



MOV

Planning Guide

to Reduce
Missed Opportunities for Vaccination



World Health
Organization

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Planning guide to reduce missed opportunities for vaccination

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**For more
information visit:**

[http://www.who.int/immunization/
programmes_systems/policies_strategies/MOV/en/](http://www.who.int/immunization/programmes_systems/policies_strategies/MOV/en/)



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Preface

Missed opportunities for vaccination (MOV) include any contact made with health services by a child (or adult) who is eligible for vaccination, but which does not result in the individual receiving all the vaccine doses for which he or she is eligible.

National immunization programmes across the globe continue to seek alternative strategies to explore the reasons for stagnating vaccination coverage and to design tailored strategies to address them. This suite of documents provides an additional strategy in the toolbox of a programme manager at the national or subnational level. Using a participatory mixed-methods approach, it provides step-by-step guidance on how to conduct a bottom-up root-cause analysis of bottle-necks in the immunization programme and to design relevant strategies to address them. When applied appropriately, the steps outlined in these guides have the potential to result to an increase in vaccination coverage and equity and an improvement in timeliness of vaccination.

The MOV strategy should not be viewed as a stand-alone or discreet "project"; rather as complementary to existing microplanning and programme improvement approaches such as RED ('Reaching Every District'). The MOV strategy is conceived as a health system-wide service improvement effort targeted at vaccination as well as other health services.

This document is one of a three-part document, designed to be used together.

For up-to-date information on the MOV strategy and the latest tools and materials, please visit:
http://www.who.int/immunization/programmes_systems/policies_strategies/MOV/en/.

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During its April 2016 meeting, the Strategic Group of Experts on Immunization (SAGE) reviewed the initial results from the MOV pilot countries and provided valuable inputs to this methodology to make it more programmatically feasible and useful to countries at different levels of development. Similarly, two WHO advisory committees reviewed early drafts and provided constructive criticism: the Immunizations and Vaccines related Implementation Research Advisory Committee (IVIR-AC) and the Immunization Practices Advisory Committee (IPAC).

Finally, we would like to specifically thank our colleagues at the ministries of health and WHO country offices in Chad and Malawi for allowing us to pilot the draft methodology in their respective countries in 2015. The experiences of the pilot helped to refine and finalize the methodology as presented in this suite of documents.

Acronyms

AFR	WHO African Region
AMR	WHO Region of the Americas
cMYP	comprehensive multi-year plan
CSO	civil society organization
DTP	diphtheria-tetanus-pertussis vaccine dose 3
DHIS2	district health information system, version 2
DHS	demographic and health survey
DVD-MT	district vaccination data management tool
EPI	Expanded Programme on Immunization
ESS	effective sample size
FBO	faith-based organization
FGD	focus group discussion
GPS	Global Positioning System
GVAP	Global Vaccine Action Plan
HMIS	health management information system
HSIS	health system and immunization strengthening
HF	health facility
ICC	interagency coordinating committee
IDI	in-depth interview
IRB	institutional review board
JRF	joint reporting form
KAP	knowledge, attitude and practices
MCV	measles-containing vaccine
MICS	multi-indicator cluster sampling survey
MOH	Ministry of Health
MOV	missed opportunity for vaccination
PII	personally identifiable information
RED	reaching every district (strategy)
SMT	stock management tool
UNICEF	United Nations Children's Fund
WHO	World Health Organization
WUENIC	WHO-UNICEF Estimates of National Immunization Coverage

About this document

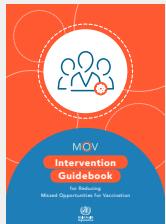
This Planning Guide is designed to help decision-makers and national or district programme managers interested in using the Missed Opportunities for Vaccination (MOV) strategy to improve immunization coverage and timeliness of vaccination by reducing MOV.

This guide provides an overview of the entire MOV strategy:

1. **Background information** on why reducing the number of missed opportunities can help to provide life-saving vaccines to a large number of children/persons who have not received any doses (unvaccinated) or who are not fully vaccinated (partially vaccinated/missing doses);
2. **The steps to plan and conduct** an assessment of missed opportunities and **how to analyze and report** on the results of an MOV assessment;
3. **Guidance on how to use the findings of an MOV assessment to design and implement interventions** to reduce missed opportunities for vaccination.



