective ways to provide uniform messages and avoid conflicting statements that can lead to rumours (see more on press releases in the event of a crisis in section 10.5).

9.6.1 Communication action points for health workers during serious AEFI

At community level (health worker)

- Immediately meet the family/parents/caregivers and empathize with them.
- Listen to them patiently.
- Ask village elders or religious leaders to accompany you when you go to meet the family.
- Follow-up with the family again after one or two days and ensure their well-being.
- Respect their space.
- Explain the extent to which the benefits of vaccination outweigh risks.
- Inform the health centre coordinator.

At health centre level (health centre coordinator, or equivalent)

- Listen to what the parents/public is saying.
- Take the health worker along when you go to meet the family.
- Take control of the situation and reassure the community without appearing judgmental.
- Keep people and media informed with facts and accurate information.
- If facts are not yet known, inform them that the matter is being looked into and the facts will be communicated in a specified time frame.
- Understand risk perception of the family/community.
- Disseminate timely and accurate messages to the media.

At district level (district coordinator)

- Get to the source of information and check its accuracy.
- Conduct a meeting of supportive opinion leaders to discuss the situation and find possible solutions and ways forward.
- Understand the community's perception towards immunization and vaccination history of other children in the family.
- Identify support groups in the community that could be positive role models and help you in reaching out to the community with the message that vaccination at large is beneficial for children.
- Respond to negative media questions with positive answers (prepared key message on the benefits of immunization, risks of non-immunization, etc.).

9.6.2 Crisis communication plan

A crisis communication plan should be prepared in advance, and should identify responsible persons to manage communication during vaccine crisis, should it occur.

Countries can have in place the basic elements of a crisis communication plan, including:

- an AEFI committee of designated individuals responsible for managing AEFI at each level, who can meet immediately to discuss the plan of action;
- identified, well-trained spokespersons at all levels;

- clear channels of communication with the media;
- key messages to communicate.

Checklist of possible interventions:

- **Mass media:** Consider whether coverage will be balanced, and possible risks of further distortion. Be proactive by issuing timely press releases.
- **Advocacy:** Key opinion leaders, professional organizations and other stakeholders may have greater credibility than the government, particularly in a crisis situation.
- **Community mobilization:** Engage and support the health community: seek collaboration and maintain contact with them.

For more information on effective communication planning and management in response to vaccine safety events, see http://www.euro.who.int/__data/assets/pdf_file/0007/187171/Vaccine-Safety-Events-managing-the-communications-response.pdf.[28]

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28 WHO Regional Office for Europe (2013). Vaccine safety events: managing the communications response. A guide for ministry of health, EPI managers and health promotion units. Copenhagen: World Health Organization, Regional Office for Europe.

10. AEFI monitoring and preparing for crisis communication

An adverse event following immunization (AEFI) is defined as any untoward medical occurrence which follows immunization and which does not necessarily have a causal relationship with the usage of the vaccine. The adverse event may be any unfavourable or unintended sign, abnormal laboratory finding, symptom or disease.[29] Adverse events can be either true adverse events (i.e. a vaccine reaction caused by the vaccine or vaccination process), or coincidental events that are not caused by the vaccine or vaccination process but are temporally associated with immunization.

In 2012, a revised classification relevant to cause-specific categorization of AEFI was introduced by the Council for International Organizations of Medical Sciences (CIOMS)/WHO (Table 10.1).

Serious AEFI are events that result in death, are life threatening, require hospitalization or prolongation of hospitalization, result in persistent or significant disability/incapacity, are a congenital anomaly/birth defect, or require intervention to prevent permanent impairment or damage.

All vaccines used in countries have to be licensed by the national regulatory authorities and may be prequalified by WHO. Developing countries with weak regulatory authorities may source their WHO-prequalified vaccines through the United Nations Children's Fund (UNICEF) or other United Nations agencies. The aim of the WHO prequalification process[30] is to ensure that vaccines provided through the United Nations for use in national immunization services of countries are safe, effective and suitable for the target populations at the recommended immunization schedules.

29 WHO (2014). Global manual on surveillance of adverse events following immunization. 2016 revision. Geneva: World Health Organization (http://www.WHO.int/vaccine_safety/publications/Global_Manual_revised_12102015.pdf, accessed 18 July 2016).

30 WHO provides advice to UN agencies on the acceptability of vaccines considered for purchase by such agencies through the service called vaccine prequalification. The purpose of prequalification assessment is to ensure that these vaccines are of assured quality, safety and efficacy, that they comply with WHO recommended standards for good manufacturing practice (GMP) and good clinical practice (GCP), and that they meet operational packaging and presentation specifications.

TABLE 10.1
Types of AEFI according to cause

Cause-specific type of AEFI	Definition
Vaccine product-related reaction	An AEFI that is caused or precipitated by a vaccine due to one or more of the inherent properties of the vaccine product.
Vaccine quality defect-related reaction	An AEFI that is caused or precipitated by one or more quality defects of the vaccine product, including its administration device as provided by the manufacturer.
Immunization error-related reaction (formerly "programme error")	An AEFI that is caused by inappropriate vaccine handling, prescribing or administration and thus by its nature is preventable.
Immunization anxiety-related reaction	An AEFI arising from anxiety about the immunization.
Coincidental event	An AEFI that is caused by something other than the vaccine product, immunization error or immunization anxiety, but a temporal association with immunization exists.

Source: WHO (2014). Global manual on surveillance of adverse events following immunization. 2016 revision. Geneva: World Health Organization.

Although serious AEFI with injectable vaccines are very rare, vaccines are biologic products and such events may occur. Due to the large number of vaccinations given within a short time and the public nature of SIAs, an increased number of observed AEFI is likely to become apparent. Although the rate may remain the same, AEFI will assume greater significance during SIAs. Furthermore, when SIAs using measles-containing vaccines are integrated with multiple interventions (such as vitamin A, deworming, OPV, etc.) they pose additional problems with AEFI, as side-effects of integrated interventions may be incorrectly attributed to the vaccine. This should be considered when planning integration. To prevent immunization error-related reactions, all the steps for safe vaccine administration and waste disposal, as described in Chapter 12, should be followed. Before vaccinating, health workers should check for vaccine contraindications (see Annex 1 for indications, precautions and contraindications, and observed rates of vaccine reactions after measles and rubella vaccines).

Some SIAs have been halted midway through the campaign, and have resulted in the loss of trust in the immunization programme following the occurrence of serious AEFI that have not been properly managed. These negative experiences could have been avoided or their impact reduced with an appropriate response. **It is, therefore, very important that immunization programmes monitor AEFI throughout the SIA and take immediate measures to address all serious AEFI.**

10.1 Planning for and organization of AEFI monitoring in SIAs

AEFI monitoring during SIAs must be an integral part of AEFI surveillance and the immunization programme. As such it must have support from political and health authorities and must be included in early SIA planning and budgeting. Proper planning to reduce immunization error-related reactions, and to monitor and respond to AEFI can minimize adverse events and their effects during an SIA. Additionally, careful planning will limit the potential for negative publicity from an AEFI.

Unless a separate national subcommittee on AEFI is established, planning and organization of AEFI monitoring is the responsibility of the national technical subcommittee and the national advocacy, social mobilization and communication subcommittee.

The national technical subcommittee is responsible for reviewing and revising the list of reportable AEFI and for developing guidelines for monitoring and management of AEFI during SIAs as necessary. These guidelines should also provide the clear flow of AEFI reporting and feedback during the SIA. Within the technical subcommittee, an AEFI coordinator should be appointed as a liaison with the country's existing AEFI surveillance system and if needed, with the national AEFI expert review committee. If an AEFI review committee does not exist in the country, an ad-hoc committee consisting of experts from different fields (paediatricians, immunologists, general practitioners, neurologists, and other clinical specialists, epidemiologists, microbiologists, etc.) should be appointed. Such a committee should not involve the staff responsible for vaccination and/or the regulatory authority because it requires independence.

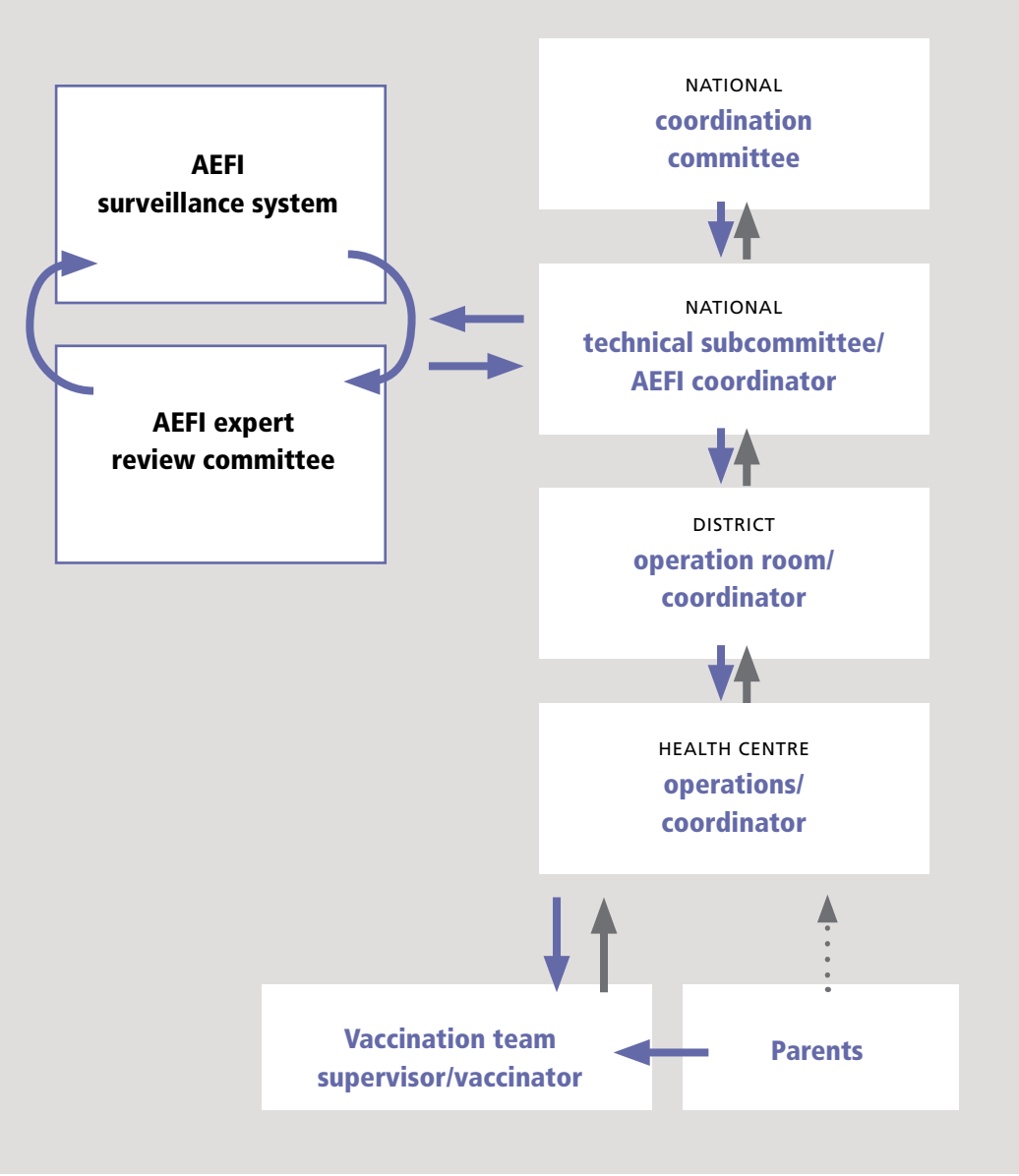
The national advocacy, social mobilization and communication subcommittee should prepare and provide health professionals and media with high-quality information on vaccine safety, along with preparing positive messages and evidence-based information for the public.

At an operational level (health centre, district and national level operation rooms) staff should be appointed to record all case reports of observed AEFI received from the field, prepare daily summaries and send reports to the next level (see Fig. 10.1), and as needed, support field teams with AEFI monitoring and management. In settings where AEFI are managed and treated by specifically designated health staff, the vaccinators should have available updated lists of names/contacts and nearest institutions to which to refer suspected cases.

AEFI observed by the health care worker and/or by parents or caregivers should be reported to the immunization programme using the standard AEFI reporting form (Annex 7a). Additionally, every SIA should have a list of reportable events (serious AEFI and AEFI of special interest) and a system of tracking and responding to these events.

Senior and team supervisors and coordinators, as well as health workers, should be on the alert for any "clustering" of adverse events of any type during or immediately following SIAs. This can be identified by reviewing AEFI data at the end of each day of the SIA including the occurrence by location. It is recommended to keep a line listing which may help initial identification of clustering or any other unusual significant events. **AEFI that occur in a cluster (within a localized area/facility, within a brief period of time), with unusual frequency or by type of reaction may indicate very serious immunization errors and need to be managed as a programmatic emergency.**

FIG. 10.1
Flow of AEFI reporting during SIAs



10.2 Responding to serious AEFI

All health facilities staffed with a medical officer (government-run as well as private sector) should be designated as AEFI management centres. The SIA microplan for each health centre should include the name, address and phone number of the medical officer of the nearest AEFI management centre. The mode of transport to the centre and the time taken to reach the centre should be determined during microplanning. All medical officers of the designated AEFI management centres should be trained and provided with AEFI treatment kits and standard AEFI reporting forms (see Annexes 7b and 7a, respectively).

10.3 Recognition and treatment of anaphylaxis

Health workers should be trained to distinguish anaphylaxis from fainting (vasovagal syncope), anxiety and breath-holding spells, which are common benign reactions (see Annex 7c). This is particularly important in countries in which the vaccinators are not allowed to administer adrenaline, and where for this reason, special attention should be given to planning and awareness of designated AEFI management centre locations. Unconsciousness is rarely the sole manifestation of anaphylaxis – it occurs only as a late event in severe cases. Anaphylaxis usually involves multiple body systems (cardiovascular, dermatologic or mucosal, respiratory, gastrointestinal). The skin is usually involved (rash and/or swelling of face or body) but in some patients clinical presentation may be incomplete. Anaphylaxis may present without skin changes, and cause only airway obstruction and/or low blood pressure (hypotension). This may lead to a delay in the diagnosis. In general, the reaction is more serious with more sudden onset and more rapid progression of symptoms. For this reason, it is advised that vaccine recipients be kept under observation preferably seated near the immunization centre for at least 15 minutes after the injection. For details on the recognition and treatment of anaphylaxis see Annex 7c.

10.4 Reporting and investigating serious AEFI

All observed AEFI cases should be reported to the surveillance system using a standard AEFI reporting form used in the country (Annex 7a). A line listing form may be used at lower levels to identify trends and clusters of AEFI and as a method of forwarding AEFI data to the regional/national level. All serious AEFI should be reported immediately, investigated and causality assessed whenever possible. Vaccine and/or diluent laboratory testing should not be requested as a routine, and never before the clear working hypothesis has been formulated.

Detailed procedures for reporting, investigation and causality assessment of AEFI are described in the *Global manual on surveillance of adverse events following immunization*[31], available online: http://www.who.int/vaccine_safety/publications/Global_Manual_revised_12102015.pdf. Additional information on WHO vaccine safety initiatives can be accessed online as well: www.who.int/vaccine_safety/en/.

10.5 Crisis management and communication

Vaccine safety crises are situations in which a real or potential loss of confidence in a specific vaccine or in the immunization programme occurs, and are often triggered by identification of AEFI. A crisis may have a "real" basis arising from genuine vaccine reactions or immunization errors, new study results, temporary suspension or recall of vaccine or vaccine replacement. Alternatively, it may have no legitimate foundation and be initiated and propagated entirely by mistaken rumours. Countries should have in place crisis communication plans at all levels, which take into account the potential impact that various events may have on the immunization programme.[32] A media communications plan is essential (see section 9.6.2).

Dealing with a crisis presents an opportunity to improve understanding of vaccine safety and quality issues and of immunization programmes in general. Additionally, it is an opportunity to upgrade policies and procedures if needed, and to correct any operative errors.

10.5.1 Responding to rumours during a crisis

Whether a rumour triggers a series of events that build up to a vaccine safety crisis depends on the nature of the rumour, how fast it spreads and whether prompt and effective action is taken to address it. Situations that can encourage rumours include serious social conflict, economic and political uncertainty, social transition and clashes of culture and beliefs, a history of discrimination and manipulation, and lack of transparency.

A clear understanding of the crisis and the rumour is necessary before an effective response can be taken. Fig. 10.2 presents a selection of questions to define rumours and potential crises.

31 WHO (2014). Global manual on surveillance of adverse events following immunization. 2016 revision. Geneva: World Health Organization (http://www.WHO.int/vaccine_safety/publications/Global_Manual_revised_12102015.pdf, accessed 18 July 2016).

32 WHO Regional Office for Europe (2013). Vaccine safety events: managing the communications response. A guide for ministry of health, EPI managers and health promotion units. Copenhagen: World Health Organization, Regional Office for Europe.

FIG. 10.2
Defining crises and rumours of AEFI during SIAs

DEFINE THE NATURE OF THE CRISIS

- Is the crisis linked to immunization or not?
- How soon will facts be available?
- What is the damage potential?

DEFINE THE NATURE OF THE RUMOUR

- Where does it come from?
- Is it based on facts?
- Who is likely to be affected by it?
- How is it spread and by whom?

10.5.2 Preparing press releases and media briefings

In the event of an AEFI investigation or impending vaccine crisis, frequent and timely press releases and media briefings can ensure that journalists are kept informed of the facts as they become available. This can prevent the spread of adverse and ill-informed speculation. The content of press releases and statements during media briefings should be clear, concise, and should include the following:

- a complete account of the event, framed in its context (e.g. an isolated event or a cluster of AEFI, or a coincidental event), including the key message;
- no technical jargon;
- an outline of actions taken or planned (such as the AEFI investigation);
- a description of the possible cause of the event;
- an assurance that corrective action will be taken, and what steps have already been taken;
- references to any relevant publications or websites for further information;
- repetition of the key message.[33]

33 WHO (2014). Global manual on surveillance of adverse events following immunization. 2016 revision. Geneva: World Health Organization (http://www.WHO.int/vaccine_safety/publications/Global_Manual_revised_12102015.pdf, accessed 18 July 2016).

11. Pre-SIA supervision and monitoring

11.1 Purpose of pre-SIA supervision and monitoring

The purpose of pre-SIA supervision and monitoring is to ensure that critical planning and preparation activities are adequately covered and are of high quality, appropriateness, and completeness at ALL levels (Table 11.1). Supervision and monitoring aim to rapidly identify gaps in preparedness and poorly-performing areas, identify corrective actions, and follow up to ensure corrective actions have taken place in a timely manner.

Supervision is performed by direct supervisors working with supervisees through the SIA operational management structure. Supervisors have the authority to direct the work, check its implementation and enforce corrective actions. Supervision is conducted through supervisory visits, which should be planned and scheduled in advance to allow for return to areas experiencing difficulties. The supervisor's focus should ensure that planning and preparations are high quality, so that every child is reached during the SIA. Several levels of supervision are required which include the vaccination team, health centre, and district/provincial level supervisors. All supervisors should be provided with checklists and tools to guide their field activities and data collection and reporting, and should be adequately trained on effective supportive supervision, on the use of the supervisory checklists and tools including the SIA Readiness Assessment Tool.

Monitoring is performed by individuals who are outside of the management structure who provide independent critical assessment of the activities preceding the SIA to the programme manager. As monitors do not usually have the supervisory authority to enforce their recommendations, they should have the qualifications and communication skills to be able to provide feedback and recommendations to the national and local staff. When government staff (national or subnational) serve

as monitors, they should not be assigned to the geographic areas where they usually live or work, to avoid biased observations and ensure fair reports.

Roles and responsibilities of supervisors and monitors at different levels are described in Annex 9a.

TABLE 11.1
Supervision and monitoring activities before the SIA

Activities	- Periodic review/meetings and follow up. - Periodic pre-SIA readiness assessment of preparatory activities carried out at the national and subnational levels.
What is assessed	- Planning, coordination and financing (includes training). - Monitoring and supervision (includes training). - Vaccine, cold chain, logistics and waste management. - Social mobilization and communication.
Action	- Immediate corrective measures by identified responsible person.

11.2 Management and coordination of pre-SIA supervision and monitoring

Pre-SIA supervision of preparedness is planned 9 months before the SIA at the national level (section 6.3.2). The technical implementation subcommittee is usually in charge of planning and coordination of pre-SIA supervision and monitoring, and feeding the findings back to the other subnational subcommittees and the NCC. At each administrative level, an SIA coordination team should be established to oversee the management and coordination of SIA activities. Prior to the SIA, the coordination teams monitor progress and timelines of SIA preparation using the SIA Readiness Assessment Tool, described in Annex 2, identify problems, assign individuals to address them and follow up to ensure that corrective actions have taken place.

11.3 Readiness assessment for national- and district-level planning

To assess and ensure timely preparation for M/MR SIAs, the SIA Readiness Assessment Tool should be used at the national and at the district level. The tool assesses SIA readiness at different points in time (see Annex 2). Results from the tool are then aggregated to higher levels to provide mid-level and national managers important and timely data for decision-making.

11.3.1 National level tool

The objective of the national level tool is to assess whether the national level has put in place the fundamental elements necessary to support successful SIA preparation and implementation at the subnational level. It addresses a total of 21 critical activities divided into four categories: i) planning, coordination and financing (11 activities); ii) monitoring and supervision (2 activities); iii) vaccine, cold chain and logistics (4 activities); and iv) advocacy, social mobilization and communication (4 activities). The major activities and timeline are the same as described below for SIA preparation. The national level tool could be administered by a representative of the ICC or the NCC who would be charged with monitoring SIA preparation at the national level from 15 months to 1 week prior to the SIA.

Between 9 and 6 months before the SIA, the subcommittees should have prepared national SIA guidelines. Microplanning workshops and advocacy and planning meetings at the provincial/district levels should be held and respective plans completed. Cold-chain system and equipment should have been assessed at provincial and district levels to establish whether additional cold-chain equipment needs to be ordered. Orders for vaccines, injection equipment, safety boxes and other logistics should also be placed before this time to ensure timely delivery and further distribution to the local level. If, despite the efforts, vaccines and devices will not arrive in time for implementation, the SIA will have to be delayed. In such a case, the earlier the decision to delay is made, the easier it is to reprogramme SIA activities while maintaining trust from local partners and local level personnel.

By 6 months before the SIA all plans including national logistics plan, supervision plans, and advocacy, social mobilization and communication plan, should be finalized and budgeted for.

By 4 months before the SIA, funds for training and advocacy and planning activities should be received at least to the district level. Microplans should be validated at the district level and strategies for special populations confirmed.

By 3 months before the SIA, training materials, supervisor and vaccination team guidelines or pocket guides, forms, tally sheets and checklists should be printed and distributed to the local level so that they can be used for the training of mid-level managers, supervisors, vaccinators and volunteers.

By 2 months before the SIA, supervision and monitoring plans and waste management should be in place at each level. Developed advocacy, social mobilization and communication materials should be distributed and plans implemented in the run-up to the campaign. SIA launch ceremonies should be confirmed. Supervisory visits to assess SIA readiness at district levels should begin and continue periodically (at 8, 4, 2 and 1 week prior to the SIA) until the start of the campaign.

During the month before the SIA, training of mid-level health workers (4 weeks before the SIA) and vaccinators and volunteers (2 weeks before the SIA) should be

conducted, social mobilization and communication activities implemented and bundled vaccines and other inputs (e.g. additional cold-chain equipment or other health interventions) distributed.

11.3.2 District level tool

The objective of the district level tool is to provide greater granularity in assessing readiness to conduct a high-quality M/MR SIA at the implementation level, whose results can be quantified and aggregated to assess overall readiness at higher administrative levels (see Annexes 9b and 9c). The tool addresses 17 critical activities and 28 components divided into four categories similar to those in the national level tool: i) planning, coordination and funding (7 activities, 12 components); ii) monitoring and supervision (3 activities); iii) vaccine, cold chain and logistics (5 activities, 11 components); iv) and social mobilization and communication (2 activities).

The district level tool (Annex 2b) is designed to be administered by a coordinator, supervisor or monitor four times prior to the SIA (during the 8th, 4th, 2nd and final week before the SIA). Suggested sources of information are provided (in *italics*) under each critical activity. When the coordinator, supervisor or monitor considers the critical activity is not on track, she/he should record the reasons for the delay, needed actions, deadlines and responsible persons on the tool. Finally, based on the findings of the assessment visit, the assessor should provide a summary assessment of whether the district is ready or on track to implement the SIA on the planned start date. The district and national SIA coordination subcommittees should use each phase of readiness monitoring in order to ensure timely preparedness for the SIA, by addressing the documented lags in preparation at the relevant administrative level.

Findings from each district visit may be entered on a computerized dashboard (Microsoft Excel) that automatically calculates and graphically displays summary statistics, which will be housed on the WHO website at the following address: http://www.who.int/immunization/diseases/measles/en/. Data entry is simple and includes Yes or No responses indicating whether each of the critical activities or their components has been accomplished. Summary statistics may be reviewed at each time point prior to the planned SIA start date. Programme managers and supervisors or other responsible persons may then take necessary actions to get preparation back on track or possibly delay SIA implementation until the critical preparation activities are accomplished, as determined by the responsible authorities.

The SIA Readiness Assessment Tool and the dashboard may be customized for national and subnational use. For example, the dashboard requires customization regarding the number of districts in a province to determine the denominator in calculating percentage of administrative units that have completed a particular activity, and to represent that graphically. Map files will be needed to create pattern maps indicating readiness by district or province catchment area.

VI.
8 weeks to 1 day before SIA: Pre-implementation activities

8 weeks to 1 day prior to the SIA you should do the following activities

At national level:

- ☐ Assess SIA readiness at national and district levels.
- ☐ Increase the frequency of meetings of the national subcommittees to review readiness and address gaps.
- ☐ Prepare for transferring vaccine and supplies from the central store.
- ☐ Start preparations for the opening ceremony.
- ☐ Verify that all media ads are prepared.

At district level:

- ☐ Verify availability of needed modes of transport.
- ☐ Receive/collect vaccine from the central store.
- ☐ Begin social mobilization and communication activities.

At health facility level:

- ☐ Final team planning: identify means of transport, finalize maps of catchment areas, start recruitment of local volunteers.

4 weeks to 1 day prior to the SIA you should do the following activities

At national level:

- ☐ Assess SIA readiness, undertake supervisory visits to selected districts (at 4, 2 and 1 week prior to the SIA).
- ☐ Begin newspaper, TV and radio announcements.
- ☐ Confirm preparations of opening ceremony.
- ☐ Prepare supervisory teams for SIA.
- ☐ Prepare site for opening ceremony (1 to 2 days before SIA).

At district level:

- ☐ Intensify social mobilization and communication activities.
- ☐ Conduct training.

At health facility level:

- ☐ Attend training.
- ☐ Train volunteers.
- ☐ Intensify social mobilization and communication activities.
- ☐ Confirm means of transport.
- ☐ About 1 week before SIA: start freezing water-packs.
- ☐ 1 to 2 days before SIA: transfer vaccine to and prepare vaccination posts.

The specific objective of the pre-implementation phase (8 weeks to 1 day before the SIA) is to ensure that all SIA planning and preparation activities are completed, and that an effective start of the SIA is ensured. Specific key activities that were planned, developed and prepared from at least 9 months prior should now be finalized. The preparations of these activities have been covered in previous chapters as described below.

1. Training for all key players (see Chapter 8) organized in no more than two levels (mid-trainers 4 weeks and health workers 2 weeks before SIA).

2. Social mobilization (see Chapter 9) – intensified activities along with communication activities at both district and health facility level.

3. Logistics at district and health facility level, based on careful microplanning (see Chapter 7) with vaccination team deployment layout (itinerary for the teams and SIA strategies, composition of teams, maps of catchment area showing movement of teams), finalized transport arrangements, adequate vaccine, diluent and other equipment, supplies and forms distribution to lower levels, reliable cold chain ensured, waste management arrangements finalized and supervisory and monitoring visits planned and ongoing.

Assessing the level of preparation in this phase is critical as it allows time for corrections or (when it is apparent that critical activities needed for a high-quality SIA cannot take place prior to the SIA) decisions to postpone the start of the SIA. If SIA implementation cannot be delayed, the central level can prepare a draft microplan and send it to each local level – where it can be amended based on local needs and returned in the shortest possible time. For verifying completion of critical activities at the district level using the SIA Readiness Assessment Tool see section 11.3 and Annex 2c.


12x100
10 ml
Engangssprøyte, 2-komponent
Kertakäyttöinen muovimäntäruisku
Σύριγγα μιας χρήσης, 2 τμημάτων
Seringas de uso único, de 2 peças
Egyszerhasználatos fecskendő, 2-részes
Спринцовка за еднократна употреба, от 2 части
Seringă de unică folosinta, din 2 piese
Jednorázová injekční stříkačka, 2-dílná
Jednorázová injekčna strieľačka, 2-dielna
Brizgalka za enkratno uporabo, 2-delna
Strzykawka 2-częściowa, jednorazowego użytku
2 parçalı tek kullanımlık enjektör
6
8
10
mL
HSW
Luer
CE 0123
©WHO/Olivier Asselin

VII. Implementation of the SIA

During the SIA you should do the following activities

At national level:

- ☐ On the first day: conduct opening ceremony, hold press briefing.
- ☐ During SIA: Supervise posts/teams, address emerging problems, calculate national daily and cumulative vaccine coverage and AEFI rates, prepare daily reports to inform ministry of health or other appropriate agency.

At district level:

- ☐ Supervise posts/teams.
- ☐ Compile, calculate and report daily coverage and AEFI to the national level.
- ☐ Coordinate back-up teams.
- ☐ Analyse data and conduct supervision.
- ☐ Review intra-SIA RCM results and take actions as appropriate (for areas with low coverage).

At health facility level:

- ☐ Start vaccinations (each day with a new set of tally sheets).
- ☐ Assist/relocate teams.
- ☐ Report daily tallies after verifying their accuracy.
- ☐ Report observed AEFI.
- ☐ Identify areas/populations (through intra-SIA RCM or other means) not achieving coverage and report to supervisor.
- ☐ Return unused supplies to the district level.

12. Operation of vaccination posts

12.1 Roles of personnel

The composition and organization of an effective vaccination team depend on the SIA strategy applied. The typical vaccination team at a permanent or temporary fixed post consists of four members: two health workers and two trained volunteers, organized to perform complementary tasks. If house-to-house canvassing is used, an additional volunteer is needed ("canvasser"), while mobile teams may have only two members (one health worker, one volunteer).

The **post coordinator** is a health worker responsible for assigning specific responsibilities to other health workers and volunteers and for the overall coordination of the activities implemented at the vaccination post. When there is only one health worker in the vaccination post, the health worker also acts as the post coordinator. Responsibilities of the post coordinator/health worker include:

- supervising volunteers and other health workers (if more than one);
- liaising with team supervisors, re-supplying the post;
- checking tally sheets and AEFI forms are correctly filled and summarized at the end of each day and submitting them to the team supervisor;
- responding to possible AEFI and ensuring proper management and reporting of any event;
- liaising with community leaders in the catchment area;
- ensuring correct storage conditions for vaccines (vaccine and diluents supply, cold chain);
- reconstituting and administering vaccines (recording the time when reconstituted);
- ensuring safe disposal of injection devices and handling of safety boxes;

- providing information/clarification and responding to questions;
- participating in the end-of-the-day meetings.

Volunteers are responsible for:

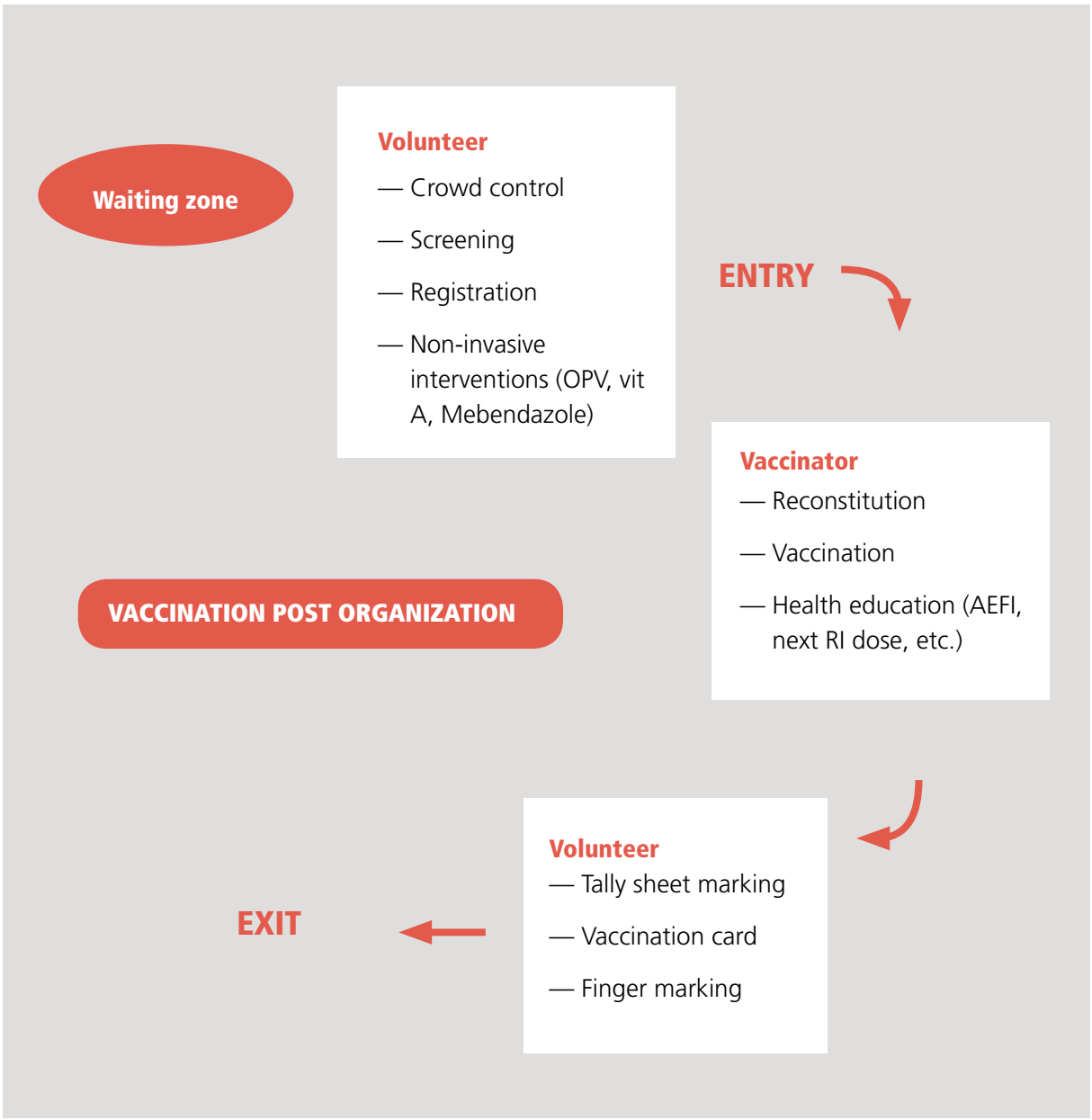
- maintaining order in the waiting area, crowd control;
- ensuring efficient flow through the post;
- screening clients, checking and recording the age (if unknown, estimate based on local events or holidays);
- providing additional non-injectable interventions (e.g. vitamin A, deworming, etc.) if integrated with SIA;
- tallying each vaccine recipient and recording each on the tally sheet;
- marking the finger of each vaccine recipient with indelible marker pen;
- marking zero dose children (if in community with good card retention);
- going into the community and seeking eligible children during SIA;
- acting as announcers or house-to-house canvassers.

The vaccination team must know exactly when and where they will vaccinate, the size of the target population, hard-to-reach populations, and how they will move from post to post. This information has to be made available to the team supervisors as well. Maps and itineraries should be shared with supervisors, local health officials and local social mobilizers and community leaders; any changes should be communicated to them promptly.

12.2 Organization and management of vaccination posts

Each vaccination post should be clearly marked (e.g. poster, banner, flag) and volunteers and health workers should be easily identifiable (armband, T-shirt with an SIA sign or similar). A well-functioning post should ensure an efficient one-way traffic flow to prevent bottlenecks, long waiting periods and confusion (Fig. 12.1). As bottlenecks occur most often during screening and recording, it is advisable to have additional trained volunteers at very busy posts. A busy fixed post may have two vaccination teams, operating in parallel.

FIG. 12.1
Example of organization of the SIA vaccination site



Each vaccination post (permanent, temporary or mobile) should have the following equipment and materials:

- appropriate supply of vaccines and diluents for the daily target population (extra supplies should be available the first 2–3 days of an SIA when demand is high and 40–50% of the target is reached, especially in urban/peri-urban posts);
- matching quantities of AD syringes, disposable syringes and needles for reconstitution, and safety boxes;
- a vaccine carrier (with four frozen water-packs or if not available, 1 kg of ice for the day);
- appropriate number of tally sheets for the day;
- indelible marker pen for finger marking;
- AEFI kit, AEFI reporting forms;
- a bin for non-biological, non-sharps waste;
- two tables, chairs, benches;
- metal trays and plastic sheeting, if possible;
- a banner/poster to identify service delivery post during SIA.

The area where vaccines, especially measles-containing vaccines, are stored should be out of direct sunlight, either under a roof or otherwise shaded. Efforts should be made to create a friendly atmosphere at vaccination posts to ensure that this experience for parents and children is as comfortable and as convenient as possible. The waiting area, for example, should be in a shaded area in hot climates.

12.3 Safe vaccine administration

Measles and measles–rubella vaccines are safe and have been used for decades. However, during SIAs a large number of vaccinations are performed in a short period of time (many of which are outside of health care facilities), therefore it is imperative to maintain high immunization safety standards. After reconstitution, measles and MR vaccines quickly lose their potency if exposed to room temperature or light, and therefore require careful handling. Supervisors should pay particular attention to safe immunization practices during their supervisory visits before, during and after the SIA.

Practices described below should be incorporated into both the routine and SIA administration of measles and measles–rubella vaccines (see Box 12.1).
The proper use of auto-disable (AD) syringes in SIAs greatly reduces person-to-person transmission of bloodborne pathogens.

BOX 12.1
Main points on using auto-disable syringes

- Use a new, sterile packed AD syringe for each injection for each child.
- **DO NOT PRE-FILL SYRINGES.**
- Use the same syringe to draw and to administer the vaccine.
- Immediately after injecting the child, the AD syringe must be placed in the injection safety box, or a puncture proof container. **DO NOT LEAVE** the syringe on the table, or a tray after the injection.
- **DO NOT ATTEMPT TO RECAP** the needle. This practice can lead to needle stick injuries.
- Do not use AD syringes that have damaged packaging, or have passed the manufacturer's expiry date.
- Wash your hands with soap and water before and after the vaccination session.

Photographs of vaccine and diluent vials may be made available to vaccination teams to avoid possible confusion and use of similarly packaged medical products.

12.3.1 Vaccine reconstitution

Measles and measles–rubella vaccines are freeze-dried and need to be reconstituted before administration. A health worker should perform vaccine reconstitution using the diluents from the same vaccine manufacturer. The diluents must be at the **same temperature** as the vaccine vial, so it is important to keep the diluents in the refrigerator for at least 24 hours before use.

- Check that correct vaccine and diluents (from the same manufacturer) are included.
- Check for expiry date on the label of vaccine vials and diluent and VVMs on the cap of vaccine vial.
- Use a new reconstitution syringe for each vial of vaccine and diluent.
- Reconstitute only one vaccine vial at a time.

- After reconstitution, shake the vial gently upside down a few times, holding the neck for mixing appropriately. Do not hold the vial with the finger on the vial's septum.

- After reconstitution, immediately dispose of the reconstitution syringe in a safety box **WITHOUT RECAPPING**.

- Record time of reconstitution on measles vaccine vial label.

- After reconstitution, **always** keep the vaccine **cool and protected from light** (i.e. sunlight or fluorescent light). Best practice is to keep the vaccine vial in a slit in the foam of the vaccine carrier, placed in the carrier (Fig. 12.2). Do not leave the vial in the holes of the water-pack as that exposes the vaccine to light and heat.

- Reconstituted vaccine vials should never be submerged in water (from melted ice, for example) and the vial's septum should remain clean and dry. Well-sealed water-packs should be used and water should not be allowed to accumulate where the vials are stored.

- Use the reconstituted vaccine **within 6 hours of reconstitution**. Any unused reconstituted vaccine **must be discarded after 6 hours** or at the end of the session, whichever is earlier. **DO NOT put reconstituted vaccine back in the refrigerator** for use the following day. Using vaccine more than 6 hours after reconstitution, even if stored in a fridge, carries the **risk of contamination** as well as **loss of potency**. Children have become severely ill and have died when injected with vaccine that was reconstituted, left overnight, then used again the day after reconstitution.

- **NEVER carry** and use reconstituted vaccine from one session site to another.

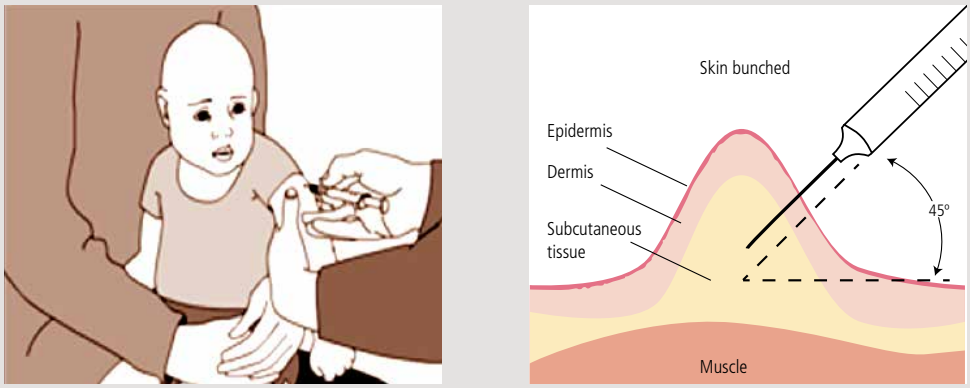
- **Discard reconstituted vaccine immediately** if there is visible evidence of contamination, any suspicion that an opened vial has been contaminated or if the cold chain has not been maintained at any point.

FIG. 12.2
Vaccine vial in the foam of the vaccine carrier

12.3.2 Vaccine administration

The dose of 0.5 ml of M/MR vaccine is given subcutaneously in the outer part of the upper arm (Fig. 12.3).

FIG. 12.3
Subcutaneous injection technique



During M/MR/MMR SIAs, all individuals in the target population should be vaccinated regardless of their previous vaccination status. This includes individuals who have received a dose of M/MR/MMR vaccine less than four weeks prior to the SIA. SIA eligible individuals who are admitted to the hospital while the SIA is in progress should receive vaccination, unless vaccination is contraindicated.

Vaccinators should anticipate and take measures to prevent sudden movements by the child during and after injection. Parents/caregivers should be asked to hold babies and small children on their laps to keep them still. It can help to tuck the child's legs between the parent/caregiver's thighs.

The following steps should be followed when administering measles or measles–rubella vaccine:

- Using an AD syringe, fill the dose (0.5 ml) accurately. If an incorrect volume is drawn, discard the AD syringe and its contents.
- If not enough vaccine for one complete dose is left in the vial, discard that vial and take the complete dose from another one.
- **DO NOT** pre-fill syringes in advance – fill them only prior to each vaccine administration.

- Hold the child's upper arm from underneath; reach around the arm with your fingers to pinch up the skin.
- Clean the injection site (if visibly dirty) with a cotton swab wet with clean water.
- Push the needle into the pinched-up skin to a depth of not more than 1 cm. The needle should go in at a sloping angle (45 degrees).
- Press the plunger with your thumb to inject the vaccine.
- Withdraw the needle and press the injection site with a dry swab; do not rub.

12.3.3 Reducing pain at the time of vaccination

WHO recommends addressing the pain at the time of the vaccination with effective, feasible, non-costly, culturally acceptable, age-specific and evidence-based strategies for pain mitigation. These can include:

- general measures (calm and collaborative health care personnel, proper positioning of the vaccinee, no aspiration during intramuscular injections, and for multiple vaccine administration sequencing injections in order of increasing painfulness, e.g. injections after oral vaccination); and
- specific additional measures (the presence of the caregiver throughout the procedure for children, breastfeeding during or shortly before the procedure if culturally acceptable, distractions to divert attention).

The following interventions are **not** recommended by WHO due to the lack of evidence of pain mitigation effectiveness and/or potential for altering vaccine effectiveness:

- warming of the vaccine (by rubbing it between the hands);
- manual stimulation of the injection site by rubbing or pinching;
- administration of oral analgesics (e.g. acetaminophen, ibuprofen) before or at the time of vaccination.

Pain occurring during the days after vaccination, as well as possible fever, can be mitigated with oral analgesics.

For more information on reducing pain at the time of vaccination see the WHO position paper at http://www.who.int/wer/2015/wer9039.pdf?ua=1[34].

34 WHO (2015). Reducing pain at the time of vaccination: WHO position paper – September 2015. Weekly Epidemiological Record. 90(39):505–516 (http://www.who.int/wer/2015/wer9039.pdf?ua=1, accessed 21 October 2016).

12.3.4 After vaccine administration

- Immediately discard the used syringe in a safety box; do not recap.
- Mark left ring finger of the child with indelible marker pen. To prevent the marker pens from drying, recap them after every use and keep them horizontal when not using (the left little finger is the standard for marking OPV; avoid using the same finger for MR).
- Mark tally sheet.
- Record vaccination in the SIA vaccination card or as **a separate line** of the home-based record (routine vaccination card, child health card or other) and return to child/caregiver. Note that SIA doses are **additional** doses and should not be recorded or counted as routine doses.
- For children aged less than 2 years (and when the child has younger siblings) remind the caregiver about routine immunization doses and provide information of the time and place of the next routine session.
- Ask the vaccinee to remain at the session site **for 15 minutes** after injection, preferably seated (to observe in case of AEFI with rapid onset).

12.3.5 At the end of the immunization day or when the team leaves to go to another vaccination site

The vaccination post coordinator/health worker should:

- cross-check and sum entries on the tally sheets and submit them to the supervisor;
- ensure that all safety boxes and other hazardous waste are collected for safe disposal;
- discard reconstituted vaccine vials;
- ensure that all other waste, including used vials, is safely disposed of and that all equipment is properly cleaned and prepared for the next day;
- return all equipment, including unopened vaccines and other supplies to the nearest health centre (the location of the health centre for the return of vaccine should be precisely indicated ahead of time to all vaccination post coordinators/ health workers and team supervisors);
- inspect and clean the vaccination post and its immediate vicinity.

12.4 Waste disposal

Safe waste disposal options should be reviewed at the national level during the planning phase (9 months before the SIA). The national logistics subcommittee (Chapter 6) should consider an assessment of existing local practices for medical waste disposal and decide on a safe strategy. No single, universally accepted method exists, but a viable, locally-adapted solution must be identified and agreed upon by all partners. Operational plans are further developed at the district level and included in the national logistics plan and should be finalized 6 months before the SIA.

12.4.1 Safe disposal of safety boxes

All used disposable syringes and needles (including reconstitution syringes and needles) must be disposed of immediately after use – without recapping – into designated puncture-resistant safety boxes provided in all vaccination posts. Each 5-L safety box can hold up to 100 syringes and needles and should only be filled approximately ¾ full, or up to the "fill" line. If, for any reason, capacity of the safety boxes is reached at a post, other puncture resistant containers such as metal cans or thick plastic containers may be used for injection equipment disposal. An ordinary cardboard box is NOT puncture-resistant, and therefore should not be used. Safety boxes must be kept in a secure area and taken for disposal as soon after the immunization session as practical. No other waste should be put into the safety boxes.

Commonly used methods for destroying filled safety boxes include burying and incineration. The recommended method of disposal is incineration. In areas where incinerators are not available and cannot be constructed, alternative disposal measures, such as burying, must be put in place.

- **Incineration:** Auto-combustion type incinerators, which achieve temperatures in excess of 800 degrees centigrade, are preferred for the destruction of all contaminated sharps. Well-functioning incinerators ensure the most complete destruction of needles and syringes and reduce the volume of waste to a minimum. High temperature, dual-combustion incinerators with air filters produce less toxic pollutants than furnaces burning at lower temperatures. Some health facilities have on-site incinerators, which may be used for SIA purposes. Otherwise, incineration facilities from other industries (e.g. cement factories) should be borrowed for the SIA, if possible.

- **Burying/encapsulation:** Full safety boxes can be placed in fenced off waste burial pits, at least 2 meters deep. The pit bottom should be more than 1.5 meters above the groundwater during rainy season. When the pit is full, it must be covered with at least 30 cm of soil and sealed with concrete. Encapsulation is a similar method, whereby waste is placed in containers which, when ¾ full, are filled with a medium such as sand, cement, or clay. Once solidified, the containers are then buried or taken to landfills. Burying/encapsulation is simple and inexpensive, however, pits will fill very quickly in SIAs so this method may only be suitable in small, rural areas. The choice of sites for pits should be agreed upon in advance with local authorities, including any local environmental, water and agricultural officials present in the area.

- **Hub cutters:** The introduction of needle removers (hub cutters) for SIAs can become an opportunity to substantially improve safe handling and disposal of injection waste, not only for SIAs, but also for routine immunization and for all other programmes using syringes and needles. For large-scale SIAs, the number of safety boxes required and therefore the volume of waste to be incinerated can quickly add up and pose logistical challenges. In contrast to one safety box for every 100 syringes, a single hub cutter can, in some cases, hold up to 4000 cut needles. Studies evaluating hub-cutters have found the devices to be as safe as current sharps disposal practices.[35] Hub cutters are particularly useful in countries that have the capacity to recycle plastic materials. Recycling of disinfected plastic syringes (with needles removed) will dramatically reduce the volume of waste generated in SIAs and the incineration needs.

Regardless of the method selected, the area in which the incineration or burial takes place must be secured. Everyone at the vaccination post, the drivers of vehicles, the people transferring the boxes from the vehicle to the store prior to incineration and into the incinerator, etc. must be made aware of the risks of contamination from the used injection equipment. Care must be taken to avoid spillage from filled containers. The vehicles used to transport the filled containers must be disinfected if spillage occurs.

Burning of waste in a metal drum or in an open pit is **NOT** in line with WHO policy for the treatment of waste and it is **NOT** recommended by WHO since it produces toxic emissions and presents a public health and environmental hazard.

35 Agbenu E, Chartier Y, Eleeza J, et al. (2014). Use of hub cutters and the volume of sharp waste and occurrence of needle-stick injuries during 2011 mass immunization campaigns against yellow fever in Ghana: a cohort study. Int J Occup Environ Med. 5:9–17.

13. Supervision and monitoring during SIA

Supervision and monitoring during the SIA aim to ensure that all SIA activities and teams are performing according to the SIA guidelines and local microplans while the SIA is still ongoing. During the microplanning process, supervisors have to formulate the workplan of supervisory and monitoring visits for which they should ensure that resources are available. Their planning should focus on teams and areas that may need more help (weaker-performing teams, hard-to-reach populations). During the SIA, the coordination team at each level oversees the management and coordination of daily SIA activities and troubleshoots the challenges that arise. Most of the coordination teams will be deployed during the SIA to supervise and monitor SIA activities. A senior government health official (often the EPI manager or health director at the respective level) is designated as the person responsible for leading the team. Key supervisory and monitoring activities during the SIA are the supervision and monitoring of the vaccination teams and conducting intra-SIA RCM to find unvaccinated children.

13.1 Supervision and monitoring of vaccination teams

Supervision of vaccination teams is essential to ensure that planned day-to-day operations are correctly executed. The team's first-level supervisor is responsible for giving directions to the staff and is responsible for ensuring the work gets done. Team supervisors should initially focus their activities on ensuring all teams can organize sessions and safely deliver vaccines. In addition, team supervisors should carry out the following activities.