This Planning Guide is the first of three MOV documents developed to be used together:

1. **Planning Guide to Reduce Missed Opportunities for Vaccination** (the present document): Intended for use by decision-makers and programme managers at national and sub-national levels, this manual provides an overview of the MOV strategy, which involves an assessment to demonstrate the magnitude and identify causes of missed opportunities, followed by tailored health system interventions to reduce these missed opportunities, ultimately leading to an increase in vaccination coverage and timeliness of vaccinations.
2. **Methodology for the Assessment of Missed Opportunities for Vaccination** ("Methodology"): This manual provides the detailed instructions, standardized methodology, and tools for conducting field work (including sample health facility exit interviews and health worker knowledge, attitude, and practices (KAP) questionnaires), and detailed guidance for conducting in-depth interviews and focus group discussions. Although in some countries it may be desirable to obtain an estimate of the proportion of missed opportunities in health facilities, the major outcome of the assessment component is to build a strong case for reducing MOV by convening multiple in-country immunization partners to identify the underlying causes and address these problems. The brainstorming sessions following the field work are intended to achieve this outcome.
Note: In some situations, it may not be necessary to conduct the standard MOV assessment outlined in this methodology. Countries, districts or health facilities may have anecdotal or pre-documented evidence of the existence of missed opportunities, and there may already be sufficient support for reducing missed opportunities as a strategy to improve timeliness, coverage and equity. In such circumstances, programmes may choose to move directly to implementation of locally-tailored interventions to reduce missed opportunities in affected districts or health facilities, using guidance provided in the *Intervention Guidebook* described below.
3. **Intervention Guidebook to Reduce Missed Opportunities for Vaccination** ("Intervention Guidebook"): This manual provides practical guidance for translating the findings of the MOV assessments into actionable work plans. It includes: a list of frequent reasons for MOV, an overview of potential interventions to reduce MOV, examples of job aids and other materials for use at the health facility level, and guidance for activities and processes to explore and design locally tailored interventions to reduce MOV. The *Intervention Guidebook* could also be used as a **stand-alone guide** to plan actions to reduce MOV in selected health facilities even when a full MOV assessment has not been conducted.

All MOV documents and supporting tools can be accessed at:

[http://www.who.int/immunization/
programmes_systems/policies_strategies/MOV/en/](http://www.who.int/immunization/programmes_systems/policies_strategies/MOV/en/)

Introduction

What is a missed opportunity for vaccination (MOV)?

Missed opportunities for vaccination (MOV) include any contact with health services by a child (or adult) who is eligible for vaccination (unvaccinated, partially vaccinated or not up-to-date, and free of contraindications to vaccination), but which does not result in the individual receiving all the vaccine doses for which he or she is eligible.

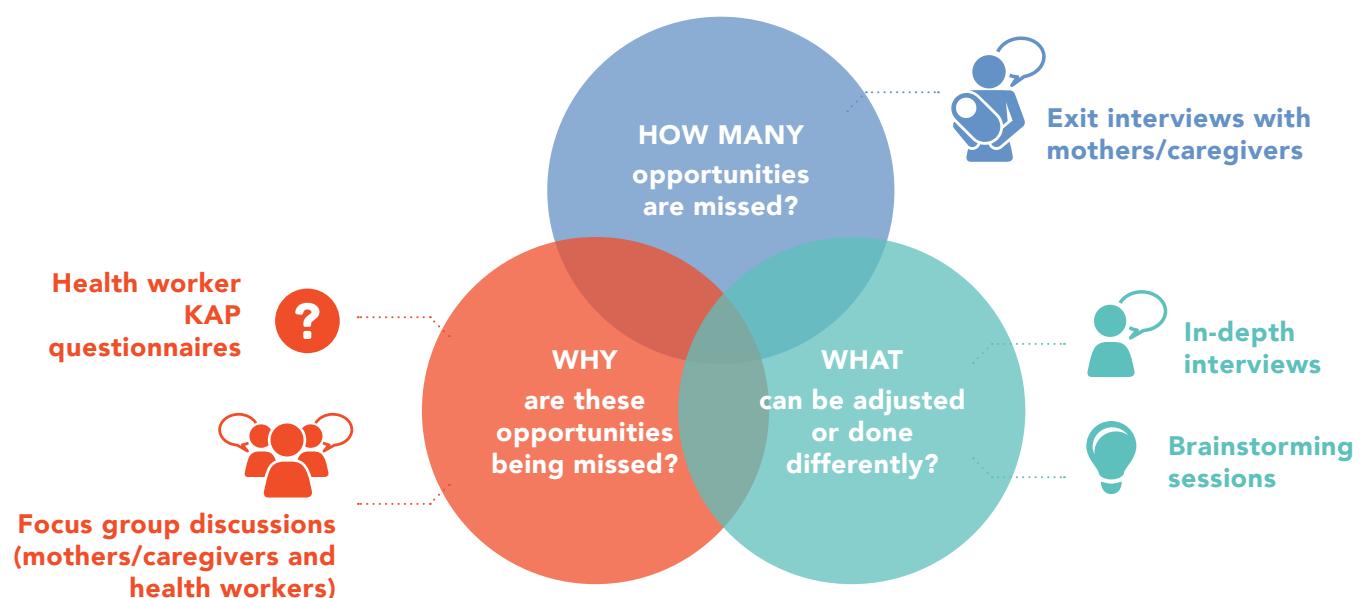
Global vaccination coverage has stagnated at about 80% since 2006. This means that one-fifth of the global annual birth cohort remains unvaccinated with DTP3. Recent calls to “reach the 5th child” through outreach services are based on the assumption that the 5th child has no access to health services. However, previous desk reviews and analysis by the World Health Organization (WHO) suggest that a proportion of these missed children may already be accessing treatment and vaccination services. The MOV strategy proposes concerted “in-reach” efforts, in addition to outreach, to identify and reduce the opportunities that are missed at the health facility level on a day-to-day basis.