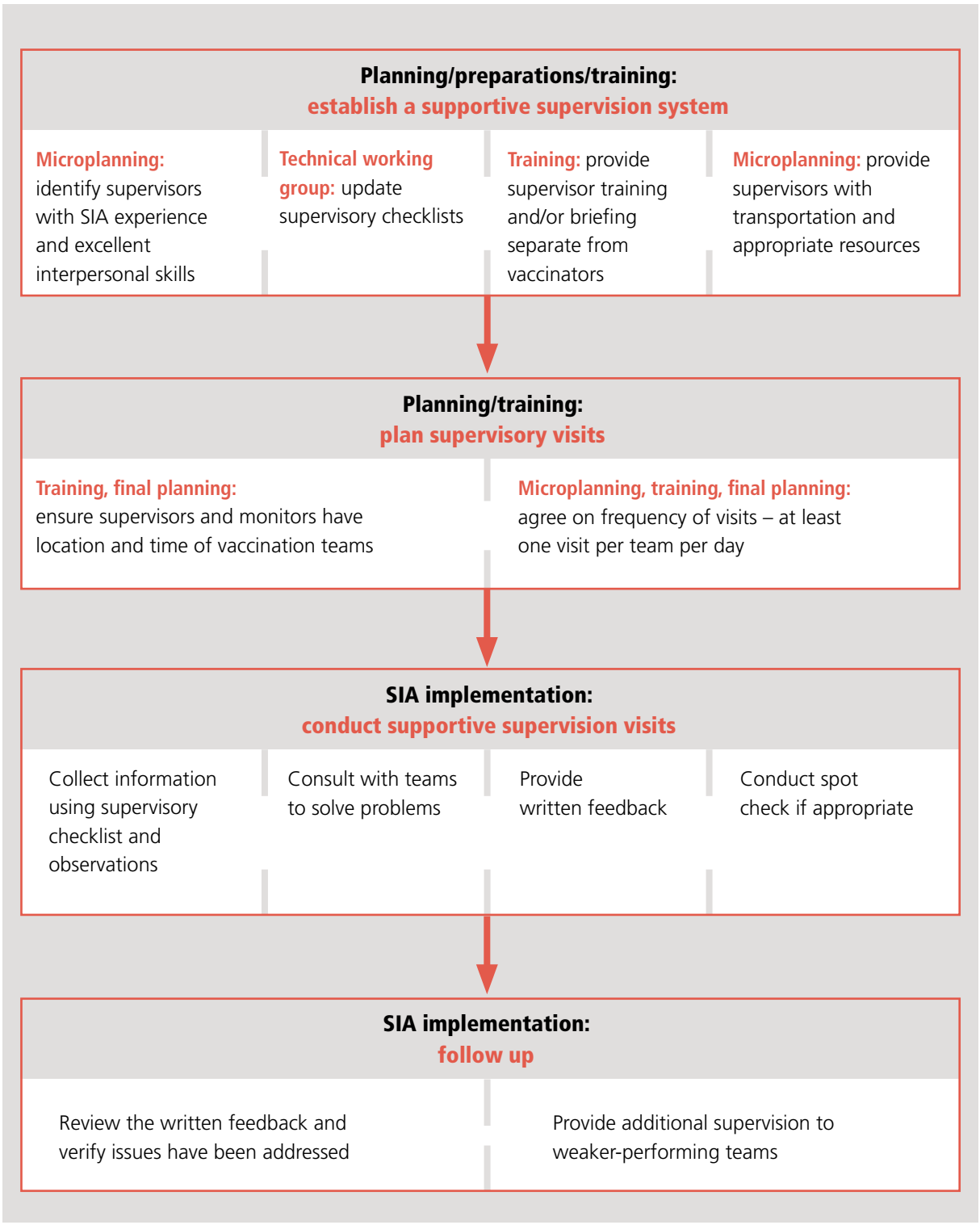
1. Observe performance of critical activities and provide immediate support, discussion and guidance to the vaccination teams when needed.

2. Ensure that tally sheets and other forms are correctly completed and turned in, in order to calculate daily coverage and track quantitative progress against the microplan.
3. Ensure that teams do not run out of supplies during the day.
4. At the end of each day summarize the tally sheets for the day and review the progress achieved; participate in daily meetings and debriefings with teams and social mobilizers; based on daily findings, plan where the teams will be the next day; and ensure the populations in the target areas, especially local leaders, are well-informed.

Fig. 13.1 shows an example of an SIA supervision framework. Monitors can also be deployed to monitor the performance of the vaccination teams during the SIA. Such monitors should be trained and provided with the relevant tools and checklists. As mentioned above, monitors do not have the authority to enforce action but should provide verbal and written (i.e. completed supervisory checklists) feedback and recommendations to the national and local SIA management teams based on their observations of the vaccination posts, so that corrective actions can be taken immediately. For more information on roles and responsibilities of various supervisors see Annex 9a.

At the district level, the coordination team communicates frequently with supervisors and monitors during the day, as well as in the evening at the daily review meeting. The coordination team also communicates daily with the coordination team at the next highest level to report progress and any issues that need to be addressed there (usually done through the coordinator).

FIG. 13.1
Framework for intra-SIA supportive supervision



Source: Adapted, with permission, from Government of India (2008).[36]

36 Government of India (2008). Immunization handbook for medical officers. Department of Health and Family Welfare, Government of India (http://www.nihfw.org/pdf/NCHRC-Publications/ImmuniHandbook.pdf, accessed 15 June 2016).

13.2 Supervisory checklists

The supervisory checklist is a useful tool to ensure a systematic approach to supervision by guiding the supervisors to observe and focus on specific activities, skills and performance of the staff. The national technical subcommittee should develop the checklist, taking into account country-specific or SIA-specific issues that need close supervision. The checklist should be finalized together with the other forms and tools, reproduced and distributed in quantities according to the microplans, and reach the peripheral levels in time for final planning and training. Supervisory checklists should be short, specific, simple and include two main sections: 1) list of activities and skills to be supervised, and 2) a space for assessment, observations and identifying problems, including recommended corrective actions and the persons responsible. Data from supervisory checklists should be compiled and analysed to identify common problems specific to the SIA, such as poor safety practices or HCW knowledge of AEFI management. Problems identified through the supervisory visits will impact the RI programme and future SIAs and should be addressed. See Chapter 14 for proposed indicators for SIA quality, with data derived from the supervisory checklists.

Supervisory checklists are particularly useful at the beginning of the SIA when the errors are most likely to occur and when early detection still allows time for necessary corrections. All critical aspects of the vaccination activities should be supervised; therefore, checklists may include the following assessments.

- Social mobilization: Assess what social mobilization activities are ongoing at the vaccination post and if they are intensive enough to ensure that the entire target population will come to the post. You may question parents/caregivers and others at the post to determine this.

- Cold chain and vaccine handling: Assess if proper techniques are being used to ensure that a safe and effective vaccine is delivered.

- Availability of vaccine and supplies: Assess if the team has the proper equipment and adequate quantities of supplies to vaccinate the target population. This assessment often requires opening vaccine carriers and counting vaccines and injection materials.

- Organization of post: Assess if the flow of the post is adequate to handle the demand both at the time of the visit, and at times with a large number of clients. Supervisors should identify and try to correct any reasons for bottlenecks and help to redeploy teams as needed. Redeployment could be either away from sites where rapid monitoring and door-to-door canvassing suggest the area is well covered or towards sites where the number of children is larger than the current team can vaccinate that day.

- Immunization safety and waste management: Assess if proper injection techniques are being used, if AEFI forms are available at each post, and if an AEFI management kit/adrenaline (epinephrine) is available at the planned level (either with the team or at a nearby health centre). Verify if accurate information is provided to caregivers about common adverse events (fever, redness at vaccination site, etc.), and if the vaccination team has proper instructions on how to reach the health professional at the nearest health centre in case of emergency.

- Recording and using data: Assess if data are being accurately recorded on vaccination cards and tally sheets for all interventions, including supplies, and cross-check number of vials used against number of vaccinations tallied, and numbers of children getting each intervention for integrated SIAs.

- RI-strengthening activities: Asses if RI messages are being given to caregivers.

Supervisory checklist templates that can be modified and used in different SIAs at different supervisory levels are provided in Annexes 9b and 9c. These checklists should be short enough that easy-to-use electronic versions could be developed and installed on smartphones or tablets. Transmission and aggregation of these data at district and higher levels can help to show the quality/gaps in supervision and how the checklist results are changing over time. If only paper forms are used, then these forms should be summarized at the end of the SIA and the forms and summary sent to the higher, and eventually national, level.

13.3 Rapid convenience monitoring

The most important objective of rapid convenience monitoring (RCM) is to find unvaccinated children in order to vaccinate them. Additional goals are to identify reasons for non-vaccination and plan and execute rapid corrective action. RCM data provide information on the general performance of the SIA and suggest how to refine strategies for reaching the hardest-to-reach children. RCM is a pass/fail assessment of the areas surveyed, not a coverage assessment. RCM data are collected using methods that are not designed to be representative of the population targeted for the SIA and, therefore, do not produce valid coverage estimates. RCM should be used while the SIA is still ongoing (referred to as intra-SIA RCM;) and at the end of the SIA (referred to as post-SIA independent monitoring; see section 14.1).

13.3.1 Intra-SIA RCM

Intra-SIA RCM is usually carried out by supervisors to rapidly identify poorly-performing areas under their supervision **before the vaccination teams move out of the**

locality so that corrective actions can be taken immediately. Planning and budgeting for intra-SIA RCM need to be done during the early SIA planning phases and all supervisors should be trained to perform RCM. These assessments generally begin on the second day of the SIA. Intra-SIA RCM should be done only in areas where vaccination teams feel that they have completed the vaccination of the target population or in areas where the effectiveness of social mobilization early in the SIA needs to be determined. In addition, supervisors should choose areas most likely to have children missed by the SIA. These include:

- areas near borders, whether between SIA team areas, health facility catchment areas, district borders, regional borders or international borders;
- areas with migrant populations, ethnic or religious minorities, marginalized populations;
- areas with groups known to resist vaccination or be reluctant to have their children vaccinated, including more affluent areas;
- areas with difficult geographic access (islands, river or lake-side communities, far from health centres, etc.).

RCM should occur at times when caregivers are available to inform supervisors/monitors of the vaccination status of children living in the household. Annex 10 provides details on the tools available for RCM.

The district or health centre coordination team should review the results of the RCM daily. Corrective action should be taken if any of the indicators (listed in Table 13.1) are not met.

TABLE 13.1
Summary of RCM triggers

INDICATOR	TRIGGER FOR CORRECTIVE ACTION
Number of houses (out of 15) with all SIA-eligible children vaccinated during SIA	< 14 houses completely vaccinated
Percentage of SIA-eligible children identified during **in-house** monitoring that were vaccinated during this SIA	< 90% vaccinated children
Percentage of SIA-eligible children identified during **out-of-house** monitoring that were vaccinated during this SIA	< 90% vaccinated children

The coordination team should determine what appropriate corrective action should be taken when the triggers are met. Below are some suggested corrective actions.

1. If non-participation is due to lack of awareness of the SIA or locations of vaccination posts and the SIA is still ongoing, then social mobilizers or house-to-house canvassers should be sent to the area to inform caregivers where the posts are located and to encourage them to take all un-immunized children to the vaccination posts.

2. If non-participation in the SIA is due to resistance or specific rumours, experienced supervisors should work with key informants and local leaders to overcome these difficulties.

3. If populations are reluctant to travel to the nearest vaccination post, either because of distance or sociocultural barriers (e.g. ethnic or religious differences between those missed and those around the nearest post) then the post should be moved or split so that a post is set up in the area with low coverage. Social mobilizers should ensure that community leaders and people know of the new site and are encouraged to send their children there.

4. If there are unvaccinated children in a mobile post in an area with a clearly defined target population (e.g. rural village) and the vaccination teams are nearby in another village, the vaccination teams can go back before leaving the locality to vaccinate any missed children.

In-school monitoring is recommended when a high proportion of the SIA target age range is attending school, or when teams are using schools as temporary vaccination posts. This allows the monitoring of the completeness of this strategy, both in terms of ensuring all schools (public, private, religious) are visited and in terms of ensuring that children absent from school on the vaccination day were reached later.

13.4 Administrative data collection and analysis

During the SIA, administrative data provide an important source of information to monitor the number of children vaccinated, vaccine utilization and other key data. Combined with the supervisory and monitoring data, these data should be reviewed to identify when corrective actions should be taken during the SIA. Therefore, a plan for rapid reporting and analysis of data on doses delivered during the SIA should be established.

13.4.1 Vaccination cards/home-based records for recording

Recording vaccinations administered during SIAs on a vaccination card/home-based record is essential for the valid verification of immunization coverage during post-SIA surveys, and for establishing the total number of vaccine doses received by a child at school entry (where school enrolment screening policies exist). Although the use of immunization cards can increase the SIA cost and workload, appropriate recording of every vaccination (including those given during SIAs) is recommended by WHO. For more information and guidance on the content and design of home-based records see http://www.who.int/immunization/monitoring_surveillance/routine/homebasedrecords/en/.[37]

13.4.2 Tally sheets

Vaccination teams record each vaccine dose administered on tally sheets. The tally sheets should be simple to understand and use, and should not require significant training. To facilitate counting doses given during the day, boxes should ideally be in groups of five, and tallies should be broken down by age group (see example in Annex 9d).

Tally sheets for SIAs with multiple interventions

During integrated SIAs with multiple interventions, separate tally sheets are often used for each intervention, so that all interventions provided may be recorded immediately after being delivered. Tallies should be made only once per intervention and only in the section for the appropriate age range. To facilitate comparisons between counts and consistency between forms, it is important that the breakdown of age groups used on tally sheets are consistent for all integrated interventions provided. For example, for an SIA with age group cut-offs at 12 months and 5 years of age:

M/MR
(target age group 9 months to 14 years):

- 9 to 11 months
- 12 to 59 months (or 1–4 years)
- 5 years to 14 years

Polio
(target age group 0 to 59 months):

- 0 to 11 months
- 12 to 59 months

37 WHO (2015). Practical guide for the design, use and promotion of home-based records in immunization programmes. Geneva: World Health Organization (WHO/IVB/15.05; http://apps.who.int/iris/bitstream/10665/175905/2/WHO_IVB_15.05_eng.pdf?ua=1&ua=1, accessed 15 June 2016).

Using tally sheets to identify zero dose children

Identifying zero dose (previously unvaccinated) children during the SIA can provide useful information for RI as it helps identify communities at risk for low routine immunization coverage. This approach should only be used in areas with high vaccination card retention. In this approach, the tally sheets include the number of age-appropriate children vaccinated during the SIA who had not received any prior measles or MR vaccine doses (zero dose children) (see example in Annex 9e). These tally sheets are optional and should be used without jeopardizing the quality of the SIA. To avoid confusion, during MR introductory campaigns the assessment should clearly be of prior **measles**, not MR, vaccination.

For information on the RI programme, data on zero dose children need to be interpreted with care. The absence of zero dose children identified on the tally sheet does NOT provide information on the strength of the RI programme in the community (as the same children missed by RI could be missed by the SIA). However, if there are a high number of zero dose children, it is clear that the RI programme has missed many children in the area and further investigation following the SIA needs to take place.

For all the above options, a new tally sheet should be started at each vaccination site each day. Tally sheets should not be carried over and used for more than one day. If a team is vaccinating at a large facility, such as a school that has an accurate list of all registered children, or it is the start of an SIA and large numbers of children have come to a vaccination site, then multiple tally sheets should be utilized. The school's registration list could be used to cross-check that all registered children are vaccinated.

At the end of each day of vaccination activities, the tally sheets should be reviewed for completeness by both the post coordinator/health worker and the team supervisor.

- Date, location, team number and team members should be clearly indicated.
- Vials of vaccine received, used, damaged and returned should be consistent.
- Tallies have been correctly done, with no skipping of rows.

The tally sheets should then be summarized and shared with the team supervisor, including:

- the number of children vaccinated and progress to reach the target;
- the number of children given other interventions;
- information on vaccine vial counts (vials received, opened, discarded and returned by team);
- number of supervision and monitoring visits;
- number of zero dose children (for areas with good card retention by caregivers).

Submission and review of the completed tally sheet (paper or electronic if available) with the supervisor is preferred; however, when necessary, communication of tentative data by other means (e.g. phone, SMS) may be used for frequent or real-time reporting. If vaccination teams are unable to submit tally sheets daily, then all tally sheets should be submitted to the supervisor as often as possible until the end of the SIA.

The tally sheets are then compiled at the first organizational level (usually a health centre or district level). The coordination team at that level calculates administrative vaccination coverage using the administrative coverage formula below. During SIA implementation, this formula should be used to track progress in SIA administrative coverage, both daily and cumulative coverage.

$$\textbf{Administrative coverage} = \frac{\text{Number of children in target age group vaccinated during SIA}}{\text{Total number of children in target age group in microplan}} \times 100 = \ldots\ldots\ldots\ \%$$

Reporting completeness should also be calculated and monitored daily using the formula below. When using this formula, the numerator should include teams that submitted a complete report for that day.

$$\textbf{Reporting completeness} = \frac{\text{Number of vaccination teams that submitted their complete tally sheets on given day}}{\text{Number of vaccination teams that worked on given day}} \times 100 = \ldots\ldots\ldots\ \%$$

If teams submit partially-completed tally sheets (e.g. reporting the number of doses given in the morning, but not those given later in the day) the data still can be included in the calculation of administrative coverage. The coordination team should assess how many teams provided partial data for each day.

13.4.3 Reporting forms

The supervisors and coordination team members should analyse the aggregated data and report them daily to the next highest level for all interventions delivered during the SIA, including persons reached and reporting completeness. It should be recognized that some teams might not be able to provide their tally sheets daily (e.g. teams not vaccinating that day due to delays in travel or lacking the means to communicate).

The supervisor is responsible for obtaining all missing data and submitting it to the next highest level (along with all preliminary reports) as soon as possible. At the end of the SIA all tally sheets should be reviewed again in order to confirm the results are included in the final report.

Maintaining accurate administrative data during SIAs is a challenge, especially when data come from multiple modalities (e.g. phone, paper, SMS). To avoid double counting when compiling final tally sheets, data communicated "informally" (e.g. phone, SMS) should be kept separate from data shared "formally" (e.g. paper, faxed, scanned or photographed forms). The number of tally sheets and other forms submitted through formal and informal channels should be reported separately (see example in Annex 9f).

As a minimum, reporting forms should contain the following key information and data.

- Key information:
  - date of vaccination;
  - site location;
  - team identifier (name);
  - team supervisor (name);
  - target population for the catchment area of that site (from microplan used for vaccine distribution);
  - place for date and signature of team leader submitting the form;
  - place for date and signature/stamp of supervisor or health officer receiving and completing the form.

- Key data:
  - number of vaccinated children by age group;
  - number of children provided with vitamin A supplementation, deworming medicine or other intervention;
  - for areas with good card retention by caregivers, previous vaccination for measles (i.e. zero dose);
  - information on vials: number of
    - vials given to the team,
    - vials opened by the team, and
    - vials discarded by the team (reasons for discarding should be noted).

13.4.4 Data flow

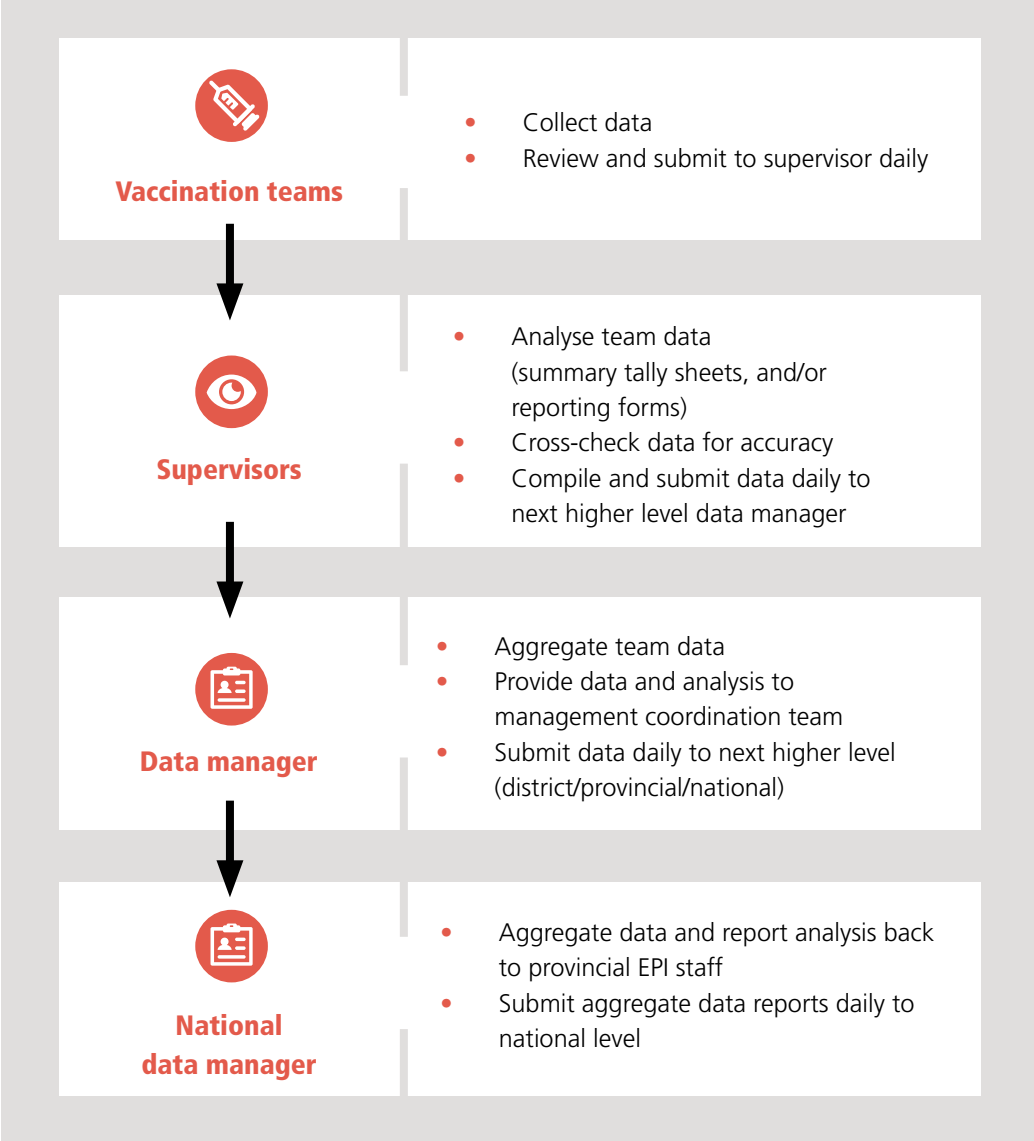
A well-defined data flow ensures that data are rapidly and efficiently communicated to the correct person at the correct time. Ideally at each level someone will be assigned as the SIA data manager, with a requirement for computer skills at district level and above. A proposed data flow is illustrated in Fig. 13.2. The aggregated data

at each level is compiled, checked for errors and then analysed. Areas that need additional support can then be identified and critical challenges promptly addressed.

At the end of the SIA, the daily reporting forms of the doses administered during the SIA, including all tally sheets, are compiled for final tabulation (and verification); they are compared to the tally sheets to check for discrepancies, and then shared following the same data flow as the daily reports.

Submission may involve passing data to additional data managers where additional levels exist. Note that in such cases, review, analysis and action is ongoing by multiple groups (i.e. by the data manager and coordination teams).

FIG. 13.2
Data flow of daily administrative coverage data



13.4.5 Data interpretation

Data interpretation requires triangulation of all available information to reach conclusions and make informed decisions for taking appropriate action to improve SIA implementation. The effectiveness of this decision-making process is dependent on having accurate and reliable quantitative data (administrative coverage, RCM data) and qualitative data (supervisor's observations and local knowledge). Supervisors at each level must ensure completeness and accuracy of data. Data should be analysed and interpreted through the following steps.

1. Compile and clean data, removing duplications and errors in data entry.
2. Review data for accuracy and completeness.
3. Perform preliminary analysis:
   a. calculate administrative coverage
   b. identify areas of poor performance.
4. Perform detailed analysis:
   a. evaluate if SIA is on track to reach every child
   b. evaluate if supervision is on track (each team visited each day)
   c. determine the proportion of zero dose children (as appropriate).

Several techniques can be used to cross-check reported administrative data for accuracy.

- Compare measles or MR doses delivered (vaccinated children) to the vials opened. The reported number of vials opened should be consistent with the reported number of doses delivered. For example, if in a given country 10% waste is considered acceptable, and twenty 10-dose measles or MR vials were opened, then between 180 and 200 doses should have been administered. Supervisors should use this information to cross-check the tally sheets daily.
- Compare the reported number of doses of measles or MR vaccine administered to other interventions for the same target age group. For example, the same number of doses of measles or MR should be given to children aged 12 to 59 months, as the number of doses of OPV for the same age range.
- Compare RCM pass/fail results to administrative coverage data. If areas have high administrative coverage but failed during one or more RCM, the teams should identify the reasons why. Reasons why may come from the RCM forms themselves, or may require a separate consultation with local officials/populations. If RCM identified areas with unvaccinated children then the actions taken should be clearly described.

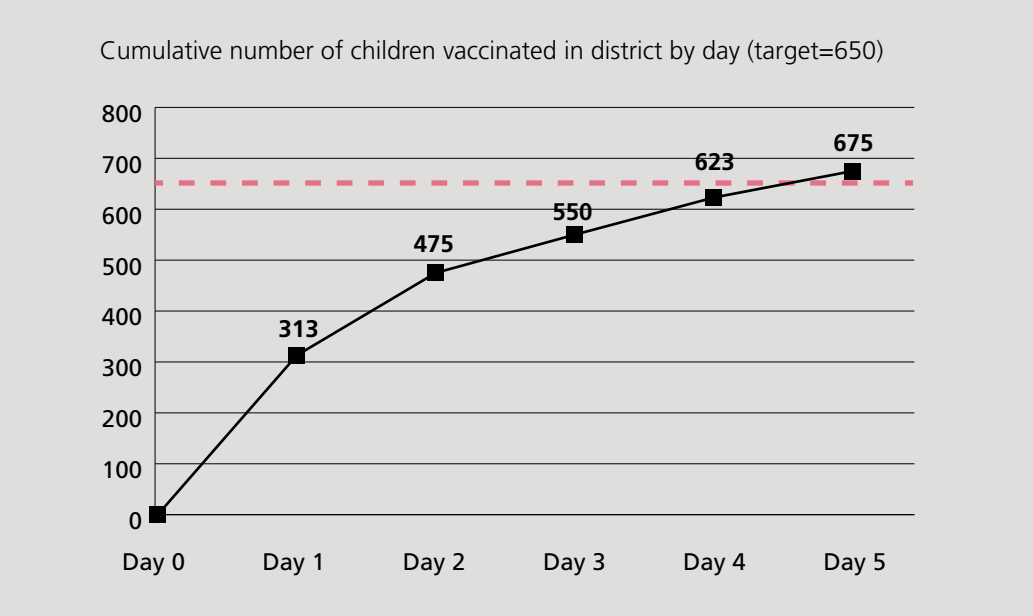
Reasons for inaccuracy of administrative data include:

- incomplete reporting by vaccination teams;
- inaccurate microplanning estimates of target population size (i.e. denominator problem);
- misunderstanding on the part of vaccination teams about target age range (e.g. vaccinating children who are already aged 5 years in an SIA targeting those aged 9–59 months);
- vaccinating children outside of target age range (children older or younger than target) at the request of the guardian or when children have travelled long distances to visit the site;
- discarding empty vials before the end of the session;
- manipulated data reporting.

In addition to reviewing the daily administrative coverage in certain areas, supervisors may plot the daily cumulative administrative coverage on a graph for their area (Fig. 13.3), similar to what is done for tracking routine immunization. Daily cumulative

charting is helpful to see if the SIA is on track to reach every child by the end of the SIA. Visual presentation of the data can facilitate rapid identification of areas with lower than expected SIA attendance that need special focus, resource reallocation, strengthening of social mobilization or a modification of the vaccination strategy. Similar strategies can be used for each vaccination team, though plotting is usually not necessary.

FIG. 13.3
Daily cumulative charting of administrative coverage



Daily total doses administered are often higher early in the SIA when attendance is highest, resulting in the majority of individuals being reached on the first few days. When interpreting the cumulative daily doses delivered, consider the strategy being used to reach children in that area. For example, in urban settings with good social mobilization, administrative coverage would be expected to increase rapidly during the first few days, and then increase slowly until every child is vaccinated. Alternatively, in rural settings, if the strategy being used were to reach first those living in sparsely-populated areas, then the initial daily administrative coverage levels would be expected to be low. For SIAs where school strategies are used, the proportion of children reached will be related to the number and size of schools planned for that day. Usually, because schools are covered first, the number of children vaccinated initially is higher.

Reviewing the coverage relative to the total population is less useful; analysing instead the proportion reached by strategy or age group may be more helpful for decision-making, so that resources can be directed to poorly performing sites/strategies.

13.5 Daily review meeting

The coordination teams at each level should convene a review meeting at the end of each day throughout the SIA. Such meetings are essential to assess SIA implementation. The meetings are an opportunity for the team (such as the district or the health centre) to share observations for the day, address issues and consult to develop points for immediate action, while documenting best practices for future SIAs. Moreover, redeployment of supervisors and/or monitors to strengthen certain areas or resolve specific challenges can be decided at the meeting.

Meeting participants should include the local coordination team, local government authorities, local supervisors and all monitors and SIA stakeholders. The local government administrator, EPI manager, or their designee chairs these meetings. The meeting should address questions relevant to the success of the SIA, such as whether vaccination activities are on track, performance is good, detailing the challenges threatening success and what solutions should be implemented.

Daily review meetings require flexibility, for example all data are not available during the meeting, and many participants may arrive late due to transportation delays from the field. Data that are available should be compiled prior to the meeting and shared with the participants (e.g. printed summaries or wall charts) to keep the meeting focused. The agenda of the meeting should be followed systematically (a sample agenda is shown in Box 13.1). For efficiency, the meeting minutes are usually limited to a brief summary of the action points for the next day. Clear action points should be developed, including mop-up activities. When the team itinerary includes designated mop-up days, the schedule should be modified to include poorly-performing areas identified each day. A good output from each daily review meeting at the provincial or national level is an SIA bulletin, which includes progress thus far in the SIA, significant action points and encouraging stories of vaccination teams. These bulletins should be shared broadly with meeting participants, international partners and regional/district/health centre staff.

On the final scheduled day of vaccination activities, the daily review meeting should include a plan for post-SIA independent RCM and plans for mop-up activities in all poorly-performing areas based on RCM or coverage and programmatic information. For details on post-SIA independent RCM and mop-up activities, see Chapter 14. Clear plans for these activities, including assignment of the teams, their duration and logistical preparations should be made during the meeting.

BOX 13.1
Proposed agenda for daily review meetings, at health centre or district level

- Chairperson reviews action points from the previous day's meeting.
- Coordination team members report any significant updates from higher levels.
- Supervisors review adequacy of SIA materials supplies for the coming days.
- For each supervisory area, summaries of the achievements and challenges should be discussed.
- Supervisors/monitors should share their findings, including RCM performed.
- Supervisors should review if the target population is being reached. This should include review of administrative coverage, RCM and observations.
- Reasons for low coverage should be discussed, including potential challenges with vaccine supply/transport, team performance or social mobilization.
- Solutions to improve activities or address gaps should be agreed upon.
- Identify if completed areas need mop-up activities before the team moves on.

13.6 Use of technology

Technology may be utilized during SIAs to facilitate supervision, data collection, data compilation and data analysis (assuming it is available and reliable). There are many documented cases of using mobile technologies in immunization programmes, such as for routine reporting of doses administered, logistics management information systems, surveillance of vaccine-preventable diseases and AEFI, as well as monitoring of SIAs. Specifically for SIAs, some of the key benefits of technology include the use of the Global Positioning System (GPS) to allow supervisors to check vaccination team movements and which geographic areas have been covered by the vaccinators, as well as the availability of data in real-time for timely decision-making during the campaign. The utility of having the data available in real-time is maximized when the incoming data are linked directly to software that use them to provide graphical representations, which automatically update as new data points become available.

These same benefits are applicable in the context of RCM as well; having the data available at all levels during the SIA allows for timely allocation of resources for mop-up activities in poorly-performing areas before or immediately after the SIA is finished. Other features such as GPS coordinates help managers to better supervise vaccination teams. Indeed, pilot projects in several countries have successfully shown the feasibility and utility of using this technology in RCM at a reasonable cost, with many of the potential benefits fully realized during implementation. National programmes are encouraged to test the utility of this technology in RCM by ensuring that there is adequate budget allocation for robust IT support from the central level and planning for sustainability. Planning for such initiatives should include considerations about device selection, type of data collection software, data security, server administration, network carriers and visualization software. It is also crucial that experiences using this technology are properly evaluated and documented.

VIII.
1 to 2 weeks after SIA:
Post-SIA activities and monitoring and evaluation

1 to 2 weeks after the SIA you should do the following activities

At health facility level:

- ☐ Conduct mop-up vaccination activities in areas with unvaccinated children.

At district level:

- ☐ Conduct post-SIA independent monitoring (RCM).
- ☐ Estimate coverage and wastage.
- ☐ Calculate proxy SIA quality and process indicators.
- ☐ Meet with health centre coordinators and organize mop-up activities, if necessary.
- ☐ Submit results (coverage, wastage) to national level.
- ☐ Attend the meeting at national level.

At national level:

- ☐ Calculate coverage and wastage rates.
- ☐ Calculate proxy SIA quality and process indicators.
- ☐ Meet with district coordinators.

14. Post-SIA activities

At the end of the SIA, trained independent monitors should conduct RCM to identify areas with missed children. In addition, committee members, supervisors, monitors and coordinators at each level should conduct post-SIA review meetings and prepare a summary report. Along with detailed quantitative information, the report should document impressions and experiences from the field. The outcomes should be used to assess the effectiveness of planning and implementation activities and their impact on immediate outcomes and on the RI programme. The lessons learned should be used to improve upon subsequent SIAs.

14.1 Post-SIA independent monitoring (RCM)

Immediately after all SIA vaccination activities have been completed, it is critical to conduct independent monitoring using the RCM methodology in all areas where initial data (coverage, intra-SIA RCM) or local knowledge suggests poor coverage. The main objective of post-SIA independent monitoring is to find unvaccinated children so that they can be targeted during mop-up activities 1–2 weeks after the SIA. In addition, such monitoring provides independent and critical information on SIA performance that would be very useful for future SIAs as well as for the RI programme.

Independent monitoring should be planned and budgeted for during the macro- and microplanning and budgeting activities. Independent monitors need to be recruited and adequately trained on the use of RCM and should undertake an independent assessment of SIA performance in predefined areas (at least one area per district). Areas selected for independent monitoring are the ones most likely to have children missed by the SIA (see list in section 13.3). The RCM methodology and triggers for

corrective action are the same as those for intra-SIA RCM (see section 13.3 and Annex 10).

Once the triggers for corrective actions have been met, countries need to schedule mop-up activities in the areas with missed children. For this, social mobilizers or house-to-house canvassers should be sent to inform the community of the location of the vaccination post and the time the post will be open. The most appropriate strategy for mop-up vaccination should be decided based on the information obtained from the RCM and reasons for non-vaccination, as well as the location and nature of the populations missed. House-to-house vaccination is used in some countries as the strategy for mop-up activities to ensure high coverage is achieved.

14.2 Mop-up activities

Despite the best planning, errors, weather, or unforeseen events may lead to areas or populations with lower coverage than the target. Therefore, the planning of itineraries for vaccination teams should include one or more days after the official end date of the SIA to allow for teams to return to areas with unvaccinated children. Mop-up activities should be included in the initial budget planning for the SIA. As mentioned earlier in the field guide, this should include the costs of an additional day of operation (approximately), or 5–10% of the operations budget (depending on the country). Once the independent RCM assessment following the SIA has been completed, the district coordination committee should meet and decide which areas or neighbourhoods should be revaccinated. This decision should be based on the following sources of information:

- post-SIA independent RCM data on areas with missed children and reasons for non-vaccination;
- administrative coverage data (where the number of vaccinated children is below the estimated target population for the area) with or without intra-SIA RCM data;
- supervisor's observations and knowledge;
- areas where significant challenges to implementation occurred (e.g. team never visited site, vaccine stock-out, area not included in microplan and/or inadequate social mobilization).

Mop-up activities should be implemented as soon as possible after the SIA (e.g. during the first two days following the SIA). The mop-up vaccination strategy should be based on inputs from the local SIA coordination committee, and on an analysis of the available information regarding low coverage areas and reasons for non-vaccination from RCM and other sources.

A report of the mop-up activity must be presented to the district health office, including the reason for the mop-up, the strategies used, the number of children vaccinated during the SIA in the given area and during the mop-up activity, and the lessons learned from the SIA and mop-up. RCM reports should also note the actions taken in response to areas failing to pass the RCM assessment.

14.3 Coverage surveys

Coverage surveys should be conducted as soon as possible after the SIAs to assess the coverage reached during the SIA, the coverage reached in children previously not vaccinated against measles (or rubella), the reasons for non-vaccination, and what communications channels informed people about the SIA. When a survey covering routine immunization, such as a DHS, MICS or stand-alone EPI survey has not been done for a few years, and none is planned in the next couple of years, the post-SIA survey can be designed to also provide estimates of routine coverage. However, adding the estimation of routine coverage can greatly increase the sample size, costs, and complexity of a post-SIA coverage survey. Surveys should be done quickly as finger markings from indelible ink fade quickly with time, children/adolescents may try to remove them and SIA vaccination cards may be lost. Ideally, coverage surveys should provide coverage data valid not only for the national, but also for the regional/provincial and district level, to provide information regarding areas insufficiently vaccinated. The capacity of surveys to provide district-level coverage data depends mainly on time and on resource availability. Revised recommendations for coverage survey methods address several weaknesses in the current recommended methods for coverage surveys, and can be found on the WHO website: http://www.who.int/immunization/monitoring_surveillance/en/. The reports and datasets from these surveys should be shared with both WHO and UNICEF as part of final SIA reporting (see next section).

14.4 Monitoring the quality of the SIA

The quality of the SIA is determined by its impact on disease incidence assessed through disease surveillance. As a proxy for quality, M or MR SIAs should aim to achieve at least 95% coverage nationally and in every district in order to interrupt virus transmission. In addition to measuring administrative coverage and validating it through a coverage survey, it is critical to monitor the quality of the SIA throughout the process of preparation and implementation in order to better understand any challenges and bottlenecks undermining its quality and use the information for improving future SIAs and routine immunization.

To assess quality a number of indicators and targets have been developed for use by countries for activities carried out before, during and after the SIA. Countries, depending on their particular issues, may wish to focus on a few of the indicators or add other indicators that are more relevant to their situation. Indicators provide information on the quality of different aspects of the SIA (e.g. training, monitoring, supervision, logistics, etc.) as well as shine the spotlight on specific issues and thereby increase accountability. Below is the suggested list of indicators (and the target) for the different phases of the SIA that should be monitored at country level. A subset of these indicators will be monitored at the global level and included in the SIA technical report (see Annex 11).

14.4.1 Pre-SIA monitoring indicators

Data for monitoring the following indicators can be obtained from programme information and from SIA readiness assessment data. These indicators can be monitored at the national level.

1. Timing of availability of donor funding (Gavi/MRI) at national level (target: available at national level at least 9 months prior to the planned SIA date).

2. Timing of availability of local/government funding at the national level (target: available at national level at least 9 months prior to the planned SIA date).

3. Timing of orders of bundled vaccines and supplies (target: orders made at least 12 to 9 months prior to the SIA).

4. Timing of availability of operational funds at district level (target: available at the district level at least 4 months prior to the planned SIA date in 100% districts).

5. Timing of completion of national SIA logistics plan (target: national SIAs logistics plan completed and approved at the latest 6 months before the SIA).

6. Timing of completion of district-level microplanning workshops (target: 100% of districts complete microplanning workshops at least 6 months prior to planned SIA date).

7. Levels of SIA readiness assessed at national level using the standard tool to assess readiness at 12, 9, 6, 3 and 2 months prior to the start date of the SIA (target: **national-level** SIA readiness information documented for 12, 9, 6, 3 and 2 months before the SIA).

8. Percentage of districts conducting a readiness assessment at least twice within the 8 weeks prior to the SIA (target: 30% of all districts).

9. Percentage of districts with planned quantities of vaccine and devices at least 2 weeks before the start of the SIA (target: 100% of all districts).

10. Number and percentage of caregivers surveyed within the 2 weeks prior to the start of the SIA who can identify the target disease, campaign dates, venues and target age groups (target: 95% of caregivers).

14.4.2 Monitoring indicators during SIAs

Data for monitoring the following indicators can be obtained from SIA RCM data and monitored at the district level with data sent to the national level.

1. Percentage of vaccination posts assessed by supervisors or monitors during the SIA (target: 100%).

2. Percentage of vaccination sites assessed with no shortfalls of vaccines and equipment (target: 95%).

3. Percentage of permanent fixed vaccination sites assessed with proper cold chain – refrigerators monitored daily and temperatures between 2 and 8 °C (target: 100%).

4. Percentage of M/MR vaccine vials seen with VVM stage 3 or 4 (target: 0%).

5. Percentage of vaccination sites assessed where used syringes are immediately placed in safety boxes (target: 100%).

6. Percentage of vaccination sites assessed where tally sheets are filled correctly (target: 100%).

7. Percentage of vaccination sites where vaccinators know and apply AEFI reporting procedures (target: 100%).

8. Percentage of districts sending daily information of number of administered vaccine doses to the upper level (target: 100%).

9. Percentage of unvaccinated children detected during intra-campaign RCM by district (target: < 10%).

10. Percentage of parents/caregivers monitored through in-house RCM who were not aware of the SIA or timing and location of vaccination posts (target: < 5%).

14.4.3 Post-SIA monitoring indicators

Data for monitoring the following indicators can be obtained from intra- and post-SIA RCM data and monitored at the district level with data sent to the national level.

1. Number and percentage of targeted districts that have at least one area monitored through RCM during or after the SIA (target: 100%).
2. Number and percentage of unvaccinated children detected during post-campaign independent RCM, by district (target: < 10%).
3. Number and percentage of monitored areas not meeting the minimal level of households/children vaccinated that had remedial action taken within one week of end of the SIA (target: 100%).
4. Administrative vaccination coverage by district, antigen and type of intervention (target depends on the antigen – for MCV it is at least 95%).
5. Percentage of districts with M/MR vaccination coverage of at least 95% (target: 100% of districts for M, MR and MMR).
6. Survey vaccination coverage by unit surveyed (target: at least 95%).

14.5 Review meeting and technical report

Following the completion of the SIA, including mop-up activities, review meetings should be held at all levels. These meetings should accomplish several tasks: identification of accomplishments, agreement on final coverage levels, identification of strengths, recognition of weaknesses and consensus on how routine immunization should be strengthened. Prior to the meetings, key indicators (see above) to provide a qualitative assessment of the various stages of the SIA should be calculated to identify key challenges and lessons learned. These include indicators on the level of readiness prior to the SIA, on the quality of vaccination efforts during the SIA, and on outcomes of post-SIA activities such as independent monitoring and mop-up activities. The report from each level is shared with the higher level, until a national review meeting is held, and the collective experience of the nation is reviewed.

The national SIA coordination committee uses the findings from these review meetings to compile a final technical report at the end of the SIA (see Annex 11). This report should be submitted to the national authorities summarizing the results of the SIA, and include:

- final administrative coverage by district and age group for M or MR vaccine, with the proportion of districts reaching 95% or higher coverage;
- final administrative coverage by district and age group for other interventions given during the SIA;
- results of the post-SIA mop-up activities;
- summary of the routine immunization-strengthening activities included in the SIA;
- results of discussion on the positive and negative impacts of the SIA on the routine immunization programme;
- results of any evaluations of the RI programme performed during the SIA:
  - analysis of reasons of non-vaccination obtained through RCM
  - verification of zero dose children in the SIA tally sheet
  - verification of prior routine vaccination performed during RCM (if this was assessed)
  - verification of routine immunization performed during post-SIA surveys;
- summary of lessons learned from the SIA, including recommendations to avoid repetition of errors:
  - recommendations for future SIAs should include all aspects of the SIA (i.e. planning, coordination and financing; monitoring and supervision; vaccine, cold chain and logistics; and advocacy, social mobilization and communication)
  - recommendations for improving the RI programme.

A copy of the report should be shared with WHO and UNICEF within two months of the SIA, together with the spreadsheets containing the administrative data results by district.

14.6 Disease surveillance

A sensitive measles and rubella surveillance system supported by an accredited measles and rubella laboratory is vital in order to be able to measure the impact of the SIA on the disease burden in the community and identify chains of ongoing measles and rubella transmission. Disease surveillance activities should be an ongoing activity routinely providing information to identify disease trends, risk factors and the need for interventions. In order to evaluate the impact of the SIA, disease surveillance both during and after the SIA should be case-based, identified by location, time, age and vaccination status.

During SIA training, all health workers should be made aware of the established measles and rubella case definition, surveillance procedures and the case investigation forms in use in the country. For further information on surveillance, refer to regional or country guidelines as well as the WHO *Module on best practices for measles surveillance*[38] and WHO surveillance standards for vaccine-preventable diseases (http://apps.who.int/iris/bitstream/10665/68334/1/WHO_V-B_03.01_eng.pdf)[39].

14.7 Post-SIA routine immunization-strengthening activities

The stronger and longer lasting the impact of an SIA measles and rubella incidence is, the more programmes can increase RI coverage with the first and (if introduced) second dose of M or MR vaccine. A strong routine immunization programme is vital for preventing the accumulation of susceptible individuals in the population. The needs identified and lessons learned during the SIA regarding the routine immunization programme and surveillance should be discussed at the post-SIA review meetings (or during stand-alone meetings) and included in routine immunization improvement plans or annual workplans. The discussion at the post-SIA review meetings should:

- identify immediate positive and negative impacts of the SIA on RI and surveillance;
- agree on follow-up actions and changes to future SIA planning needed to capture the potential benefits and reduce the negative impacts of the SIA to strengthen RI and surveillance;
- clarify roles and responsibilities for follow-up actions.

Typically the key activities for exploiting the SIA to improve routine immunization are updating routine immunization microplans and/or outreach plans, identifying how to reach through the routine immunization programme the previously unreached who were vaccinated during the SIA, and incorporating these lessons into the routine immunization workplan, strengthening plan and/or cMYP.

38 WHO (2001). Module on best practices for measles surveillance. Geneva: World Health Organization (WHO/V&B/01.43; http://apps.who.int/iris/bitstream/10665/67192/1/WHO_V-B_01.43_eng.pdf, accessed 15 June 2016).

39 WHO (2003). WHO-recommended standards for surveillance of selected vaccine-preventable diseases. Geneva: World Health Organization.

14.7.1 Post-SIA RI microplan improvement activity

Incorporate newly identified hard-to-reach areas and communities into routine immunization microplans.

a. Discuss budget implications and future resource requirements needed to ensure these areas are assigned outreach vaccination sessions.

b. In the routine immunization microplan, update the schedule for planned vaccination sessions to include any new outreach vaccination sessions.

c. Highlight and identify areas (i.e. identified as hard-to-reach either due to geography, vaccine resistance or other reasons such as ethnic minority, urban poor, or mobile population) where there was low SIA coverage in the schedule for planned vaccination sessions.

14.7.2 Post-SIA local review and strengthening sessions

Identify the positive and negative impacts of the SIA on routine immunization service. If measles SIA coverage is higher than routine measles immunization coverage, then health workers involved in the SIA outline at post-SIA review meetings the reasons why the SIA was successful and provide potential mechanisms for how to implement these strategies during routine service delivery. These identified strategies should be matched up to the RI system components to help allow for easier selection of one or more strategies that could be incorporated into routine delivery mechanisms. Budget implications and future resources requirements should be discussed. Useful questions to ask include the following.

- How did you mobilize communities to ensure high participation in the SIA? The answers to this question could help guide discussions regarding future interventions to strengthen routine vaccination.

- Were planned routine immunization services disrupted? If so, the reasons for disruption and the solutions proposed to eliminate such problems in subsequent SIAs should be included in the SIA technical report.

- How did the SIA catalyse renewed attention to immunization practices and, specifically, to injection safety? The training and supervision during an SIA can help to re-train health workers and reduce programmatic errors which can cause unnecessary deaths and have negative long-lasting effects on the programme's credibility. Educational efforts in this regard, including educational supervision, should continue to be promoted after the SIA.

14.7.3 Include lessons learned in routine planning

Identify follow-up activities needed to realize the SIA's potential benefits to strengthen RI and surveillance. To ensure that these activities actually happen, they may need to be built into other RI or surveillance documents, such as the annual plan of action, cMYP, routine immunization improvement plan, training or supervision instruments. Ensure these plans include all of the activities identified. Review them to decide:

- priority, based on importance and feasibility;
- fit with other activities already planned for routine immunization and surveillance;
- timing and sequence of activities: which activities need to come before others;
- human resources needed;
- financial resources needed and potential sources of funding;
- clarify tasks, roles and responsibilities, time frame, budget and potential sources of funding, and indicators for measuring progress on these activities;
- identify immediate next steps for implementing the plan, including sharing it with members of the ICC;
- agree on the key points for the final SIA technical report. These should highlight the achievements and outcomes of the planned SIA activities for RI and surveillance strengthening and provide a clear indication on the priority follow-up actions and responsibilities.

14.8 Other follow-up activities

Meetings and press briefings should be held and press releases developed and distributed to communicate the SIA outcome to the participating authorities, organizations and the population.

Other post-SIA EPI-associated activities may be included in accordance with other country-specific priorities (e.g. vitamin A deficiency assessments, improving disease surveillance for other vaccine-preventable diseases, etc.).

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Annex 1
Recommended measles and rubella vaccines

Measles and rubella vaccines are available as monovalent measles and monovalent rubella, or in combination, as measles–rubella (MR), measles–mumps–rubella (MMR), and measles–mumps–rubella–varicella (MMRV) vaccine. All of the measles, rubella and mumps vaccine products currently prequalified by WHO are effective, safe and of assured quality.
The list of WHO prequalified vaccines is available at:
http://www.who.int/immunization_standards/vaccine_quality/PQ_vaccine_list_en/en/.

WHO position papers on measles and rubella vaccines are available at:
http://www.who.int/immunization/documents/positionpapers/en/.

1a MEASLES LIVE ATTENUATED VACCINE

Vaccine characteristics and administration

Measles vaccine is made from live, attenuated virus. It has been in use since the 1960s and is safe, effective, provides long-lasting protection and is inexpensive.

Vaccinating infants before or at the age of 6 months often fails to induce seroconversion due to the immaturity of the immune system as well as the presence of neutralizing maternal antibodies. Based on the results of a large number of studies from all over the world, the median proportion of infants vaccinated aged 8–9 months who seroconverted after receiving 1 dose of measles vaccine was 89.6% (interquartile range, 82–95%); the median proportion of infants vaccinated aged 11–12 months who seroconverted was 99% (interquartile range, 93–100%).

Delivering the first dose of MCV as soon as possible after the loss of protection by maternal antibody remains the highest priority for programmes. In countries with ongoing transmission in which the risk of measles mortality among infants remains high, the first dose of MCV should be administered at the age of 9 months. In countries with low rates of measles transmission and with low risk of measles infection among infants, the first dose of MCV can be administered at the age of 12 months, as the achieved rates of seroconversion are higher at this age. In countries with significant incidence among children aged less than 9 months, measles vaccine can be given to babies as young as 6 months, despite the expected lower vaccine effectiveness in these infants. If this is the case, it is important to communicate that this is considered a **zero dose** and these children should receive two additional doses once they are more than 9 months old, to ensure protection.

Delivery of the second dose of MCV may occur either through routine services at the scheduled age, or periodically through SIAs targeting defined age groups (depending on which strategy achieves higher coverage). The minimum interval between MCV1 and MCV2 is 1 month. Providing routine MCV2 to children in their second year of life reduces the rate of accumulation of susceptible children and the risk of an outbreak. As doses provided through SIAs are considered additional doses, all individuals in the target age group should be vaccinated regardless of when the last MCV dose was given.

Adverse reactions

Measles vaccine is very safe. Adverse reactions following measles vaccination are generally mild and transient. Serious allergic reactions and anaphylaxis are extremely rare. Adverse reactions, with the exception of anaphylactic reactions, are less likely to occur after receipt of a second dose. The rate of serious AEFI is minimal compared to the complications observed after measles disease or infection. Observed rates of measles vaccine reactions are shown in Table A1.1.