Most missed opportunities are due to failures to execute established policies and procedures. Previous MOV assessments suggest several common reasons why opportunities for vaccination are missed in health facilities.

The MOV strategy answers three important questions:

1. **How many opportunities** for vaccination are missed at existing vaccination sites?
2. **Why** are opportunities for vaccination being missed at the different vaccination sites?
3. **What can be adjusted or done differently** (e.g. policies, behaviours, structural or organizational changes) so that we do not continue to miss any opportunity to vaccinate?

FIGURE 1. Key questions addressed by the MOV strategy



These include: 1) the failure or inability of health providers to screen patients for eligibility; 2) perceived contraindications to vaccination on the part of providers and parents; 3) vaccine shortages; 4) rigid clinic schedules that separate curative services from vaccination areas; and 5) parental or community resistance to immunizations.

With the introduction of many new vaccines into national immunization schedules, the opportunities to vaccinate, as well as the opportunities to catch-up on delayed vaccinations during regular health service encounters, have also increased.

What is the MOV strategy?

The MOV strategy aims to reduce missed opportunities and therefore increase immunization coverage by making better use of **existing** vaccination sites (at health centres, hospitals, outreach/mobile services etc.). Reducing MOV will also improve timeliness of vaccination, improve the efficiency of health service delivery in general, and promote synergies between treatment services and preventive programmes at the health facility level.

How can the MOV strategy increase vaccination coverage?

The MOV strategy establishes a system through which any child/person eligible for vaccination who comes to a health facility/mobile health service (for whatever reason) receives the needed vaccines during their visit.

Missed opportunities for vaccination can occur:

1. During visits to health facilities/mobile health services **for immunization services** ("vaccination contact");
2. During visits to health facilities/mobile health services **for curative services** (e.g. treatment of mild fever, cough, diarrhoea, injuries; "treatment contact");
3. During visits to health facilities/mobile health services **for other preventive services** (e.g. growth monitoring, nutrition assessments and oral rehydration training sessions, etc.); and
4. While accompanying a family member to a health facility for any type of service.

How much could vaccination coverage increase with a reduction in MOV?

Reducing MOV can contribute towards achieving the 2020 Global Vaccine Action Plan (GVAP) goal of “90% national coverage and 80% in every district or equivalent administrative unit, for all vaccines in the national immunization schedule.”