TABLE A1.1
Observed rates of measles vaccine reaction

MEASLES VACCINE REACTIONS	ONSET INTERVAL	REACTION INCIDENCE (per dose or %)
Local reaction at injection site	0–2 days	~1/10 (~10%)
Fever > 39.4 °C	7–12 days	5–15%
Rash	7–10 days	2–5%
Febrile seizures	6–11 days	1/3 000
Thrombocytopenia	15–35 days	1/30 000
Anaphylaxis	0–2 hours	3.5–10/1 000 000
Encephalopathy/encephalitis	8–9 days	< 1/1 000 000

Source: Adapted from WHO (2014).[A1]

1b RUBELLA LIVE ATTENUATED VACCINE

Vaccine characteristics and administration

Most of the licensed rubella vaccines are based on the live attenuated RA27/3 strain, which is propagated in human diploid cells. Rubella-containing vaccines (RCV) are available either as a monocomponent rubella vaccine or as combined vaccines: with measles (MR), measles–mumps (MMR), and measles–mumps–varicella (MMRV).

Over 95% of susceptible children will seroconvert after a single dose of rubella vaccine at 12 months of age or older. This high response rate and the long-term persistence of protection in vaccines do not support a routine requirement for a second dose of rubella vaccine. However, based on indications for a second dose of measles-containing and mumps-containing vaccines, and for programmatic reasons, the WHO recommendation is that the same measles-containing vaccine product be administered for both first and second dose. When RCV is given as MR or MMR, the age of administration usually follows the schedule for measles.

During outbreaks of measles, RCVs (as MR or MMR) may be administered to infants as young as 6 months. Because of the possibility of lower seroconversion, this dose should not be counted as a valid dose and the child should be vaccinated with subsequent dose(s) of RCVs according to the usual national immunization schedule.

A1 WHO (2014). information sheet. Observed rate of vaccine reactions measles, mumps and rubella vaccines. Geneva: World Health Organization (http://www.who.int/vaccine_safety/initiative/tools/MMR_vaccine_rates_information_sheet.pdf?ua=1, accessed 13 September 2016).

Adverse reactions

Generally, the adverse reactions following RA27/3 rubella vaccination (whether monovalent, or in fixed combinations) are mild and transient, particularly in children. Low-grade fever and rash, irritability, lymphadenopathy, myalgia and paraesthesia are commonly reported. While acute joint-related symptoms last from a few days to two weeks, large epidemiological studies have not supported any association between rubella vaccine and chronic joint disease. Observed rates of rubella vaccine reactions are shown in Table A1.2.

TABLE A1.2
Observed rates of rubella vaccine reactions

RUBELLA VACCINE REACTIONS	ONSET INTERVAL	REACTION INCIDENCE (per dose or %)
Local reaction at injection site	0–1 day	~1/10 (~10%)
Low-grade fever	7–12 days	2%
Acute arthralgia (in children and men)	7–21 days	0–3%
Acute arthralgia (in adult women)	7–21 days	Up to 25%
Acute arthritis (in adult women)	7–21 days	Up to 10%
Anaphylaxis	0–2 hours	3.5–10/1 000 000

Source: Adapted from WHO (2014).[A1]

1c MEASLES–RUBELLA (MR) VACCINE

This vaccine has the characteristics of both components listed previously. For MR vaccine, the protective immune responses to each individual antigen as well as vaccine-associated adverse events remain largely unchanged. Contraindications and precautions to MR vaccine are the same as those to measles and rubella monocomponent vaccines.

1d MEASLES–MUMPS–RUBELLA (MMR) VACCINE

This vaccine includes live attenuated mumps vaccine, along with the measles and rubella components. Accumulated global experience has demonstrated that the prevention of mumps requires more than one dose of the vaccine. WHO recommends integrating strategies to control mumps with existing high-priority goals of measles and rubella control or elimination. Once the decision has been made to include mumps vaccine, the use of combined MMR vaccine is strongly encouraged. Contraindications to MMR are the same as those to M, R, and MR.

Adverse reactions

Adverse reactions to mumps vaccination are rare and mild – the most common are parotitis and low-grade fever. Higher rates of post-vaccination aseptic meningitis have been described in vaccines containing the Urabe and Leningrad-Zagreb strains, however, it is difficult to compare results from different studies given the differences in methods used to monitor for adverse events, including active vs passive surveillance, clinical vs laboratory-confirmed cases and

prospective vs retrospective ascertainment.[A2] The WHO Global Advisory Committee on Vaccine Safety (GACVS) cautions that if Urabe, Leningrad-Zagreb and Leningrad-3 strain vaccines are used in SIAs, national immunization programmes need to take into the account the potential for clustering of aseptic meningitis cases, and implement appropriate strategies for risk communication and case management.

There is no evidence to support a causal relationship between MMR vaccine and autism, and there is no evidence to support a causal relationship between MMR vaccine and inflammatory bowel disease, Crohn disease or ulcerative colitis.

Contraindications for measles and rubella vaccination

Measles and rubella vaccination should not be postponed in the presence of mild conditions (e.g. mild upper respiratory infections, otitis media, diarrhoea, low-grade fever ≤ 38.5 °C). Symptomatic or asymptomatic HIV infection is NOT a contraindication, except in severely immunocompromised patients.

The contraindications to measles–rubella vaccine are:

— history of anaphylactic reaction to a vaccine component (neomycin, gelatin);
— severe immunodeficiency (advanced HIV infection and AIDS, congenital immune disorders, malignancies, aggressive immunosuppressive therapy);
— acute severe illnesses, including those with severe fever or evolving neurologic conditions (as a precautionary measure vaccination should be postponed until the acute severe illness is resolved);
— active untreated tuberculosis (as a precautionary measure vaccination should be postponed until therapy has been established);
— pregnancy*.

Storage of measles- and rubella-containing vaccines

Measles- and rubella-containing vaccines should be kept at temperatures below 8 °C and **always** protected from heat and light. At central stores, it is recommended to keep the freeze-dried vaccine at a temperature of –20 °C. **Diluent vials must never be frozen**. Diluents can be stored at ambient temperature, unless they are packed with the vaccine, in which case they should be kept in the cold chain at 2–8 °C. Reconstituted vaccine quickly loses potency at ambient temperatures. VVMs are of no use once the vaccine vial has been opened. **After reconstitution, the vaccine must be stored in the dark at 2–8 °C and used within 6 hours, or discarded at the end of each immunization session (whichever comes first)**.

A2 WHO (2007). Mumps virus vaccines. WHO Position Paper. Weekly Epidemiological Record. 7(82):51–60. (http://www.who.int/wer/2007/wer8207.pdf?ua=1, accessed 15 June 2016).

* As a precautionary measure M, MR, and MMR vaccination should be avoided in pregnancy. Women planning pregnancy should avoid it for one month after vaccination. Fetal damage has not been documented when measles- or mumps-containing vaccines have been administered to pregnant women. No CRS cases have been reported in women inadvertently vaccinated in pregnancy and in identified fetal infections. Inadvertent administration of MR or MMR vaccines in pregnancy is not considered an indication for pregnancy termination.

1e ADMINISTRATION WITH OTHER VACCINES OR ANTIBODY-CONTAINING PRODUCTS

Immunogenicity and reactogenicity of the individual components are similar when MCVs and RCVs are administered as combined products or simultaneously at different anatomical sites with other vaccines, such as diphtheria toxoid, tetanus toxoid, pertussis vaccine, *Haemophilus influenzae* type b vaccine, poliovirus vaccines (OPV or IPV), varicella vaccine, hepatitis B vaccine or heptavalent pneumococcal vaccine. Similarly, available data suggest that vaccines against measles and yellow fever or Japanese encephalitis may be administered at the same time at different sites.

As a general rule, **live vaccines** should be given either simultaneously or at intervals of 4 weeks (see Table A1.3). An exception to this rule is OPV, which can be given at any time before or after MCVs without interference in the response to either vaccine.

TABLE A1.3.
Recommended intervals between the administration of various types of vaccine

VACCINES		
Type of vaccine		**Recommended minimum interval between doses**
Inactivated vaccines and MCV/RCV		Can be administered simultaneously or at any interval between doses. No interference.
MCV/RCV and other live injectable vaccine(s) – e.g. Japanese encephalitis, yellow fever		Must be simultaneous, or a 4-week minimum interval.
BLOOD PRODUCTS		
Antibody-containing blood products and MCV should not be administered simultaneously		
First dose	**Second dose**	**Recommended minimum interval between doses**
Ig-containing blood product	MCV	Depends on the type of product and dose given, but varies between 3 and 11 months for MCVs. For monocomponent rubella vaccine, 3 months should be sufficient.
MCV/RCV	Ig-containing blood product	2 weeks.

Annex 2
SIA Readiness Assessment Tool

Desired time frames for completion of preparation activities are shaded yellow. When an activity is shaded yellow over a period of time, this indicates either an ongoing activity or that the activity is started at the first yellow box and should be completed by the time of the last yellow box. Summary results of the activities and activity components completed at each monitoring/supervisory visit are given below each column as a number and percentage of the total number of critical preparation activities.

2a MEASLES–RUBELLA SIA READINESS ASSESSMENT TOOL – NATIONAL LEVEL

Measles-Rubella SIA Readiness Asessment Tool - National Level

Planned SIA start date: ___/___/___

Completed? Enter "Y" or "N" each time reviewed

Ideal time prior to SIA to complete the activity

	Critical activities *(desired timeframe for completion*	15 m	12m	9m	6m	4m	3m	2m	1m	2 wk	1 wk	If not completed, give reason	Action required	Deadline	Person responsible
PLANNING, COORDINATION & FUNDING	1. Budgeted macroplan developed in line with the cMYP for resource mobilization purposes														
	2. SIA budget prepared with MoH and ministry of finance collaboration or approval														
	3. Political commitment at highest level														
	4. Agreements with local partners to mobilize local resources														
	5. National coordinating or steering committee established and meeting regularly														
	6. National subcommittees established: 1)technical, 2) vaccine, cold chain & logistics, 3) advocacy, social mobilization & communication, and others (e.g. risk management/media relations)														
	7. National SIA guidelines and microplanning tools prepared and distributed														
	8. Funds available to the district level for operational costs														
	9. Microplanning workshops conducted at district level														
	10. Pocket guides, supervisory checklists, tally sheets, report forms, AEFI forms, etc. developed, printed and distributed														
	11. Training materials developed and distributed														
MONITORING & SUPERVISION	1. Plan and budget for administrative and "special"monitoring (including independent monitors, RCM, AEFI) and evaluation (including Coverage Evaluation Surveys) of SIAs completed														
	2. Conduct supervisory visits to province and/or district levels to assess preparedness														

VACCINE, COLD CHAIN & LOGISTICS	1. A budgeted national logistics plan developed and finalized													
	2. Order placed for the purchase of vaccines, injection devices, safety boxes or alternate disposal method and additional commodities (e.g. vit A, deworming, insecticide-treated bed nets, etc.)													
	3. Cold-chain assessment completed at all levels and action taken													
	4. Bundled vaccine and other inputs distributed to province and district levels													
ADVOCACY, SOCIAL MOBILIZATION & COMMUNICATION	1. A budgeted national plan for advocacy, social mobilization and communication developed and finalized													
	2. Advocacy & planning meetings held with partners and stakeholders, e.g. other line ministries (e.g. education, local government, religion), NGOs, professional/scientific societies, journalists, civil society groups (e.g. scouts, IFRC, Lions Clubs International, LDS, and others)													
	3. Advocacy, social mobilization and communication materials developed and distributed (e.g. pamphlets, leaflets, T-shirts, caps, banners, posters, cassettes, jingles, radio/TV announcements, etc.)													
	4. Preparation of launch confirmed before the SIA													
	Total score (no. of items with "Y"):													
	Target number of completed activities	3	6	14	14	15	18	21	21	21	21			
	Circle time of assessment:	15m	12m	9m	6m	4m	3m	2m	1m	2 wk	1 wk			
	Is the national level on track to conduct the SIA as scheduled?													

2b MEASLES–RUBELLA SIA READINESS ASSESSMENT TOOL – DISTRICT LEVEL

Measles Rubella SIA Readiness Assessment Tool - District and Health Center (HC) Level

Province: _____ District: _____ Planned SIA start date: ___/___/___/ Target population: ____

Name of supervisor/monitor: _____ Dates of visits: (1) ___/___/___ (2) ___/___/___/ (3) ___/___/___ (4) ___/___/___/

	Critical activities (*Source of information in italics*) (Desired timeframe for completion shaded light yellow)	*Completed? Write "Y" or "N" each time reviewed* 8 wks	4 wks	2 wks	1 wk	If not completed, give reason	Action required	Deadline	Person responsible
PLANNING, COORDINATION & FUNDING	**1. Have the following SIA components been operationally planned?** *Source: Workplan with list of assigned activities and dates*								
	- vaccine & supplies management								
	- waste management								
	- AEFI investigation								
	- training								
	- social mobilization/communication								
	- daily data aggregation, reporting and analysis								
	2. Is there a coordination team at this level? *Source: Minutes of coordination meetings*								
	3. Is there political commitment for the SIA? *Source: Evidence of involvement of local authorities with the coordination team, communication, local resource mobilizaton, planned launch, and/or involvement of different government sectors*								
	4. Do validated microplans identify target population by geographic area/vaccination site? *Source: Microplans, maps and lists*								
	5. Are "special" strategies planned for geographically hard-to-reach, marginalized and resistant populations? *Source: Microplans, maps and lists: team deployment adapted to special needs groups with special logistic and budget allocation*								
	6. Have funds been received and distributed for all planned activities? *Source: Microplan, budget and financial statement*								
	7. Have health workers and volunteers been trained? *Source: Implementation status of training plan*								

MONITORING & SUPERVISION	**1. Is there a supervision plan that includes names, dates and daily locations of supervisors?** *Source: Supervision plan*								
	2. Have supervisors/monitors been identified and trained to do rapid convenience monitoring? *Source: Supervision plan, training report*								
	3. Have arrangements been made to ensure daily reporting of coverage and other data to the next highest level, incl. analysis? *Source: Workplan*								
VACCINE, COLD CHAIN & LOGISTICS	**1. Is there sufficient functional cold-chain capacity and/or contingency plans for vaccine storage?** *Source: Cold-chain inventory and requirements* *(assume each M/MR dose requires 2.5cm^3 storage volume; add 4 cm3 per dose for diluent in refrigerators, cold boxes and vaccine carriers)*								
	- refrigerators								
	- freezers								
	- cold boxes								
	- vaccine carriers								
	2. Does the district have a waste management plan that clearly describes how, when, where and by whom filled safety boxes will be transported and incinerated/discarded? *Source: Waste disposal plan for used needles & syringes*								
	3. Have pocket guides for vaccinators (and supervisors), forms, checklists, training and communication materials been received? *Source: Review documents received; list missing materials*								
	4. Has the district secured vehicles and fuel (or other means of transportation) to transport bundled vaccines, supplies, and staff before and during the period of the SIA? *Source: Transport plan*								
	5. Are the received supplies of bundled vaccines and other inputs consistent with target population and expected wastage factors? *Source: Vaccine and logistics plan*								

VACCINE, COLD CHAIN & LOGISTIC	- **vaccine** (Target population x 1.11 wastage multiplication factor, WMF)								
	- **AD syringes** (= total # of vaccine doses = Target population x 1.11)								
	- **mixing syringes** (= total # vials = Target population x 1.11 / 10)								
	- **safety boxes** (AD + mixing syringes) / 100								
SOCIAL MOBILIZATION & COMMUNICATION	**1. Are social mobilization and communication activities being implemented according to plans/microplans?** *Source: Implementation status of plan*								
	2. Is the community aware of the date and venue of the SIA? *Source: Spot check of community members beginning 2 weeks before SIA - 5 households/caregivers*								
	Total score (no. items with "Y"):	0	0	0	0				

Target number of activities - District level:	**24**	**26**	**28**	**28**
Summary Assessment Circle week of visit:	**8 wks**	**4 wks**	**2 wks**	**1 wk**
Is the district on track to conduct the SIA? (Y/N)				

2c VERIFYING COMPLETION OF CRITICAL ACTIVITIES AT DISTRICT LEVEL

Planning, coordination and funding

1. **Have the following SIA components been operationally planned?**
   Each district should have plans addressing the following six components with specific persons designated as responsible for each: 1) vaccine and supplies management; 2) waste management; 3) AEFI investigation; 4) training; 5) social mobilization and communication; 6) daily data aggregation, reporting and analysis. Although one person may have more than one role/responsibility, each responsibility/task should be delegated to a specific person. Sources of data may include a workplan that identifies the persons responsible for the specific activities. If these activities have not been assigned, the district has not accomplished this critical activity. Ideally, these activities and responsible persons will be designated by 8 weeks prior to SIA implementation, with a proposed deadline of 4 weeks prior to SIA implementation.

2. **Is there a coordination team at this level?**
   The national-level steering or coordination committee and subcommittees should be replicated subnationally and at district level. Sources of data may include the minutes from meetings. The coordination team should be in place no later than 8 weeks before the SIA.

3. **Is there evidence of political commitment for the SIA?**
   Political commitment at every level is an important factor that determines whether the SIA will be successful. Evidence of such commitment would include involvement of local political authorities (e.g. district governor) with the coordination teams and/or with social mobilization and communication activities, local resource mobilization, planned SIA launches at the district level, and involvement of different government sectors in the SIA. Political commitment is needed early and throughout SIA preparation and should be evaluated at each visit. By 8 weeks before the SIA this should be well in place.

4. **Do validated microplans identify target numbers by geographic area/vaccination site?**
   Each district should identify specific target numbers of persons to be vaccinated (and provided vitamin A, de-worming medicine, or other interventions) by age group (e.g. 6/9–11 months, 12–59 months, 5–14 years), by geographic area (e.g. village, urban slum, hard-to-reach area) and by vaccination site (e.g. permanent fixed (health facility), temporary fixed or mobile sites). Sources of data may include microplans, maps and lists. If these targets have not been identified, the district has not accomplished this critical activity. This should be recognized in earlier assessments and re-evaluated 8 weeks prior to SIA implementation.

5. **Are "special" strategies planned for geographically hard-to-reach, marginalized and resistant populations?**
   Each district should identify the special populations and high-risk groups (e.g. hard-to-reach and underserved groups); identify the strategies that are needed to reach them (e.g. using fixed site with house-to-house canvassing); and develop specific team deployment plans, including special logistics, travel and budget needs adapted to these populations. Sources of data may include microplans, maps, lists and reports from respective health centres. If special strategies for these populations have not been identified, the district

has not accomplished this critical activity. Ideally, these populations will be identified by 8 weeks prior to SIA implementation, with a proposed deadline of 2 weeks prior to SIA implementation.

6. **Have funds been received and distributed for all planned activities?**
   Each district should receive the necessary funds as early as possible before the SIA so that the needed preparatory activities (e.g. training, social mobilization and communication) may proceed without delays. If SIA preparation activities are fully funded, the activity is accomplished. Sources of data may include receipts or bank statements. Ideally, funds for SIA preparation should be available at the district level 6 to 4 months before the SIA. Funds should be available at the health centre-level 8 weeks (but no later than 4 weeks) before the SIA so that training and preparation activities may proceed as planned.

7. **Have health workers and volunteers been trained?**
   The number of cascade levels in training is recommended to be limited to two: national-level master trainers train mid-trainers 4 weeks before the SIA and mid-trainers directly train health care workers and others 2 weeks (and no later than 1 week) before the SIA. Sources of data may include the training plan, signed participant attendance lists, daily allowance receipts and completed pre- and/or post-tests.

Monitoring and supervision

1. **Is there a supervision plan that includes names, dates and daily locations of supervisors?**
   A supervision plan should detail the name of each supervisor, his/her daily location (travel plan) and which team(s) she/he will supervise. Sources of data include the supervision plan and/or map. The detailed supervision plan ideally should be finalized by 8 weeks before the SIA. Transport and logistics will need to be arranged for the supervisors, and should be verified to answer question 4 in the cold chain and logistics section of this tool.

2. **Have supervisors and/or monitors been identified and trained to do rapid convenience monitoring (RCM)?**
   RCM is often done by both supervisors (for intra-SIA RCM) and independent monitors (for post-SIA independent RCM). You must verify that the district has provided training to supervisors and independent monitors and that the training has included RCM. Sources of data may include a supervisor/independent monitors training plan, RCM forms, copies of training materials, signed participant attendance lists, travel and daily allowance receipts and completed pre- and/or post-tests. Ideally, districts should conduct training of supervisors and independent monitors no later than 2 weeks before the SIA. However, keep in mind that if supervisors are administering the SIA Readiness Assessment Tool, they may also be briefed and/or trained for this purpose more than 8 weeks prior to the SIA.

3. **Have arrangements been made to ensure daily reporting of coverage and other data to the next highest level, and analysis?**
   In addition to verifying that specific persons have been designated as responsible for the daily reporting of numbers vaccinated, RCM results, AEFI identified, etc. (question 1 under planning, coordination and funding section), arrangements should be made to transmit this information daily from the health centre to district level, from the district to provincial level, and so on. Such arrangements may be by telephone or mobile phone, email correspondence, personal digital assistant transmission, fax machine or physical couriers that deliver paper-based report forms. You should verify that the indicated mechanism of

data transmission is available by physical inspection and, if data are to be transmitted by courier, by review of the budget and contact information of the intended courier. Such arrangements should be finalized and confirmed ideally 2 weeks before the SIA.

Vaccine, cold chain and logistics

1. **Is there sufficient functional cold-chain capacity and/or contingency plans for vaccine storage and freezing water-packs?**
   You must determine if there is sufficient space in the functional refrigerators/ice-lined refrigerators, freezers and cold boxes to store the needed amount of vaccine (usually the target population number times a wastage factor of 1.11) and water-packs. In addition, you must determine if there are a sufficient number of vaccine carriers to store the required daily amount of vaccine and diluent. Thus, this activity has four components: refrigerators, freezers, cold boxes and vaccine carriers. Keep in mind that measles and MR vaccine in 10-dose vials require 2.5 cubic centimetres (cm^3) of storage volume per dose and diluent bottles require 4 cm^3 per dose. The volumes and specifications of cold-chain equipment vary by make and model, so you likely will need to refer to the PQS Catalogue (http://apps.who.int/immunization_standards/vaccine_quality/pqs_catalogue/) when determining cold-chain capacity. Remember in comparing litres and cubic centimetres that 1 litre = 1000 cm^3. The cold-chain assessment ideally should be conducted 9 to 6 months before the SIA so that repairs may be done and/or additional cold-chain equipment procured before the SIA. If the assessment done 8 weeks before the SIA reveals insufficient cold storage capacity, contingency plans such as phased vaccine distribution or use of alternative cold storage facilities in the private sector should be in place.

2. **Does the district have a waste management plan that clearly describes how, when, where and by whom filled safety boxes will be transported and incinerated/discarded?**
   Districts must ensure that the SIA does not result in an increased risk of transmission of bloodborne pathogens by mishandling of biological waste such as used needles and syringes. A plan is needed that identifies who will transport the filled safety boxes, when they will be transported, how they will be transported, and where they will be ultimately incinerated, discarded or recycled. Data sources would include the waste management plan and evidence of funding in a budget. Operational plans from district levels should be included in the national logistics plan 6 months before the SIA. This should be confirmed at the visits to the districts at 8 weeks prior to the SIA.

3. **Have pocket guides for vaccinators (and supervisors), forms, checklists, training and communication materials been received?**
   Each district should receive the necessary field guides (e.g. for vaccination teams and supervisors), tally sheets, report forms, AEFI and other forms, checklists, training materials and communication materials well before the SIA. Field guides, forms and checklists are often used in training, and therefore they should be received before the training begins. Sources of data may include stock ledgers and receipts, and physical inspection should be done to verify these are present. Ideally, these materials will be received by the district and immediately distributed to the health centre-level 12 weeks before the SIA, with a proposed deadline of 8 weeks prior to SIA implementation so that local-level training and communication may be conducted during the month before the SIA.

4. **Has the district secured vehicles and fuel (or other means of transportation) to transport bundled vaccines, supplies and staff before and during the period of the SIAs?**
Each district should prepare a transport plan that specifically identifies how vaccine, logistics and staff (vaccination teams and supervisors) will move daily for the whole district. This includes return of unused vaccine and tally or report forms to the health centre or possibly district. If all of these transport needs have been secured, the activity is accomplished. Sources of data may include a transport plan and budget and financial statements indicating available resources to fund transport. The means of transport should be confirmed or secured ideally 8 to 6 weeks before the SIA.

5. **Are the received supplies of bundled vaccines and other inputs consistent with the target population and expected wastage factors?**
Each district should determine the target population number and required number of doses of M or MR vaccine based on a standard wastage factor, as described in Section 7.3.1 (1.11 for 10% wastage, 1.05 for 5% wastage). The wastage multiplication factor (WMF) is calculated as follows:

WMF = 100 / (100 – wastage rate)

A WMF of 1.11 is usually used for vaccines; as AD syringes, reconstitution/mixing syringes and safety boxes are bundled with vaccine, the number of AD syringes should match the total number of vaccine doses (including wastage), and the number of reconstitution/mixing syringes should equal the total number of vaccine vials or total number of vaccine doses (including wastage) divided by 10. The number of safety boxes should be equal to the total number of AD syringes and 5 ml (reconstitution/mixing) syringes divided by 100 (assuming the safety box is designed to hold 100 syringes). Thus, this activity has four components: vaccine, AD syringes, reconstitution/mixing syringes and safety boxes. Sources of data may include vaccine and stock ledgers, verified by physical inspection. Ideally districts should receive vaccine, injection equipment and safety boxes 8 to 4 weeks before the SIA so that health centres can receive vaccine, injection equipment and safety boxes 2 weeks (but no later than 1 week) before the SIA.

Social mobilization and communication

1. **Are social mobilization and communication activities being implemented according to plans/microplans?**
Social mobilization and communication planning should engage different ministries, CSOs/members and NGOs, as well as village leaders. Data sources include implementation status of social mobilization and communication plans, records of meetings and events, participant lists, communication materials developed and disseminated and relevant contracts or receipts. While social mobilization activities may begin as early as 6–4 months before the SIA with advocacy and planning meetings at different levels, communication activities are usually intensified during the month leading up to the SIA. These activities should continue during SIA implementation.

2. **Is the community aware of the date and venue of the campaign?**
The source of data comes from visits to five households in the community and interviews of parents/caregivers to assess their awareness of the SIA, and knowledge of when and where to bring their children to be vaccinated. Someone in each of the five sampled households should know when and where the SIA will be conducted for the "activity" to be accomplished. Ideally, the community should be aware of when and where the SIA will take place 2 weeks before the SIA with a deadline of the final week prior to the SIA.

Annex 3
Examples of common challenges that contribute to low-quality SIAs and suggestions to address them

COMMON CHALLENGES	SUGGESTED PREVENTIVE MEASURES OR SOLUTIONS
Insufficient high-level political support for the SIA at the national level.	• Negotiate high-level political support for the SIA. • Mention need for advocacy visits or high level "ambassadors for the SIA". • If high-level political support is not obtained, consider postponing the SIA as the risk of failure without political support is high.
Operational resources (particularly financial) reaching the implementation (local) level either too late or not in the required amounts.	• Start planning the SIA, including its budget, sufficiently early to obtain the necessary assurances, approvals and resources from the government and donors (15 to 12 months before the SIA). • Plan in sufficient detail (amounts, dates, responsible persons) the distribution of financial and other resources down to the local level. • Plan reporting requirements to track accountability and use of all resources for operations at each level. • Ensure that staff are aware of these processes and requirements. • Ensure high-level political support as it is key for improving accountability.
Vaccine and devices ordered/ delivered too late. Even when the orders for vaccines and devices are timely placed, the resources necessary for payment of the order may not be available in time, or vaccine/equipment shortages may occur.	• Order devices and vaccines at least 9 months prior to the SIA. Devices shipped by sea must have longer lead times than vaccines. • Obtain assurances for timely delivery, borrow vaccine and/or devices from nearby countries, or delay the SIA until they arrive. • A timeline for vaccine delivery and a vaccine distribution plan should be developed and monitored by the SIA logistics task force.
Late start of planning and preparation**.** It is difficult to implement a successful SIA if preparations begin less than one year prior to the expected SIA implementation.	• Use the SIA Readiness Assessment Tool as a management tool to help with ensuring that critical activities are implemented in a timely manner.
Insufficient or delayed local-level microplanning. There is insufficient time or resources to develop microplanning of SIA activities at the local level.	• At the outset, ensure that sufficient resources are available for microplanning workshops and that microplanning activities are carried out in a timely manner.
Unclear designation of responsibilities.	• Clearly define roles with responsibilities and authorities for each position at each level (usually contained in the ToR).

COMMON CHALLENGES	SUGGESTED PREVENTIVE MEASURES OR SOLUTIONS
Inadequate resources for communication at all levels.	• Budget for costs and plan resources at all administrative levels. • Include low-cost social mobilization strategies, including use of religious and community groups to disseminate information about the SIA; plan visits to schools so the students and teachers become engaged SIA promoters and information agents; engage local authorities and recognized subject-matter experts to talk about the SIA.
Visits to schools not included for social mobilization or vaccination.	• Include ministry of education early in planning. Engage schools and private educational facilities and their associations.
Inadequate distribution of supplies to vaccination posts, and/or inadequate provision of transportation for supplies and vaccination teams.	• Maintain sufficient flexibility in logistics planning, including emergency transportation resources and contingency funds.
Long queues that discourage participation of attendees, irrespective of their causes.	• In well-publicized SIAs for high-demand vaccines, plan for twice as many vaccines to be administered by each team for the first few days of the SIA. Be prepared to increase the number of teams and extend the time when personnel are available at each SIA site. These additional teams can be moved to different sites after the initial demand decreases. • For fixed sites with two vaccination teams, having the two teams vaccinate simultaneously in different areas of the same health centre as far as possible from each other can help with crowd control.
At the vaccination posts, too much information is asked from each child, which increases the delays and the likelihood of recording errors.	• To facilitate training and implementation, and to avoid errors, vaccination cards should contain basic minimum information, usually including (a) location and date (which can often be filled in advance) and (b) name and age of the vaccinee. • Tally sheets should contain only the essential information for recording.
Working hours of the vaccination posts not convenient for parents and children.	• SIA planning should specifically include strategies to reach difficult-to-vaccinate populations; so while planning, it is critical to use local knowledge to ensure teams are present when children/parents are at home. • Visits to all preschools, schools, etc. should be included in the plans, and schools should be informed in advance of the SIA.
Civil unrest.	• In situations of high insecurity or civil unrest, it is often necessary to delay implementation of SIAs. If the decision is made to move forward with the SIA, implementation of all or most local activities, including vaccination and supervision, may need to be carried out by properly trained local personnel (see Annex 4 for suggested strategies during civil unrest).

Annex 4
Securing access for immunization in security-compromised areas: lessons from the Polio Eradication Programme

Context

In the past three years, the overwhelming majority of wild poliovirus cases have been reported from countries that are experiencing conflict or from areas that are highly insecure. In addition, tens of frontline health workers working on polio eradication efforts have also been attacked or killed. The inability of planned polio SIAs to reach children has been due to some of the following reasons:

- displacement and movement of thousands of people;
- impacts of violence and fear among the health workers and local populations, limiting high-quality work;
- targeted attacks on health workers and primary health care facilities;
- lack of legitimate government authorities in areas of insecurity and conflict to assist in planning and implementation of polio SIAs;
- large areas under the control of nongovernmental groups;
- state of emergency triggers security levels by the United Nations Department of Safety and Security that prevent movement of UN staff to assist in planning and supervision of activities;
- lack of respect by armed groups for international humanitarian law, the Geneva Conventions and the neutrality of health activities or UN activities.

Access support

In order to ensure a focused approach to securing access to children in such high-risk and insecure areas, the Polio Eradication Programme at WHO headquarters established a unit called "Polio Access Support". This unit provides support and guidance in four areas: 1) field security support and assessments; 2) political/conflict analysis and advocacy; 3) access diplomacy and programme innovation; and 4) community acceptance and trust, all of which have proven to be essential to secure access to children and conduct vaccination campaigns in areas of insecurity. The Polio Oversight Board also approved four "access approaches" that the Polio Eradication Programme could utilize, as needed (Fig. A4.1). Innovative operational strategies to reach children in security-compromised areas are shown in Table A4.1.

FIG. A4.1
Approaches used to secure immunization access in insecure settings

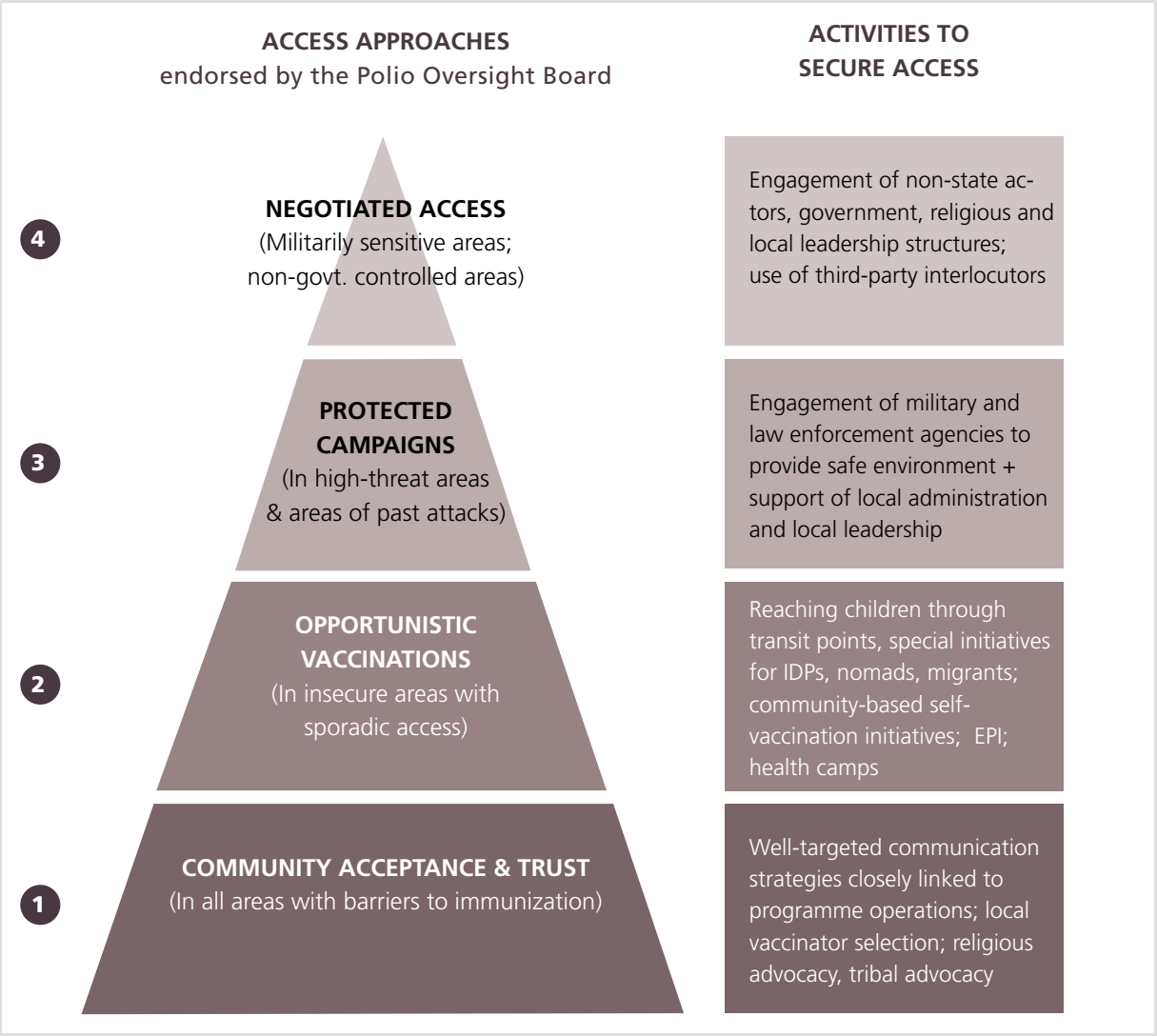


TABLE A4.1
Innovative operational strategies to reach children in security-compromised areas

OPERATIONAL STRATEGIES	DESCRIPTION
1. Remote operations/ management	Conduct planning and training of local staff from insecure areas outside the high-risk zone; operations in insecure areas should be implemented and managed remotely from safe zones.
2. Permanent health teams	Minimize visibility of local vaccination teams who are active throughout the month.
3. Shortened Immunization Days	Reduce the duration of SIAs while increasing the number of teams and logistics to seize short periods of peace/stability.

OPERATIONAL STRATEGIES	DESCRIPTION
4. "Fire-walling" and permanent transit points	Vaccinating on transit points and bordering districts surrounding a high-risk or inaccessible area.
5. Health Camps	Secure support from local religious, tribal and government authorities; stock OPV along with other health interventions at fixed posts in communities with barriers to immunization or in communities highly resistant to vaccination.
6. Discrete activities	Promote self-vaccination activities; provide immunization in local pharmacies.

Lessons learned

The key activities that have helped to improve the quality of Immunization in security-compromised areas are described below.

1. Conduct detailed security risk assessments with the involvement of:
   a. government security, and traditional and religious leaders;
   b. local surge-capacity personnel.

2. Mobilize communities, and increase vaccine acceptance and demand by:
   a. engaging traditional and religious leaders in planning;
   b. identifying local staff to conduct the SIAs and develop a community mobilization network;
   c. conducting "Health Camps", which provide a broader range of health services than just immunization.

3. Periodically revise microplans based on population displacements/movements.

4. Pre-position vaccines and operational funds to quickly implement vaccination activities once a window of opportunity opens.

5. Intensify and fine-tune the existing local innovations for security-compromised areas – transit points, permanent teams, community volunteers, tribal councils and fixed posts.

6. Sustain advocacy with the government and law enforcement authorities to provide access or security support, while maintaining neutrality.

7. Reach out to third parties/local interlocutors who can engage with non-state armed groups.

Annex 5
SIA strategies: fixed or mobile posts with house-to-house canvassing and house-to-house vaccination

5a FIXED OR MOBILE POSTS WITH HOUSE-TO-HOUSE CANVASSING

Strategy description

Due to the high cost and labour-intensive nature of house-to-house canvassing, this vaccination strategy is only recommended in areas where the communities may be hesitant about vaccination or need additional motivation in order to seek vaccination. This strategy can also be helpful in reaching the urban poor and migrant populations.

This vaccination strategy with added social mobilization element involves the use of an additional trained volunteer/community mobilizer (referred to as a "canvasser") who goes house-to-house informing caregivers about the SIA. She/he works in coordination with the personnel at the vaccination post. Therefore, the full vaccination/canvassing team includes a volunteer canvasser going house-to-house and the vaccinator(s) and an additional volunteer(s) who remains at the vaccination post. There should be one supervisor for every four vaccination/canvassing teams.

The geographic area of responsibility of the house-to-house canvasser should match that of the vaccination team. A trained canvasser conducts visits to around 50 to 100 households with eligible children in a defined area for the duration of the post during the SIA. In most cases there is one house-to-house canvasser in the area of responsibility of each team. As the canvasser should be a member of the community being vaccinated, there may be a need for training several canvassers per vaccination team but only one canvasser will be working in any given area. Some countries have specific community canvassers for performing household visits during SIAs and routine immunization. If these are successful, the countries should continue with their own approach.

Canvassers must be able to read and write and should be selected from the local community. Prior to each vaccination day, canvassers will receive workplan sheets to track progress, a map of the designated neighbourhoods to be visited, and a form to indicate the number of houses visited and the total number of eligible children in the area. Visits should be planned so that the canvasser does not cover more than 3 to 5 km daily. If complete and accurate maps are not available, simple diagrams showing the limits of the designated neighbourhood should be provided. An example of such diagrams is shown in Fig. A5.1. The diagram should include the following:

- approximate size of the catchment area;
- labelled area to cover in a day;
- useful landmarks in the area to inform the route and movement plans.

An example of the workplan of the canvasser is shown in Fig. A5.2.

FIG. A5.1
Example of diagram of areas for canvassing visits per day

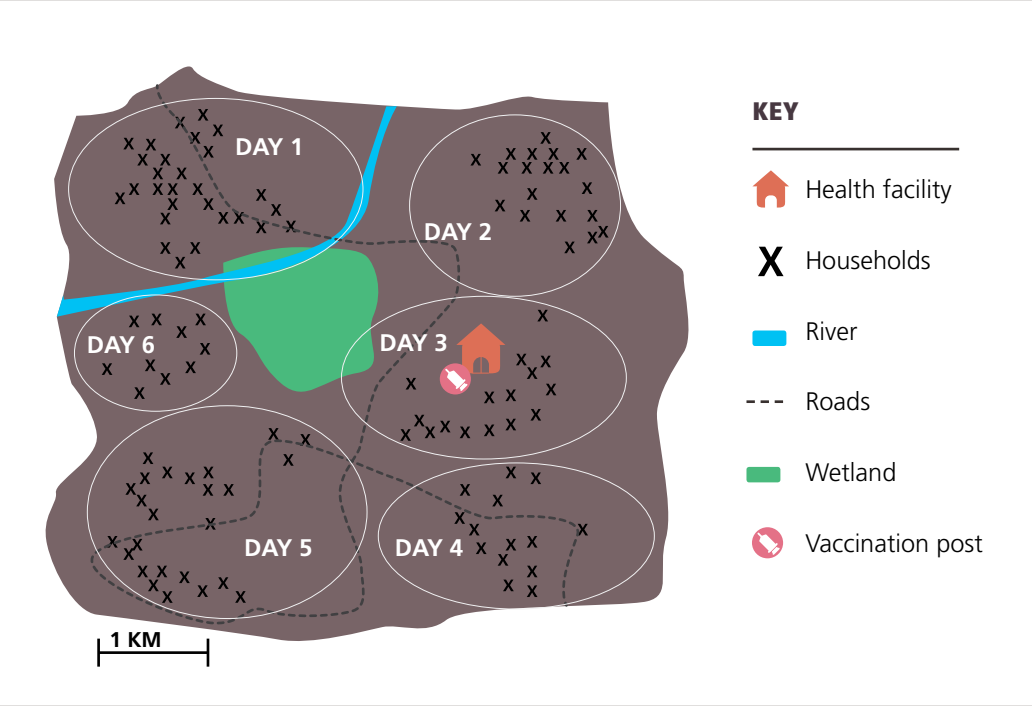


FIG. A5.2
Example workplan for canvasser

Health centre: _____ **SIA week:** From_____to_____

Work area: _____

Canvassing supervisor: _____ **Canvasser:** _____

Canvasser Name and mobile no.	Sectors/neighbourhoods to be visited by canvasser each day					
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Canvasser-1	Neighbour-hood XXX	YYY	ZZZ	QQQ	TTT	PPP
Canvasser-2						

Household visits

1. During each visit, the canvasser should do the following:
   - courteously introduce himself/herself as a health centre (SIA) volunteer, and explain the reason for the visit;
   - seek informal consent of the household head to discuss the immunization status of the children;
   - inform the head of household about the disease, its control, and need for vaccination (the messages should be short and concise, e.g. what vaccine will be administered/ why it is important, and should stress the importance of routine vaccination and the need to have each child fully vaccinated);
   - determine the number of children eligible for the SIA;
   - encourage the head of household to bring all eligible children to the SIA vaccination post – emphasize times, dates, and location of nearest vaccination post;
   - when leaving the household, mark the main door with chalk or a pre-printed sticker, with the date of the visit and any other marking agreed by the country.

2. Fill out the house-to-house canvassing form indicating the number of houses visited, the total number of children in the target age group in the area covered (see Fig. A5.3).

3. Report any household in which caregivers refuse vaccination to the vaccination team and supervisor, so she/he can visit the houses and provide further advice.

FIG. A5.3
Example of form to be completed daily by canvassers

Health centre: _____ **SIA week:** From_____to_____

Work area: _____ **Day:** _____

Canvassing supervisor: _____ **Canvasser:** _____

Sector/neighbourhood: _____

Houses visited	Total no. children in target age group	Comments and location of households that refuse vaccination
1		
2		
3		
4		
5		
6, etc.		

Responsibilities of the vaccination/canvassing team supervisor

There is one supervisor for four vaccination/canvassing teams. The supervisor should use the same maps/diagrams as the canvasser. The responsibilities of the supervisor include:

1. checking the vaccination activities at each of the four assigned vaccination posts (see Chapter 13);

2. checking the work of each house-to-house canvasser:
   a. assessing every day that each of the canvassers have completed all household visits in the assigned area, by checking the house-to-house canvassing forms and doing spot checks on some of the houses to verify that they were visited and marked;
   b. if possible revisiting all houses in which the canvasser reports that the family refuses vaccination;
   c. providing feedback to the responsible next-level supervisor regarding the need (or not) to keep teams in the same area the following day.

Variations on the strategy

There are a number of variations of the canvassing approach, and every country may have a preferred procedure. An ideal scenario is for the canvasser to count the SIA-eligible children in each household, or even write down their names, to share with the vaccination team so they can confirm that they have been vaccinated. Although this can substantially increase the workload of the canvasser and the vaccination team, it can be used in places with a sufficient number of volunteers. Additionally, canvassers can record the vaccination status of all age-appropriate children within the household, to help identify zero dose children for future follow up through the routine immunization programme. Such thorough approaches to canvassing have been used successfully in some countries in the African Region.

5b HOUSE-TO-HOUSE VACCINATION

Strategy description

The house-to-house vaccination strategy involves a two-person vaccination team (usually one health worker who administers the vaccine and one volunteer), conducting at least one visit to all households in a defined area each day. The vaccination team will administer vaccine to all eligible children directly and mark the door of the house accordingly.

This strategy is best used as a mop-up strategy for areas shown by RCM to have people refusing vaccination as it provides an opportunity for informative dialogue. The vaccination team must be well trained to avoid vaccination-related errors and the multi-dose vial policy should be applied according to the national policy.

Given the effort and distances involved, the use of this strategy means that vaccination teams will be able to vaccinate fewer (approximately 50 to 75) children per day, rather than the

expected 100 to 150 in urban or 75 to 100 in rural areas for temporary and mobile teams. As with house-to-house canvassing, it requires strong supervision: one supervisor for every four vaccination teams (depending on the setting).

The geographic area of responsibility of the house-to-house vaccination team must be clearly defined and made available to the vaccination teams and the supervisor.

Responsibilities of the house-to-house vaccination team

The responsibility of the team is to visit all households in the assigned geographic area, vaccinate all eligible children found, appropriately mark all households, and return to any households with remaining unvaccinated children to vaccinate them.

Each vaccination team should be provided a map/diagram of the catchment area, which, if possible, includes a scale to define the size of the area, any prominent physical features that inform the route or movement plans, and have visit dates planned in such a way that the vaccination team does not have to cover an area larger than 3 km^2 each day.

Household visits

During each visit, the vaccination team should do the following:

1. courteously introduce themselves as health workers and/or a health centre (SIA) volunteer, as appropriate, and explain the reason for the visit;

2. ask the parent or caregiver about the immunization status of their children;

3. inform the parent/caregiver about the benefits of vaccination, and encourage the family to vaccinate all children, including in the routine immunization programme;

4. determine the number of children in the household eligible for the SIA;

5. vaccinate them all, if present;

6. mark the finger of each child vaccinated with indelible marker pen, usually the left ring finger, to differentiate from finger markings for polio vaccination;

7. fill out the SIA vaccination card or immunization card, ensuring that SIA doses are not recorded as routine doses, for each vaccinated child;

8. when leaving the household, mark the household with the date of visit and indicate if a revisit is needed (either because the eligible children were absent at the time of the visit or the caregivers are refusing vaccination or it is unknown if there are eligible unvaccinated children);

9. record any households refusing vaccination and inform the supervisor that further assistance is needed (GPS equipment may be used to record the specific location of households refusing vaccination).

Ensuring safe vaccination in house-to-house vaccination strategy

The best approach is to use single-dose vials. If single-dose vials are not available, and multi-dose vials (5, 10, or 20 doses) are being used, the options to avoid safety issues are the following.

a. Once a vial is opened in a household, the vaccinator stays and continues to vaccinate at this site, while the volunteer visits the houses nearby to bring other eligible children for vaccination. Once the vial is finished, the team moves to the next unvisited house. In this case, the houses from which children are brought for vaccination should be marked appropriately.

b. If there are no eligible children living nearby, and if there are concerns about vaccine safety, it may be advisable to discard the open vial rather than move from house to house with an open vial.

Responsibilities of the house-to-house vaccination supervisor

There should be at least one supervisor for every four house-to-house vaccination teams. His/her responsibilities include:

1. overseeing the vaccination activities of each of the four vaccination teams assigned him/her (see Chapter 13);

2. checking the proper marking of the households using spot checks;

3. assessing daily that the four assigned teams have completed all household visits, including repeated visits to households with unvaccinated eligible children;

4. revisiting all houses marked as having unvaccinated children at the end of the day, regardless of repeated visits by the house-to-house vaccination team, and attempting to encourage vaccination;

5. using the findings to advise corrective actions (e.g. best times for vaccination in the area).

5c VACCINATION AT SCHOOLS, PRESCHOOLS AND DAY CARE CENTRES

Schools are practical settings for vaccination of appropriate age cohorts in which both teachers and students can contribute to social mobilization activities. A school-based vaccination strategy can make use of schools in the following ways.

- A member of the vaccination team, or another health-centre nurse, visits each school prior to the SIA to provide a short presentation to the students on the diseases covered by the SIA, the SIA schedule and the importance of routine immunization.

- SIA-related homework: Following the class, the teacher provides each student with a letter to parents informing them about: (a) vaccines included in the SIA, (b) age eligibility, (c) timing of the SIA, and (d) location of the vaccination posts.

- Vaccination and social communication teams are assigned to visit schools to provide information about the SIA on pre-agreed days, and prior to vaccinating all eligible children class by class.

Because school children are unaccompanied, school vaccination will require taking into account national and institutional regulations regarding consent from parents or caregivers for the vaccination. In countries where informed consent from parents is required (i.e. where measles vaccination is not mandatory) parents need to be adequately informed of measles vaccination and provided with a consent form. In those cases, it is most efficient to establish an "opt-out" procedure that requires those parents not wanting to vaccinate their child to sign a form. Sufficient time needs to be allotted for the forms to be provided to parents and to be returned to school prior to the vaccination session. Further guidance can be found in the WHO document *Considerations regarding consent in vaccinating children and adolescents between 6 and 17 years old*: http://www.who.int/immunization/programmes_systems/policies_strategies/consent_note/en/.[A3]

A3 WHO (2014). Considerations regarding consent in vaccinating children and adolescents between 6 and 17 years old. Geneva: World Health Organization (WHO/IVB/14.04).

Annex 6
Critical activities and proposed timeline for planning high-quality SIAs

Some of the activities planned for the SIA (see Tables A6.1 and A6.2) may be a part of regular national and district level activities and as such would be in-kind contribution not requiring additional budgetary funds. These activities/items along with those marked as needing funding will vary according to the specific country situation and needs, and will have to be evaluated on a country-by-country basis. District level planning complements the national level planning, and the district activity list is similar to the national level activity list but with greater operational elements. The two tables below highlight the key activities and indicate whether or not these activities *usually* incur additional funding.