A 2014 analysis¹ using data from recent Demographic Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) estimated the potential gains in coverage if the children who were in contact with health services received the doses of vaccine(s) for which they were due. For example, bridging the MOV gap could potentially improve Penta3/DTP3 coverage by as much as 10 percentage points, depending on the country (Table 1). **At a sub-national level (e.g. poor performing districts or facilities) these coverage gains could be even greater, in some cases up to 30%.**

TABLE 1

WUENIC and projected 2013 DTP3 coverage by country, if missed opportunities for vaccination were to be completely eliminated

COUNTRY	WUENIC ² DTP3 (2013)*	PROJECTED NEW DTP3 (2013)**	PROJECTED % GAIN IN COVERAGE
Benin	69	77	8%
Cambodia	92	95	3%
DRC	72	80	8%
Ghana	90	92	2%
India	72	84	12%
Kenya	76	81	5%
Liberia	89	95	6%
Malawi	89	96	7%
Mozambique	78	92	14%
Niger	70	80	10%
Sierra Leone	92	97	5%
Tanzania	91	99	8%
Uganda	78	89	11%
Zambia	79	88	9%

Table 1 footnotes:

* WHO-UNICEF estimates of national immunization coverage.

** Using estimates (from recent DHS and MICS) of the proportion of un-/under-vaccinated children who had visited a health facility for treatment of cough, fever and diarrhea in the preceding two weeks, we estimated what the national DTP3 coverage would have been, had they all used the health visit to take all the vaccines for which they were eligible. Such a healthcare encounter was considered a missed opportunity only if the missed vaccine dose was more than 3 months overdue and there were no contraindications to vaccination.

¹ Unpublished data. WHO analysis of potential coverage gains if missed opportunities were eliminated, using recent DHS and MICS surveys and other ancillary data.

² WHO/UNICEF estimates of national immunization coverage

Recent field assessments of the magnitude of MOV in the Region of the Americas (AMR) (2014) and the African Region (AFR) (2015) of WHO indicate that **between 23% to 96%** of eligible children who visited a health facility for vaccination or for medical care left the health facility without receiving all the vaccine doses they needed. These are children who are already being reached by health services (and not necessarily “hard-to-reach” or underserved populations). Missing the opportunity to vaccinate these children, when they are already present at the health facility/outreach site, is unacceptable.

What are the core principles of the MOV strategy?

PRINCIPLE #1 Focus on implementing actions at the local level, where most of the reasons for missed opportunities for vaccination are identified

The MOV strategy is based on a bottom-up approach that obtains information on the reasons for MOV from service providers and the users of health services, at the health facility level. The strategy uses a participatory research approach to obtain the commitment, and leverage the knowledge and experience of the local staff and users to resolve identified issues. When health workers and local communities take ownership and responsibility for reducing missed opportunities, the impact on the number of children vaccinated is augmented.

PRINCIPLE #2 Emphasis on country leadership

MOV assessments should not be performed as stand-alone research projects by an academic institution. Every effort should be made to have the Ministry of Health (MOH)'s Expanded Programme on Immunization (EPI) team incorporate reducing MOV into their programme improvement plans and to use the MOV strategy to optimize health service processes, policies and mechanisms. In order to achieve long-term gains, the MOV strategy in each country begins with a country-led assessment of why opportunities for vaccination are missed. It then specifically addresses the issues identified using locally-tailored interventions. The MOV strategy is designed to be low-cost and action-oriented. It is intended to be supported at the national and sub-national levels and implemented and managed by the health facility staff.

PRINCIPLE #3 Capitalization on existing platforms and builds synergies

The MOV strategy should be integrated with other ongoing country work plans and activities for increasing routine vaccine coverage and improving vaccination timeliness and coverage equity. Where applicable, the MOV strategy can be built into health systems strengthening activities, to take advantage of synergies with other non-immunization services/programmes. The MOV strategy should not be viewed as a stand-alone or discreet project, but rather as complementary to existing microplanning and programme improvement approaches such as RED ('Reaching Every District')³. The focus on health facilities seeks to improve the management, organization and integration of service delivery at the lowest level possible. As a result, the coverage of other primary health services can also be improved.

PRINCIPLE #4 Investment in sustainable monitoring and supervision

Reducing MOV requires an investment in regular monitoring of coverage and frequent supportive supervision from the next higher level of the health system. It is important to monitor the number of

³ www.who.int/immunization/programmes_systems/service_delivery/red/en/

children vaccinated, to compare this from month to month, and to compare similar months from year to year. All facilities should track monthly vaccination coverage using standard monitoring charts. These monitoring charts should be large enough to be displayed and visible to all users of the health facility as well as for review during community meetings. (See [MOV Intervention Guidebook](#) for a sample monitoring chart).