TABLE A6.1
National-level planning list

SUGGESTED TIMING	ACTIVITY/ITEMS		EXTRA FUNDS
At least 12 months prior to SIA	Develop budgeted macroplan with a timeline (plan funds for pre- and intra-campaign monitoring and post-campaign activities)		
	Hold meetings with ministries of health and finance regarding allocation of funds for the SIA		
	Submit application to partners (e.g. Gavi, Measles & Rubella Initiative, local partners, etc.) for additional funding, if applicable		
	Present draft macroplan and discuss the financing within the Interagency Coordination Committee (ICC)		**X**
	Establish and plan the meetings of the national coordinating committee (NCC)		
12 to 9 months before SIA	Establish and plan the meetings of technical subcommittees with clear terms of reference		
9 to 6 months before SIA	Meet with district leaders and health officials (initiate microplanning meetings)		**X**
	Conduct microplanning workshops at the regional/district level		**X**
	Conduct microplanning meetings to finalize plans		**X**
	Finalize plans and obtain endorsement by the NCC		
	Develop and finalize plan for social mobilization, advocacy and communication		
	Develop/update logistics spreadsheets and ensure consistency of calculations, including:		
	Supplies needed	Vaccine and diluents vials	**X**
		AD syringes (0.5 ml) and needles	**X**
		Reconstitution syringes (5 ml) and 19 G or 20 G needles	**X**
		Gauze, soap, trays	**X**
		AEFI treatment kits	**X**
		Indelible ink for finger marking	**X**
		Vaccination cards	**X**

SUGGESTED TIMING	ACTIVITY/ITEMS		EXTRA FUNDS
9 to 6 months before SIA —continued	Cold-chain equipment	Purchase/rental of refrigerators	X
		Vaccine carriers	X
		Coolant-packs	X
		Portable cold boxes	X
	Waste management	Safety boxes (5 L)	X
		Incinerator/pit construction	X
	Transport	Car/motorboat rental and fuel	X
		Motorcycle rental and fuel	X
		Fuel if vehicles are available	X
	Human resources	Vaccinators	X
		Volunteers	X
		Announcers	X
		Canvassers	X
		Vaccination team supervisor (per diem)	X
		Technical assistance consultant, if needed	X
		External monitors	X
		Coordinators, supervisors, stockroom managers, incineration workers, drivers	X
	Place order for vaccines and injection devices		
	Develop national SIA guidelines		X
6 to 4 months before SIA	Transfer operational funds to the district level		X
	Review and validate microplans at the national level		
	Budget revision and adjustment according to the microplans		
	Develop social mobilization materials		X
	Confirm participation of public figures in launching ceremony		
3 months before SIA	Print and distribute supervisory checklists including SIA Readiness Assessment Tool, tally sheets, AEFI forms, summary forms, cards		X
	Develop and distribute training materials and tools		X
	Develop radio/TV announcements and press articles		X
	Confirm the workplan for monitoring and evaluation of the SIA		X
8 weeks before SIA	Conduct supervisory visits to provincial /district levels to assess SIA readiness and identify problems		X
	Start preparation for launching ceremony		
	Verify availability of transport for supervision, social mobilization, etc.		
	Transport vaccine from central level to provincial cold rooms and district levels		X
4 to 2 weeks before SIA	Conduct supervisory visits to districts with problems to check readiness		X
	Designate supervisory teams for SIA implementation		
	Confirm preparations for the launching ceremony		
	Conduct training of mid-level trainers (training sites, refreshments, notebooks, pens, other materials)		X

SUGGESTED TIMING	ACTIVITY/ITEMS	EXTRA FUNDS
2 weeks before SIA	Conduct supervisory visits to selected districts to confirm preparation and identify and address readiness gaps	**X**
1 to 2 weeks before SIA	Start regular newspaper, TV and radio announcements	**X**
	Conduct training of vaccination teams (training sites, refreshments, notebooks, pens, other materials)	**X**
1 week before SIA	Set up a national operations control room to follow the SIA and provide back-up support to the subnational level	
	Conduct SIA readiness supervisory visit	**X**
	Intensify all social mobilization activities	
1 to 2 days before SIA	Prepare site for launching ceremony and verify public relations arrangements	
Day of the SIA start	Conduct opening ceremony	
Every day of SIA implementation	Visit/supervise service delivery posts and vaccination teams	**X**
	Follow up and review implementation through national supervisors	
	Provide back-up support to subnational level if needed	
	Support daily monitoring meetings at district, regional and central level with key stakeholders	
	Support intra-SIA monitoring (independent RCM monitors)	**X**
1 week after SIA	Actively collect and compile coverage results from all administrative units	
2 weeks after SIA	Conduct a national review meeting with supervisors, consultants, programme managers, and national and subnational coordinators	
	Conduct post-SIA RCM and coverage survey	**X**
1 month after SIA	Compile and submit a technical and expenditure report	
	Provide written feedback to the subnational level	

TABLE A6.2
District-level planning list

SUGGESTED TIMING	ACTIVITY	EXTRA FUNDS
9 to 6 months before SIA	Prepare initial planning meeting: census data, maps, list of communities, inventory of human resources, transport, cold chain, storage and waste incinerators/pits in the district	
	Establish a district SIA coordinating committee and relevant subcommittees composed of participants from health and other sectors	
	Conduct microplanning workshops	**X**
	Verify the availability of transport logistics for the distribution of vaccines and materials	

TABLE A6.2
District-level planning list (continued)

SUGGESTED TIMING	ACTIVITY	EXTRA FUNDS
4 to 3 months before SIA	Verify the availability of operational funds to be transferred from the national level	
	Hold meeting with the subdistrict and local-level SIA coordinators – assign schedule and task lists	
	Distribute SIA guidelines to the subdistrict and local coordinators	**X**
8 weeks before SIA	Initiate local social mobilization	
	Confirm strategies for hard-to-reach and special populations	
	Start preparations for the local launching ceremony	**X**
8 to 6 weeks before SIA	Verify the availability of transport for the distribution of vaccines and materials, supervision, etc.	
	Finalize distribution plans of vaccines and materials	
	Conduct supervisory visits to assess readiness	**X**
4 weeks before SIA	Confirm preparations for the local launching ceremony	**X**
4 to 2 weeks before SIA	Transfer vaccines and materials to subdistricts and health facilities	**X**
	Conduct second round of pre-campaign supervisory visits to selected sites	**X**
	Initiate social mobilization activities for hard-to-reach and special populations	**X**
	Intensify social mobilization activities	**X**
	Conduct training of vaccination teams	**X**
1 week before SIA	Visit and support selected underperforming subdistricts	**X**
1 to 2 days before SIA	Confirm deployment of supervisors	
Day of the SIA start	Conduct opening ceremony	**X**
Every day of SIA implementation	Visit/supervise service delivery posts and vaccination teams	**X**
	Conduct intra-SIA monitoring – RCM by independent monitors (on average one area per district)	**X**
	Calculate immunization coverage at the end of each day for all levels	
	Hold daily meetings of district supervisors and coordinators to review daily administrative coverage and to review the quality of SIA implementation	
	In case of AEFI, respond to reports and/or rumours	
3 days after SIA	Meet with all subdistrict coordinators of the district	**X**
1 week after SIA	Review supervision checklists	
	Estimate vaccine coverage and wastage in the district	
	Conduct mop-up activities, if needed	**X**
	Submit coverage results and reports (technical and financial) with documented lessons learned to the national level	
2 weeks after SIA	Participate in the national review meeting	**X**

Annex 7
Forms associated with recording and treating AEFI

7a AEFI REPORTING FORM

AEFI reporting id number:

REPORTING FORM FOR ADVERSE EVENTS FOLLOWING IMMUNIZATION (AEFI)

***Patient name*:** ***Patient's full address*:** Telephone: Sex: ☐ M ☐ F ***Date of birth* : _ _ / _ _ / _ _** *OR Age at onset:* ☐☐ *Years* ☐☐ *Months* ☐☐☐ *Days* *OR Age group at onset:* ☐ *< 1 Year* ☐ *1 to 5 Years* ☐ *> 5 Years*	***Reporter's name*:** Institution: Designation & Department: Address: Telephone & email: Date patient notified event to health system: _ _ / _ _ / _ _ Today's date : _ _ / _ _ / _ _

Health facility (place or vaccination centre) name & address:

Vaccine						*Diluent (if applicable)*			
Name of vaccine	***Date of vaccination***	***Time of vaccination***	Dose (1st, 2nd, etc.)	***Batch /Lot number***	Expiry date	Name of diluent	***Batch /Lot number***	Expiry date	Date and time of reconstitution

Adverse event(s): ☐ Severe local reaction ☐ *> 3 days* ☐ *beyond nearest joint* ☐ Seizures ☐ *febrile* ☐ *afebrile* ☐ Abscess ☐ Sepsis ☐ Encephalopathy ☐ Toxic shock syndrome ☐ Thrombocytopenia ☐ Anaphylaxis ☐ Fever ≥ 38°C ☐ Other (specify).....	Date AEFI started **:** _ _ / _ _ / _ _ Time __ __ __ __ Describe AEFI (signs & symptoms):

Serious: Yes / No; ➔ If Yes ☐ Death ☐ Life threatening ☐ Persistent or significant disability ☐ Hospitalization ☐ Congenital anomaly
☐ Other important medical event (specify).....

Outcome: ☐ Recovering ☐ Recovered ☐ Recovered with sequelae ☐ Not Recovered ☐ Unknown

☐ Died If Died, date of death : _ _ / _ _ / _ _ Autopsy done: ☐Yes ☐No ☐Unknown

Past medical history (including history of similar reaction or other allergies), concomitant medication and other relevant information (e.g. other cases). *Use additional sheets if needed:*

First decision-making level to complete:

Investigation needed: ☐ Yes ☐ No	If yes, date investigation planned : _ _ / _ _ / _ _

National level to complete:

Date report received at national level _ _ / _ _ / _ _	AEFI worldwide unique ID **:**
Comments:	

indicates compulsory field

7b AEFI TREATMENT KIT

Contents of an AEFI treatment kit include the following.

Injection adrenalin (1:1000) solution – 2 ampoules

Injection hydrocortisone (100 mg) – 1 vial

Disposable syringe (insulin type) having 0.1 ml graduations and 26 G IM needle – 2 sets

Disposable syringe (5 ml) and 24/26 G IM needle – 2 sets

Scalp vein set – 4 sets

IV canula (for multiple sizes)

Paracetamol (500 mg) – 10 tabs

IV fluids (Ringer lactate/normal saline): 1 unit in plastic bottle

IV fluid therapy: 1 unit in plastic bottle

IV drip set: 1 set

Cotton wool + adhesive tape: 1 each

AEFI reporting forms

Label showing: date of inspection, expiry date of injectable adrenaline and shortest expiry date of any of the components

Drug dosage tables for injecting adrenaline and hydrocortisone

At hospital, oxygen support and airway intubation facility should be available.

7c RECOGNITION AND TREATMENT OF ANAPHYLAXIS

Distinction between anaphylaxis and fainting (vasovagal reaction):

	FAINTING	ANAPHYLAXIS
Onset	Usually at the time or soon after the injection.	Seconds to minutes of exposure to a given substance; most cases start within 1 hour of exposure (Brighton Collaboration definition).
Skin effects	Pale, sweaty, cold and clammy.	Red, raised and itchy rash; swollen eyes, face, generalized rash.
Respiratory effects	Normal to deep breaths.	Noisy breathing from airway obstruction (bilateral wheeze or stridor).
Cardiovascular effects	Slow pulse rate, transient hypotension.	Fast pulse rate, hypotension.
Gastrointestinal effects	Nausea, vomiting.	Abdominal cramps, vomiting.
Neurological effects	Transient loss of consciousness, relieved by supine posture (lying down).	Loss of consciousness, not relieved by supine posture (lying down).

Progression of signs and symptoms of anaphylaxis:

CLINICAL PROGRESSION	SIGNS AND SYMPTOMS OF ANAPHYLAXIS
Mild, early warning signs	Itching of the skin, rash and swelling around injection site.
↓	Painless swelling in parts of the body (e.g. face or mouth). Flushed, itching skin, blocked nose, sneezing, red and itchy eyes.
	Nausea, vomiting, abdominal pain.
Late, life-threatening symptoms	Noisy breathing (wheeze or stridor), hoarse voice, difficulty swallowing or talking, difficulty breathing (fast breathing, recession), collapse, low blood pressure, irregular weak pulse.

Treatment of anaphylaxis

Once the diagnosis is made, consider the patient as having a potentially fatal condition, regardless of the severity of the current symptoms. Begin treatment immediately and stay with the patient. Unless you are already at the designated AEFI management centre or at the hospital, arrange for immediate transfer of the patient.

Adrenaline (epinephrine) stimulates the heart and reverses the spasm in the lung passages, and reduces oedema and urticaria, thus countering the anaphylaxis. But, if used in inappropriate doses, this potent agent can cause irregular heartbeat, heart failure, severe hypertension and tissue necrosis.

Every health facility should have health staff trained in treatment of anaphylaxis who have rapid access to an emergency kit with adrenaline, and should be familiar with its dosage and administration. The expiry date of the adrenaline should be written on the outside of the emergency kit and the whole kit should be checked three or four times a year. Adrenaline that has a brown tinge must be discarded. Adrenaline has a short shelf life, so the expiry date should be monitored on a regular basis.

Steps in initial management (see also Fig. A7.1):

- Stop administering any further vaccines.
- Place the patient in the supine position, or if the patient has difficulty breathing, place him/her in a semi-supine position. Do not stand the patient up or allow the patient to walk.
- If already unconscious, place the patient in the recovery position and ensure that airway is clear.
- Assess Airway, Breathing and Circulation (ABC). If appropriate, begin cardiopulmonary resuscitation (CPR). Give adrenaline 1:1000 (see Table A7.1 for correct dose by age or

weight) by deep intramuscular injection into the opposite limb to that in which the vaccine was given. In general, in children it is administered in the upper lateral thigh, and in adults it is usually given in the deltoid. Subcutaneous administration is acceptable in mild cases.

- Give oxygen by face mask, if available.
- Repeat the same dose of adrenaline by intramuscular route every 5-10 minutes if symptoms are ongoing, up to a maximum of three doses.
- Call for professional assistance but never leave the patient alone. Call an ambulance (or arrange other means of transport) **after** the first injection of adrenaline, or sooner if there are sufficient people available to help you.
- Record, or get someone to record, vital signs (pulse rate, respiratory rate and blood pressure), as well as time and exact dose of any medication given. Make sure the details accompany the patient when s/he is transferred.
- Mark the immunization card clearly so the individual never gets a repeat dose of the offending vaccine. At a suitable moment, explain to parents or relatives the importance of avoiding the vaccine in the future.
- Report the occurrence of anaphylaxis to the appropriate officer by phone followed by the reporting form.

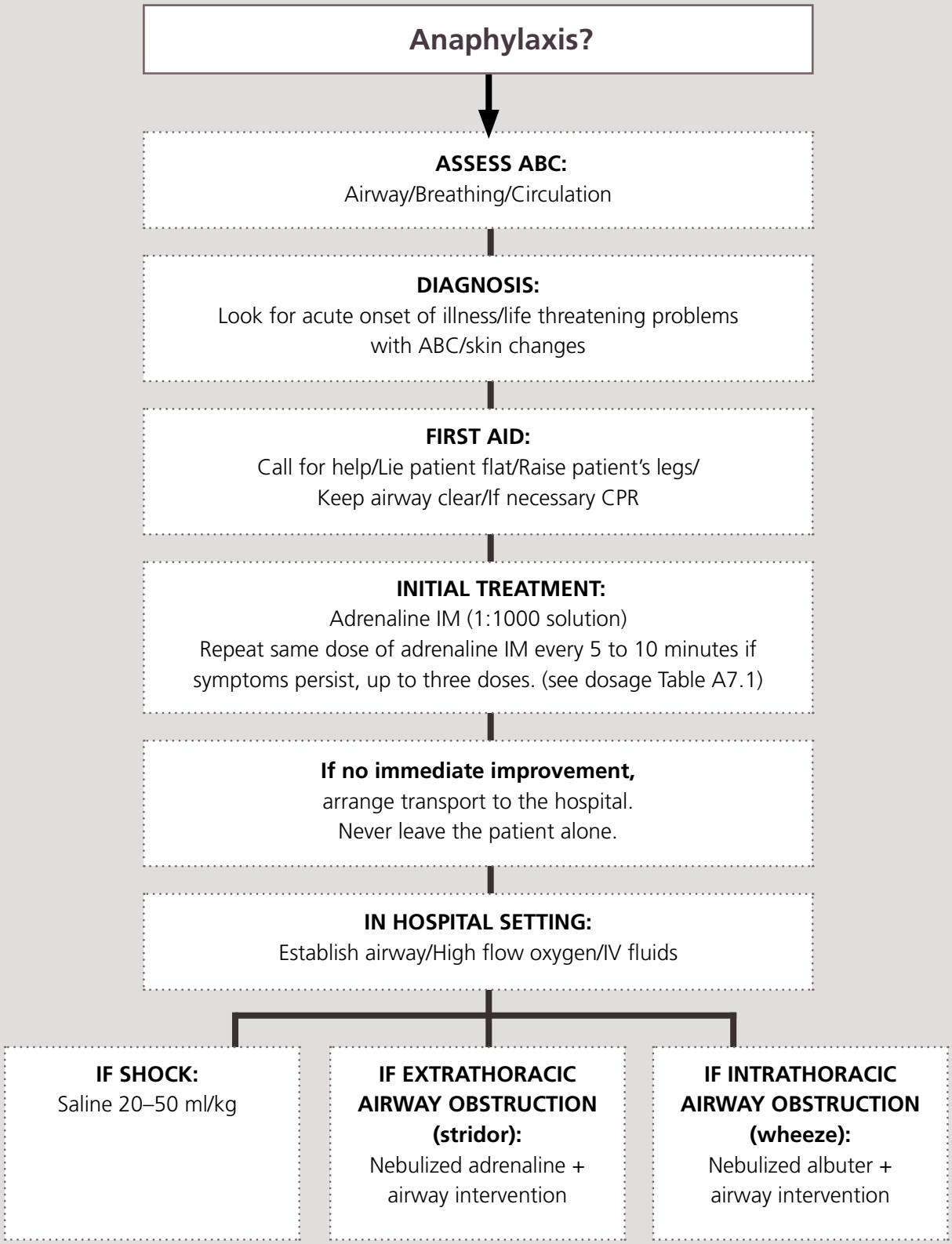
Adrenaline dosage: 1:1000 adrenaline (epinephrine) at a dose of **0.01 ml/kg up to a maximum of 0.5 ml injected intramuscularly**. If the weight of the patient is unknown, an approximate guide can be used, as per the table below.

TABLE A7.1
Dose of adrenaline 1:1000 (aqueous) for treatment of anaphylaxis according to age

AGE	DOSE[a] (ml)
12 months	0.10
18 months–4 years	0.15
5 years	0.20
6–9 years	0.30
10–13 years	0.40[b]
≥ 14 years	0.50[b]

a The dose for children is based on 0.01 ml/kg per dose up to 0.5 ml, repeated every 10–120 minutes, as indicated, for up to 3 doses.
b For a mild reaction, a dose of 0.30 ml can be considered.

FIG. A7.1
Example of the treatment protocol for anaphylaxis



Annex 8
Communication tools

8a ASSESSING AWARENESS OF AN UPCOMING SIA

A survey is useful for assessing whether social mobilization efforts are effective, particularly in high-risk or hard-to-reach populations. Spot-check surveys should begin 2 weeks before the SIA, allowing enough time to rectify any problems identified. Supervisors/monitors should also make this assessment as part of the SIA Readiness Assessment Tool used each week in the 2 weeks prior to the SIA. In each neighbourhood of interest, it is recommended to interview five parents/caregivers of SIA-eligible children. Interviews can take place at households, markets, bus stops, etc.

Date: ___/____/___ **Interviewer:** _____ **Supervisor:** _____

Town: _____ **Neighbourhood:**_____ **District:** _____

PARENT/CAREGIVER:	1	2	3	4	5
Do you know that measles and rubella vaccine can save the life of your child?	Y/N	Y/N	Y/N	Y/N	Y/N
Do you know the dates of the SIA?	Y/N	Y/N	Y/N	Y/N	Y/N
Do you know which age groups will be vaccinated?	Y/N	Y/N	Y/N	Y/N	Y/N
Do you know where the nearest vaccination post will be located?	Y/N	Y/N	Y/N	Y/N	Y/N
Do you know which hours you can take your child to be vaccinated?	Y/N	Y/N	Y/N	Y/N	Y/N
How did you learn about the SIA?					
1. Health worker/volunteer	○	○	○	○	○
2. Radio	○	○	○	○	○
3. Television	○	○	○	○	○
4. Poster, banner	○	○	○	○	○
5. Neighbour	○	○	○	○	○
6. Other source	○	○	○	○	○
7. Never heard	○	○	○	○	○

8b EXAMPLE OF KEY COMMUNICATION MESSAGES FOR THE MEASLES AND RUBELLA SIA

Measles

- Measles is a dangerous disease that can kill children.
- It is so contagious that any child exposed to it who is not already immune is likely to get the disease.
- Measles is caused by a germ (the measles virus). Signs include a red rash over the whole body, fever, runny nose, red eyes and cough.
- Children with measles must be taken to a health centre immediately. A child with measles can develop ear and eye infections, diarrhoea, pneumonia, even blindness, deafness or swelling of the brain.
- Measles can be prevented by giving at least two doses of measles vaccine. It is a safe vaccine. The first dose is given when the child is 9 months old or soon afterwards. The second dose should be given when the child is 15–18 months of age.
- Sometimes mild swelling and redness can occur at the site of the vaccine injection. It goes away with warm compresses and paracetamol.
- An extra dose of measles vaccine is given during supplementary measles immunization activities to all children aged 9 months to under 15 years **[target age group…depending on the SIA]**, even if they were vaccinated previously, and regardless of whether or not they already had measles.
- Take your child **[insert target age range]** to the nearest health centre or vaccination post for vaccination during the measles immunization days taking place on …… **[dates]**.
- Bring your child's home-based immunization record (vaccination card) when you come for vaccination, so health workers can tell you which other vaccines are needed. If you do not have the vaccination card, you still need to bring your child for vaccination.
- Other important health services, such as **[insert integrated interventions]** will also be available during the campaign.

Rubella/Congenital rubella syndrome

- Rubella is a highly contagious disease that can cause crippling birth defects or the death of the unborn child of an infected pregnant woman.
- Deafness, cataracts, heart defects, mental retardation, and liver and spleen damage are some of the irreversible birth defects caused by congenital rubella.

- All infants/children should be protected by rubella vaccination, using a measles/rubella vaccine; the protection lasts for life.
- If enough people are vaccinated with rubella vaccine, injuries to unborn babies as a result of rubella infection of the mother can be eliminated.

Routine immunization

There are five (5) essential messages that caregivers should receive when they go to be vaccinated/take their child/children to be vaccinated:

1. Explain which vaccine is to be given and the disease that the vaccine will prevent.
2. Explain what side-effects may occur, how to treat them and when they should be reported, and to whom.
3. Tell the caregiver the place and time of the next immunization session.
4. Tell the caregiver to bring the child back for immunization even if she/he is sick.
5. Tell the caregiver to take good care of the immunization card and to bring it every time the caregiver and/or child come to a health facility. The vaccination card should be kept safe like a birth certificate.

Note: *Each of the five (5) messages should be given more than once.*

Vitamin A

- Vitamin A contributes to healthy growth and development, prevents blindness and provides defence against diarrhoea and measles.
- Vitamin A deficiency can be prevented by administering vitamin A supplements to all children aged 6–59 months. It is also very important to consume foods rich in vitamin A, such as breast milk, whole milk, liver, kapenta (sardine), green vegetables, carrots and other foods of yellow, orange or red colour, e.g. pawpaws, mangoes, sweet potatoes, pumpkins, palm oil and yellow maize.
- A lack 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 aged between 6 months and 5 years during measles immunization days to be conducted on ……**[dates]**.
- Take all children aged between 6 months and 5 years to receive vitamin A drops.

Annex 9
Examples of checklists and forms used for SIA monitoring and supervision

9a ROLES AND RESPONSIBILITIES OF VARIOUS INDIVIDUALS ASSIGNED TO SUPPORT THE SIA

VACCINATION TEAM SUPERVISORS	
Who:	Selected from among local health staff experienced with immunization programme activities, including SIAs. On average, one supervisor is needed per four vaccination teams. In urban settings where the distance covered to reach each team is small, one supervisor can supervise more than four teams; in rural settings each supervisor can supervise fewer teams.
Responsibility:	Supervision of the vaccination teams. Supervisors visit teams daily to ensure they are performing according to SIA guidelines and the local microplan, that daily tally sheets and other forms are properly completed, that any challenges that arise during implementation are being addressed, and ensure efforts are made to reach every child.
Activities:	Visit vaccination teams, at least once per day, for supportive supervision using the supervision checklist. Compile vaccination team reports, analyse them and report to higher level; give attention to areas at risk of not reaching entire targeted population. Attend and contribute to daily review meetings. Review team performance and undertake corrective actions if needed. Perform intra-SIA RCM in recently-vaccinated areas as necessary and undertake corrective actions.
Report to:	SIA coordinating team lead, specifically the health centre-level supervisor (i.e. health centre coordinator/EPI chief) or district supervisors (this will depend on the country's health system structure).

HEALTH CENTRE LEVEL SUPERVISORS	
Who:	At least one supervisor per health centre, usually the health centre coordinator or EPI chief/coordinator at the health centre level. Larger health centres may require more than one supervisor at this level (usually one supervisor for approximately every four vaccination team supervisors). Where there are multiple supervisors at this level, one person should be designated as the coordinator (usually the EPI manager).
Responsibility:	Supervision of the team supervisors and vaccination teams. Supervisors ensure that the tally sheets from the supervisor and teams are properly completed, address any challenges that arise during SIA implementation, ensure appropriate corrective actions are taken after the intra-SIA RCM, and that efforts are made to reach every child. Prior to the SIA and during the microplanning phase, supervisors also ensure that the hard-to-reach and high-risk groups are identified and appropriate vaccination and communication strategies are planned for reaching them.

HEALTH CENTRE LEVEL SUPERVISORS	
Activities:	Visit vaccination teams with team supervisors, at least once per day, using the checklist. Supervisors review submitted reports, compile and analyse supervisor data, and report to higher level, giving attention to areas at risk of not reaching vaccination target. Supervisors perform intra-SIA RCM as necessary and attend and contribute to daily review meetings. They also communicate at least daily with the SIA coordinating team to assist with addressing challenges arising during the SIA.
Report to:	SIA coordinating team, specifically the district supervisors or, in large health centres, the health centre-level coordinator (i.e. EPI manager). This will depend on the country's health system structure.