What are the steps for implementing the MOV strategy?

There are 10 steps in the MOV strategy, each leading to the next. These 10 steps are summarized below:

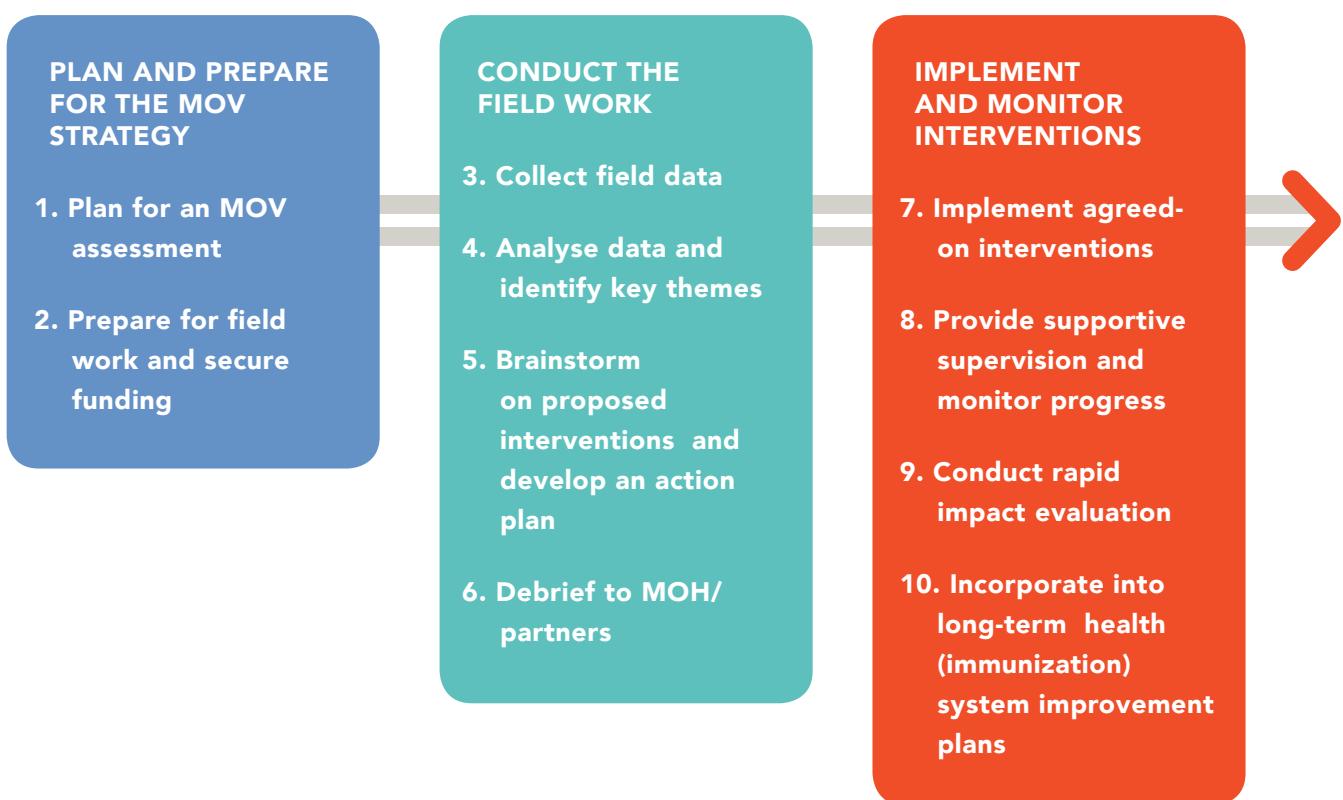
PLAN AND PREPARE	
STEP 1	Plan for an MOV assessment and intervention
STEP 2	Prepare for the assessment and secure commitment for follow-up interventions
FIELD WORK	
STEP 3	Conduct field work for the rapid assessment of MOV
STEP 4	Analyze preliminary data and identify key themes
STEP 5	Brainstorm on proposed interventions and develop an action plan for the interventions
STEP 6	Debrief with MOH leadership and immunization partners on proposed next steps
IMPLEMENT AND MONITOR	
STEP 7	Implement the interventions
STEP 8	Provide supportive supervision and monitor progress
STEP 9	Conduct rapid field evaluation of outcomes/impact of interventions (12-18 months later)
STEP 10	Incorporate into long term plans to ensure gains are sustainable

This *Planning Guide* outlines the key actions that need to be taken at each step and any lessons learned from country experiences. The 10 steps are further categorized into:

1. **Steps to be completed by the planning team** (the “MOV Strategy Team”) at the national or subnational level:
 - Steps 1 – 2
 - Steps 7 – 10
2. **Steps to be completed by the field teams** responsible for conducting and analyzing the assessments:
 - Steps 3 – 6.

A summary of the 10-step MOV strategy, including responsible actors, recommended timelines, detailed tasks to be carried out under each step and expected outcomes, is found in [Annex A](#).

FIGURE 2. The 10-step process of the MOV strategy



Plan for an MOV Assessment

WHO	 MOH and MOV Strategy Team, with support from all in-country immunization partners
WHEN	2–4 months before field work

TASK 1.1	 Decide whether an MOV strategy is needed
TASK 1.2	 Achieve high-level support from the Ministry of Health (MOH)
TASK 1.3	 Identify an Assessment Coordinator and members of the MOV Strategy Team (preferably multi-partner; may be a sub-committee of the Inter-agency Coordinating Committee (ICC) or similar body)
TASK 1.4	 Identify funding sources from within and/or outside the EPI programme
TASK 1.5	 Prepare a schedule of activities and include in annual EPI work plan, with approval of ICC or similar body

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TASK

1.1 Decide whether an MOV strategy is needed

The causes of MOV and the interventions to reduce them vary widely in different countries. Experience shows that the MOV strategy and tools are applicable across low-, medium- and high-coverage immunization programmes. Each country needs to critically appraise the findings of its recent immunization programme reviews and decide whether addressing MOV will be a useful strategy to increase immunization coverage and timeliness of vaccination.

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TASK

1.2 Achieve high-level support from the Ministry of Health (MOH)

Once Task 1.1 is completed, the EPI programme should put together a detailed plan to obtain high-level MOH support. Such support is usually obtained by making presentations to the MOH leadership that include, among other items, a listing of some of the **known** problems with the immunization programme, how the MOV strategy could provide solutions to improve both immunization and other services, and a listing of possible sources of funding, such as an upcoming Health System and Immunization Strengthening (HSIS) application or similar funds. This task is critical for the post-assessment phase, when new activities and policy changes may require high-level political support for sustainable implementation and funding.

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TASK

1.3 Identify an Assessment Coordinator and members of the MOV Strategy Team (preferably multi-partner; may be a sub-committee of the Inter-agency Coordinating Committee [ICC] or similar body)

Identifying “MOV champions” and forming an “MOV Strategy Team” early in the planning phase is one of the critical steps for success. The Assessment Coordinator may be the EPI Programme Manager or other official from the MOH or other immunization partners. Ideally, the MOV Strategy Team should include a representative from each of the key immunization partners (for example, one person each from the MOH, WHO, UNICEF, etc).

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A team of 3 – 5 persons is ideal. The MOV Strategy Team does not need to be a new committee. It could be a sub-committee/working group of the ICC or similar body.

With support from the MOV Strategy Team, the Assessment Coordinator is responsible for advocating for the MOV strategy at the different high-level fora of the MOH and for coordinating the logistics and funding for the implementation among the immunization partners. He/she is also expected to lead the report writing following the assessment, to disseminate the work plan from the brainstorming sessions, and to lead the implementation of long-term activities to reduce MOV.

Typical human resource requirements for conducting an MOV assessment:

- Assessment Coordinator
- Data Manager
- MOV Strategy Team (3-5 members; multi-partner team)
- Field teams (10-20 interviewers, two per team; 5-10 supervisors)
- Social scientist (if possible), or someone familiar with qualitative research methods

TASK

1.4

Identify funding sources from within and/or outside the EPI programme

Although the cost of MOV field work is not very high, potential sources of funding for the field work as well as the post-assessment interventions should be identified. This is to ensure that the MOV strategy can be fully implemented. Conducting the MOV assessment and determining the causes of MOV (Steps 3-6) without supporting the implementation and monitoring of corrective interventions/actions (Steps 7-10) constitutes a failure of the strategy. For long-term funding of interventions and supervision activities, explore synergies with existing (funded) programmes and/or other platforms (e.g. HSIS funds) to enhance sustainability. Sources outside the EPI programme, such as family planning, ante-natal, and nutritional programmes, may provide synergistic funding opportunities in some settings.