DISTRICT (AND/OR PROVINCIAL) LEVEL SUPERVISORS	
Who:	Selected from among district level personnel well-acquainted with the SIA field guide and operating procedures. District-level supervisors will usually include the district EPI AEFI managers, among others (and often can be members of the SIA coordination team).
Responsibility:	Supervisors should be involved in both pre- and intra-SIA supervisory and monitoring activities. Their duties include ensuring that the health centre-level supervisors are planning and executing activities, completing proper reporting procedures, and addressing challenges that arise during implementation. Supervisors also attend and contribute to pre-SIA planning meetings and intra-SIA daily review meetings and ensure efforts are made to reach every child during both the planning and the implementation phases of the SIA.
Activities:	Visit health centres or districts at 8, 4, 2 and 1 week prior to the SIA to monitor progress in preparedness. Supervisors support training and microplanning activities, review submitted reports, compile and analyse health centre-level data, and report to higher level, giving attention to areas at risk of not reaching vaccination target. Supervisors perform intra-SIA RCM in recently vaccinated areas as necessary and attend and contribute to daily review meetings.
Report to:	Regional and/or national supervisors (depending on the health system structure in country).

MONITORS AND INDEPENDENT MONITORS	
Who:	Monitors are usually local staff assigned to geographic areas other than those where they usually live or work, or people who belong to various organizations (WHO, UNICEF, IFRC, other NGOs, etc.) collaborating with the SIA. Independent monitors are individuals who are not involved in planning or implementation of the SIA and can thus provide an independent and unbiased assessment of the SIA. Both monitors and independent monitors should be familiar with vaccination activities and SIA implementation.
Responsibility:	Provide an additional layer of attention and observation of the SIA preparation and implementation, particularly in areas at-risk for achieving suboptimal SIA coverage. They can visit vaccination sites and recommend efforts to ensure that every child is reached. Monitors can also, through carrying out intra-SIA RCM, verify communities are reached, with special attention to finding missed children. Post-SIA RCM should be carried out by independent monitors once the SIA is completed. Monitors also share observations with vaccination team and supervisors and provide recommendations to improve SIA implementation, as needed.
Activities:	Visit vaccination sites and complete monitoring forms (modified versions of supervisory checklists). Monitors conduct intra-SIA RCM (monitors) and post-SIA RCM (independent monitors). Monitors participate in meetings of the coordination team responsible for the area being monitored; they should also be available to assist in troubleshooting, as needed.
Report to:	Report to vaccination team supervisors, district and provincial supervisors and coordination teams. They report their observations and recommendations on the status of the SIA and provide recommendations for improvements in SIA implementation and mop-up activities for consideration by vaccination team supervisors, district and provincial supervisors and coordination teams.

9b EXAMPLE OF A CHECKLIST FOR INTRA-SIA SUPERVISION AT A VACCINATION POST

Province/region: _____ **District:** _____ **Subdistrict (area):**_____

Date of supervisory visit : ___/____/___ **Day of SIA:** _____

Name of person completing supervisory visit: _____

NAME OF VACCINATION POST:	**YES/NO**	**ISSUES IDENTIFIED**	**CORRECTIVE ACTION** (and person responsible)
Social mobilization			
Post clearly identified by banner or other means			
Health workers/volunteers actively search for unvaccinated children, and direct them to vaccination post			
Health workers explain to caregivers about the vaccine and possible side-effects			
Cold chain and vaccine handling			
Correct vaccines and correct diluents stored in vaccine carriers with 4 conditioned water-packs			
Diluent cooled before reconstituting the vaccine			
Vaccinator reconstitutes only one vial at a time			
Vaccinator writes time of reconstitution on vial			
Reconstituted vaccine discarded after 6 hours*			
Availability of vaccines and supplies			
Sufficient vaccine and diluent			
Vaccines bundled with enough reconstitution and AD syringes			
Enough cold boxes			
Enough safety boxes			
Enough tally sheets			

NAME OF VACCINATION POST:	YES/NO	ISSUES IDENTIFIED	CORRECTIVE ACTION (and person responsible)
Post organization			
Post well organized (e.g. no bottlenecks)			
Sufficient vaccinators and volunteers			
Every child is tallied immediately after vaccination			
Immunization safety and waste management practices			
Vaccinator checks VVM at cap of vaccine vial			
Vaccinator checks expiry date of vaccine and diluent			
MR injection given correctly (0.5 ml SC, outer part of upper arm)			
Used syringes inserted into safety boxes without recapping			
AEFI reporting forms present at site and procedures applied			
Safety boxes correctly used and filled			
Recording and use of data			
Tally sheets correctly completed			
Number of vials used and children vaccinated as per tally sheet match (wastage between 5 and 20%)			
Zero dose children properly accounted for (if the corresponding tally sheet was used)			
Routine immunization mobilization			
Health workers explain to caregivers about times and locations for routine immunizations, including measles vaccination			

* Reconstituted vaccine should be discarded either after 6 hours or at the end of the vaccination session, whichever is first.

9c EXAMPLE OF A DISTRICT OR PROVINCIAL SUPERVISOR CHECKLIST FOR SUPERVISION DURING THE SIA

Province: _____ **District:** _____ **Subdistrict (area):** _____

Date of supervisory visit : ___/____/___ **Day of SIA:** _____

Name of person completing supervisory visit: _____

NAME OF PROVINCE/DISTRICT	YES/NO	ISSUES IDENTIFIED	CORRECTIVE ACTION (and person responsible)
Coordination team			
Daily review meeting held			
Action points known and being followed-up daily			
Daily bulletin/report being produced and distributed			
Data management			
Data are available from previous day's vaccination activities			
Data reported separately for formal (paper, email, fax, scan) and informal (phone, SMS) reports			
Daily data analysed and discussed by coordination team			
RCM data and findings from vaccination team supervision are analysed and discussed by coordination teams			
Supervision			
Microplans available (seen)			
Transport available for supervisor			
Cold chain and vaccine handling			
Water-packs being frozen for following day's activities			
Refrigerators packed correctly to allow air circulation (adequate space)			

NAME OF PROVINCE/DISTRICT	YES/NO	ISSUES IDENTIFIED	CORRECTIVE ACTION (and person responsible)
Refrigerators between 2 and 8 °C			
Vials in VVM stage I or II			
Availability of vaccines and supplies			
Sufficient vaccine and diluent			
Vaccines bundled with enough reconstitution and AD syringes			
Enough cold boxes			
Enough safety boxes or hub cutters			
Enough tally sheets			
Waste management practices			
Plan to dispose of safety boxes (without open air burning) can be articulated			
Social mobilization/advocacy			
Check if population awareness of SIA performed (e.g. through spot checks)			
Reasons for non-vaccination from RCM discussed and corrective actions identified			
Mop-up activities			
Identification of mop-up areas discussed at daily meeting			
Mop-up activities assigned to teams			
Mop-up activities implemented			
Routine immunization mobilization			
Local population aware of opportunities to receive measles and other vaccinations through routine service delivery			

9d SAMPLE TALLY SHEET TO RECORD ADMINISTERED DOSES DURING M OR MR SIA WITH A TARGET GROUP AGE RANGE: 9 MONTHS TO 14 YEARS

Vaccinator/HCW responsible for vaccination post: _____

Signature: _____ **Town/village:** _____

Neighbourhood, block/site: _____ **District/zone:** _____

Municipality: _____**Province/region:** _____ **Date:** __/___/___

Name of supervisor: _____**Signature:** _____**Mobile no.:** _____

Location and contact details of nearest AEFI treatment centre_____

After vaccination of each child with M or MR, please mark one circle diagonally (ø) in the appropriate box based on the child's age

CHILD'S AGE	COUNTING OF M OR MR VACCINATION					TOTAL
9m–11m	○○○○○ ○○○○○	○○○○○ ○○○○○	○○○○○ ○○○○○	○○○○○ ○○○○○	○○○○○ ○○○○○	A
12m–4y	○○○○○ ○○○○○ ○○○○○ ○○○○○	○○○○○ ○○○○○ ○○○○○ ○○○○○	○○○○○ ○○○○○ ○○○○○ ○○○○○	○○○○○ ○○○○○ ○○○○○ ○○○○○	○○○○○ ○○○○○ ○○○○○ ○○○○○	B
5y–14y	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○	C

Total for all ages = A+B+C

VIALS	NUMBER OF VIALS	SUPERVISION	Y/N	SIGNATURE
Received		Supervisor visit today		
Opened		Written feedback		
Not usable (e.g. VVM indicates vaccine expired)		Monitor visit today		
Returned in good condition				
AEFI identified **AEFI reported**				

9e PROPOSED TALLY SHEET STRATIFIED BY PRIOR RI DOSE OF MCV PER THE RI CARD TO IDENTIFY NUMBER OF ZERO DOSE CHILDREN

This sheet is designed for optional use, in the SIA where the immunization card is checked for routine measles vaccination with the first dose of MCV.

CHILD'S AGE GROUP	COMPLETE FOR ALL CHILDREN: Child received M or MR vaccine during SIA (Column A, 1–4)	COMPLETE ONLY FOR CHILDREN AGED 12–23 MONTHS: Child received M or MR vaccine during RI services Per RI card or recall (Column B)	TOTALS
9m–11m*	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		Total SIA (A1):
12m–23m	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○	Total SIA (A2): Total RI (B): Zero dose children = A2 – B
24m–4y	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		Total SIA (A3):
5y–14y	○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○ ○○○○○		Total SIA (A4):
			Total number of children receiving vaccine during SIA = A1+A2+A3+A4

* This first category should be adjusted to represent all children older than 9 months and not yet eligible for the second routine measles dose.

9f SAMPLE FIRST-LEVEL SUMMARY REPORTING FORM FOR VACCINATION DOSES GIVEN DURING THE SIA TARGETING CHILDREN AGED 9 MONTHS–14 YEARS WITHOUT ADDITIONAL INTERVENTIONS

Supervisor: _____ **Mobile number:** _____ **Signature:** _____

District/zone: _____ **Municipality:** _____ **Province/region:** _____

Date: __/___/_____

Person receiving report:

Title: _____ Name: _____ Mobile number: _____

Signature: _____

TEAM							
SOURCE OF REPORT (F=FORMAL, I=INFORMAL)							
FINAL REPORT (Y OR N)							
							TOTAL
AGE GROUP	**9–11m**	**Target***					
		Doses administered					
	12m–4y	**Target***					
		Doses administered					
	5–14y	**Target***					
		Doses administered					
TOTAL		**Total vaccinated**					
		Total target					
VIALS		**Received**					
		Opened					
		Not usable					
		Returned (good condition)					
SUPERVISION		**Supervisor visit**					
		Written feedback					
		Monitor visit					
AEFI		**Identified**					
		Reported					

* Target population for the catchment area of the vaccination site as calculated in the microplan.

Annex 10
RCM tools for monitoring during and after the SIA

The most important objective of RCM is to find unvaccinated children in order to vaccinate them. Additional goals are to identify reasons for non-vaccination and plan and execute rapid corrective action. RCM data provide information on the general performance of the SIA and suggest how to refine strategies for reaching the hardest-to-reach children. RCM data also provide very useful information that can help improve the RI programme. RCM is a pass/fail assessment of the areas surveyed, **not** a coverage assessment. RCM data are collected using methods that are not designed to be representative of the population targeted for the SIA and, therefore, do not produce valid coverage estimates. RCM should be used while the SIA is still ongoing (referred to as intra-SIA RCM); and at the end of the SIA (referred to as post-SIA independent monitoring; see section 14.1).

Other tools, besides the 15-household tool proposed here, also exist. For instance, some regions have used 20-household RCM tools, some use different options to identify reasons for non-vaccination, while others include questions about routine immunization. It is important that the tool ultimately used for rapid monitoring is adapted to the needs of the country, and that it is planned early enough to assure proper training in its implementation. When possible, children who have not received any vaccinations should have their name and house location recorded and shared with local health staff, so the child can be enrolled in routine immunization services.

In-house monitoring

Monitors should visit 15 households that have at least one person in the SIA target age group. If the area being monitored is large, monitors should select locations considered to have the highest risk of unvaccinated children. Vaccination status for all SIA-eligible children in the households visited should be recorded on the IN-HOUSE monitoring form (see below for forms and further details). Upon completion of 15 household visits, monitors will summarize the following data: 1) the number of households (among the 15) with ALL SIA-eligible children vaccinated, and 2) the proportion of all SIA-eligible children who were vaccinated. Below are the steps to be carried out during In-house monitoring:

1: Select geographic areas, such as a neighbourhood or village, where unvaccinated target-age children are likely to be found.

2: Once in the area, start in the highest-risk part of the area. Pick a direction at random to start, and begin with the first household (HH). A HH is defined as a group of people who live under one roof and cook and eat together.

3: In each household, ask the parent or caregiver if there are any target-age children who slept in the house the previous night. If no one is at home or no eligible children are in the house, proceed to the "next"* house. If the HH has eligible children, then complete the in-house monitoring form as follows:

Column A: Document the number of target-age children in the HH.
Column B: Document how many of these eligible children received a vaccination during the current SIA, documented by card, finger mark or recall.
Column C: If any unvaccinated children are found, document the reason(s) for being unvaccinated using the number codes from the list of reasons at the bottom of the form.
Column D: If the reason for being unvaccinated was refusal, document the reason for refusal using the numeric codes from the list at the bottom of the form.
Column E: If all age-eligible children in the HH are vaccinated (number in column A = number in column B) place a "1" in column E, otherwise if there are children who are unvaccinated or with unknown vaccination status write a "0" in column E.

4: Continue until 15 HHs with at least one eligible child per household have been interviewed.

5: Summarize data as follows:

1. Total column A = total number of eligible children

2. Total column B = number of eligible children vaccinated in SIA (card/finger marking/ recall)

3. Calculate percentage of children vaccinated = $\frac{\text{(total column B)}}{\text{(total column A)}} \times 100$

4. Total column E = total number of HHs with all eligible children vaccinated in this SIA.

* **Note:** The "next" house should be determined using the following guidelines:
- For urban or densely populated areas, monitors should skip two houses between selected households if the SIA target population is 9–59 months or skip three households if target population is under 15 years.
- Where houses are further apart (e.g. in rural areas), monitors may proceed to the next house if the SIA target is 9–59 months. Skip one house if the target population is under 15 years, unless there are fewer than 30 households in the area.

In-house monitoring RCM tool: all eligible persons in 15 HHs

Region:_____		**District:_____**	**Vaccination team supervisor (name): _____**		
Date of visit:__ /__ /__		**Day of SIA _____**	**Post name _____**		
Age of eligible children:		**Monitor name(s):**	Additional location information (optional):		
HH #	**No. eligible children in HH**	**No. eligible children VACCINATED IN SIA (CARD/FINGER MARK/ RECALL)**	**If ANY unvaccinated, list reason (see list below)**	**If reason is REFUSAL, list reason (see list below)**	**HH is COMPLETELY VACCINATED 1 = YES, 0 = NO**
	(A)	**(B)**	**(C)**	**(D)**	**(E)**
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
	TOTAL NO. ELIGIBLE CHILDREN	**TOTAL NO. VACCINATED CHILDREN**			**TOTAL NO. COMPLETELY VACCINATED HHs**

C: REASONS FOR BEING UNVACCINATED
(Select all that apply for the HH)
1 – Child was absent/away from home
2 – Unaware of the campaign/location of post
3 – Vaccine post too far away
4 – Vaccine post did not have vaccine
5 - Plan to go later today/tomorrow
6 – Child is already vaccinated
7 – Refusal
8 – Other
9 – Do not know/declined to respond

D: REASON (CAREGIVER) REFUSED
(reason 7 from column C)
(Select all that apply for the HH)
1 – Child was sick
2 – Religious beliefs
3 – Fear of vaccine
4 – Respondent does not make that decision
5 – Other
6 – Do not know/declined to respond

Out-of-house monitoring

As monitors progress through the area being monitored, they should identify areas where children may congregate outside of their house (e.g. in markets, bus/train stations, border crossings, fields, playgrounds). When SIA-eligible children are identified outside the house, the monitors should record information on up to 10 SIA-eligible children on the out-of-house monitoring form, and summarize by calculating the proportion of vaccinated SIA-eligible children interviewed.

Data from out-of-house monitoring is supplemental data that should be viewed in context, along with the in-house monitoring results. If ≥ 90% of children identified in the in-house monitoring were vaccinated, use the out-of-house monitoring data to confirm that the area does not need corrective action. In this event, if fewer than 10 out-of-house children have been identified, monitors may choose to search for additional children out of the house by going to markets, playgrounds, bus stations, etc. If the in-house monitoring has found more than two households with unvaccinated children, or < 90% of in-house children were vaccinated, then a decision about what corrective action is needed can be made without having to have the additional out-of-house data.

The out-of-house monitoring form should be filled in as follows:

Column A: Child number pre-filled.
Column B: Document where in the community the child was found (example: markets, bus/train station, etc.).
Column C: If the child is < 1 year, document his/her age in months and circle M; if the child is ≥ 1 year, document his/her age in years.
Column D: Document if the child is vaccinated by card, finger mark or recall (code = 1) or unvaccinated (code = 0).
Column E: Note in the comment field additional information (e.g. to find the child's house if child is unvaccinated, or other important information).

Once the monitoring in this neighbourhood has been completed, summarize out-of-house data by calculating the percentage of children identified outside the house that were vaccinated:

$$\frac{\text{(total column D)}}{\text{(total column A)}} \times 100$$

Out-of-house monitoring RCM tool

Region: _____	**District _____**		**Vaccination team supervisor (name) _____**		
Date of visit __ / __ / ____	**Day of campaign _____**		**Post name _____**		
Monitor name (s): _____			**Additional location information (optional):**		
AGE OF ELIGIBLE CHILDREN: _____					
CHILD No.	**Where was the child located? (example: markets, bus/train stations, border crossings, fields, playgrounds)**	**Age of child Circle M for months if child is < 1 year**		**CHILD VACCINATED in campaign? 1 = Vaccinated 0 = Unvaccinated**	**NOTES/COMMENTS (optional)**
(A)	**(B)**	**(C)**		**(D)**	**(E)**
1			M		
2			M		
3			M		
4			M		
5			M		
6			M		
7			M		
8			M		
9			M		
10			M		
TOTAL out-of-house children SURVEYED _____				**Total out-of-house children VACCINATED _____**	

School monitoring

The SIA technical subcommittee should consider adding school monitoring when a significant proportion of the SIA target age groups are enrolled in schools and when schools are used as temporary vaccination posts. In this situation it is critical to monitor the completeness of this strategy, both in terms of ensuring all schools (public, private, religious) are visited and in terms of ensuring that children absent on the day teams visited their school were later reached.

Column A: Document the name and location of the school.
Column B: Document school level (preschool, primary, or secondary).
Column C: Indicate if the school is listed on the microplan (yes/no).
Column D: Indicate if the school has been visited by a vaccination team (yes/no). If yes, give date(s).

Column E: If the school has not been visited, indicate if it is scheduled to be visited (yes/no). If yes, give date(s).
Column F: Note the number of children in school in the target age range.*
Column G: Note the number of children actually vaccinated during the first visit by the team.*
Column H: Note the number of children absent during the first visit by the team.
Column I: Indicate how many children absent at the first team visit have since been vaccinated.

School name and location	**(A)**		
Type of school (preschool, primary, secondary)	**(B)**		
Listed on microplan (yes/no)	**(C)**		
Has the school been visited by the vaccination team (yes/no)? If yes, give date(s)	**(D)**		
If no, are they scheduled to be visited (yes/no)? If yes, give date(s)	**(E)**		
Number of children in school in the target age range*	**(F)**		
Number of children actually vaccinated during the first visit by the team*	**(G)**		
Number of children absent during the first visit by the team	**(H)**		
How many children absent at the first team visit have since been vaccinated?	**(I)**		

* **Note:** These two columns could be dropped if the information is not supposed to be kept at the schools or is otherwise unavailable. While information on the number of eligible children should be available at the school, the number vaccinated during the first visit may be available only from the vaccination team(s) at the school. Data on absences and re-visits, however, should be recorded during monitoring.

Optional activities and forms

1: In SIAs targeting wide age ranges, expand each column on the IN-HOUSE form to multiple columns, one for each age group. For example, column A becomes three columns, as shown below.

HH #	No. eligible children in HH			No. eligible children VACCINATED IN SIA (CARD/ FINGER MARK/ RECALL)			If ANY unvaccinated, list reason (see list below)	If reason is REFUSAL, list reason (see list below)	HH is COMPLETELY VACCINATED 1 = YES, 0 = NO
	(A)			**(B)**			**(C)**	**(D)**	**(E)**
	6–59m	**5–9y**	**10–14y**	**6–59m**	**5–9y**	**10–14y**			

2: Alternatively, in SIAs targeting wide age ranges, collect each child's information on a separate line, as shown below.

HH #	Child #	Age of child	VACCINATED IN SIA (CARD/ FINGER MARK/ RECALL)	If ANY unvaccinated, list reason (see list below)	If reason is REFUSAL, list reason (see list below)	HH is COMPLETELY VACCINATED 1 = YES, 0 = NO (complete for last child only)

3: The In-house form can also be modified to capture vaccinated by card/finger mark and vaccinated by recall, separately.

HH #	Child #	Age of child	VACCINATED IN SIA BY CARD/ FINGER MARK (SEEN)	VACCINATED BY RECALL (NO CARD)	UNVACCINATED or UNKNOWN status	If ANY unvaccinated, list reason (see list below)	If reason is REFUSAL, list reason (see list below)	HH is COMPLETELY VACCINATED 1=YES, 0=NO (complete for last child only)

4: In addition to the above options, some countries may be well positioned or interested in monitoring RI as part of the SIA through looking at vaccination cards and checking completeness of vaccination.

Annex 11
Post-SIA technical report

Summary measles and measles–rubella SIA technical report

(National EPI Programme to fill and submit to UNICEF & WHO within 4 weeks of the end of SIA)

1. Country: _____

2. Dates of SIAs: _____

3. Target provinces (if not a nationwide activity): _____

4. Targets and results for measles/measles–rubella vaccine by first subnational level (state/province/region) **–** *please copy and paste table below into an Excel spreadsheet and attach with the report.*

	Measles/measles–rubella vaccine								
State/ province/ region	**Target age**	**Target pop.**	**No. reached**	**Admin. coverage**	**Number (and % districts) > 95% admin-istrative coverage**	**Survey coverage**	**Wastage rate**	**No. AEFI**	**AEFI attributed to SIA**
National									

5. Targets and results for other interventions by first subnational level (state/province/region).

	< Intervention name >*					
State/prov-ince/region	**Target age**	**Target pop.**	**No. reached**	**Admin. coverage**	**Number (and % districts) ≥ 95% administrative coverage**	**Survey coverage (if available)**
National						

* Please fill out the above table for every intervention added to the SIA.

6. Number (numerator and denominator) and % of monitored sites with more than 10% un-reached children during end-process monitoring.	

7. Cost of SIA and amount of financial resources mobilized within the country (in US$).

Expenditure category	Budgeted	Government contribution	Donor contribution* <specify donor>	Donor contribution <specify donor>
Total bundled vaccine				
Total operational costs				
Routine system strengthening activities** (if any)				
Total				

* Insert additional columns for donor contribution if more than two donors supported a given expenditure category.

** This is for routine systems-strengthening activities that are linked to the SIA (occur before, during or after the SIA). An example is the cost of an additional day of training on non-measles and rubella related issues.

8. Timing of availability of donor funding (e.g. Gavi/MRI) at national level in relation to the start date of the SIA.	
9. Timing of availability of operational funds at district level in relation to the start date of the SIA.	
10. When was the national SIA logistics plan completed in relation to the start date of the SIA?	
11. Timing of completion of district-level microplanning workshops in relation to the start date of the SIA.	
12. Was SIA readiness assessed at the national level using the standard tool to assess status of preparedness at 12, 9, 6, 3 and 2 months prior to the start date of the SIA? If not, at what time points was SIA readiness assessed at the national level?	
13. What percentage of districts conducted readiness assessments at least twice within the 8 weeks prior to the SIA?	
14. What percentage of districts had planned quantities of vaccine and devices at least 2 weeks before the start of the SIA?	

15. Number of immunization posts actually operational during the SIAs.	
16. Number of vaccination teams (including number of health workers per team) actually deployed during the SIA.	
17. Number of supervisors actually deployed during the SIA.	
18. Number of volunteers actually deployed during the SIA: • No. IFRC volunteers • No. LDS volunteers • No. Lions Clubs International volunteers • No. Other (please specify).	
19. What is the number and percentage of permanent fixed vaccination sites assessed during the SIA that had proper cold chain (refrigerators monitored daily and temperatures between 2 and 8 °C)?	
20. What is the number and percentage of unvaccinated children detected during intra-campaign RCM?	
21. Describe the strategies employed to identify AND to address hard-to-reach children, including the descriptions and size of these populations and the experiences during the SIA.	
22. Comment on any serious AEFI observed or reported (no. AEFI should be already included in table for question Q4).	
Questions 23–30 are on activities carried out during the planning and preparation of the SIA and on any activities planned for after the SIA to improve routine immunization.	
23. Is there a national/subnational focal point assigned to ensure that routine immunization-strengthening activities are identified and planned?	
24. Is there a budgeted plan for the routine immunization-strengthening activities before, during and after the SIA? -	
25. Did SIA training include training on EPI beyond measles and rubella? State additional elements -included in training and -number of health workers trained.	

26. What cold-chain improvements were done in preparation for the SIA (# of refrigerators refurbished, # refrigerators purchased, # vaccine carriers purchased, etc.)?	
27. What improvements were made in waste management (# of incinerators built, # waste disposal pits, etc.)?	
28. Did social mobilization include messages on routine vaccination?	
29. Is there a plan to use the SIA microplans for updating facility-level RI -microplans?	
30. Were SIAs used to improve measles surveillance? Did SIA training include measles surveillance (and rubella if an MR SIA) and/or AEFI surveillance? Explain.	
31. Number and percentage of targeted districts that have at least one area monitored through RCM during or after the SIA?	
32. What is the number and percentage of unvaccinated children detected during post-campaign independent RCM?	
33. Were any mop-up activities organized, and on what basis was the selection of areas for mop up done? (Give number of children targeted for the mop up and the proportion reached; explain how resources were organized.)	
34. What is the number and percentage of monitored areas showing < 95% of total children vaccinated that had remedial action (e.g. mop-up vaccination activities) taken within one week of end of the SIA?	
35. What are the five top reasons for unvaccinated children during the SIA?	
36. Highlight the three major problems that occurred during this SIA and how they were addressed.	
37. Highlight the three major achievements during this SIA (including relevant best practices and/ or innovative approaches used).	
38. Please indicate five key lessons learned that need to be taken into account when planning future SIAs.	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