TASK

1.5

Prepare a schedule of activities and include in the annual EPI work plan, with approval of ICC or similar body

The final task in the planning phase is to ensure that the ICC or similar high-level body endorses the proposed activities. Many countries consistently experience overloaded annual EPI work plans. Country experience shows that including the MOV assessment and interventions in an annual EPI work plan and, where possible, the comprehensive multi-year plan (cMYP), remarkably improves the possibility that sufficient time and resources are allocated for its implementation.



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STEP
2

Prepare for the assessment and secure commitment for follow-up interventions

WHO	 MOH and MOV Strategy Team, with support from all in-country immunization partners
WHEN	1–2 months before field work
TASK 2.1	✓ Collect, compile and review available information on the immunization programme, including recent programme reviews and coverage estimates
TASK 2.2	✓ Decide on the scale of the MOV work (nationwide or only in selected low-coverage districts(s))
TASK 2.3	✓ If appropriate, select subnational areas for field work
TASK 2.4	✓ Agree on sample size, the number of field staff and the number of days for field work needed
TASK 2.5	✓ Finalize the budget for the assessment field work
TASK 2.6	✓ Prepare a draft budget for the post-assessment interventions
TASK 2.7	✓ Share plan with ICC or appropriate body (and partners) for final approval of the plan
TASK 2.8	✓ Clarify whether ethical approval is necessary and commence the process
TASK 2.9	✓ Review generic questionnaires, and if necessary adapt to country context and vaccine schedule
TASK 2.10	✓ If needed, finalize arrangements for the translation of the updated questionnaires and training materials into the local language(s)

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TASK

2.1

Collect, compile and review available information on the immunization programme, including recent programme reviews and coverage estimates

Where available, routine administrative data (such as District Vaccination Data Management Tool (DVD-MT), Stock Management Tool (SMT) and Health Management Information System (HMIS) data), recent coverage surveys and programme review reports are invaluable for the preparation of the MOV assessments. These may be helpful to prioritize districts or types of health facilities for targeted interventions. Review of these reports and data sources may also help identify MOV as a challenge for the immunization programme, or to prepare and target the field work to specific issues or geographic areas.

Data elements to examine may include whether the proportion of fully-immunized children is below Penta3 and/or MCV1 coverage; the number of doses administered by month; the number of days of stock-out by antigen; and, stock-outs of syringes, recording tools or other injection devices. Although the data quality from many of these sources may not be consistently high, the information provided may confirm the existence of MOV, thereby helping to orient field work to certain districts and/or highlight additional questions that may need to be included in the questionnaires (e.g. policy and practice on catch up if a child misses one of the due antigens because of stock out).

Additional resources, such as the UNICEF District Health Systems Strengthening (DHSS) approach that provides guidance for evidence-based management and monitoring at district level as well as the use of scorecards and bottleneck analysis tools built on the DHIS2 platform, should be consulted if applicable. Other recent health worker knowledge, attitudes and practices (KAP) assessments⁴ that may have been conducted in the country may also shed light on some of the causes of missed opportunities. These reports, if available, should be reviewed during the planning phase to identify areas of focus.

TASK

2.2

Decide on the scale of the MOV work (nationwide or selected districts[s])

The MOV methodology is adaptable to different levels of the health care system. While solutions to the problems identified are mostly applicable at the service delivery point, national policies and guidelines may sometimes need to be modified as well. Although the assessments may be performed in a limited number of sentinel districts/health facilities, the follow-up interventions may be applicable for scale-up nationwide. Figure 3 shows an example of the selection of multiple districts as part of a nationwide sample.

⁴ See Guide for Studying Health Worker/Caregiver Interactions on Immunization (WHO, 2017), available at: http://www.who.int/immunization/programmes_systems/vaccine_hesitancy/en/

2.3 If appropriate, select subnational areas for field work

Some countries may select the largest or worst performing districts for the MOV assessments and interventions, on the assumption that this would provide the greatest benefit and the best use of limited resources. Figure 4 illustrates an example from a country in which the largest district was selected for the MOV assessment. The MOH plans to later scale up the interventions in additional districts following the proof-of-concept phase in the largest district.

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FIGURE 3. Example of sampling for a nationwide assessment
(Total n=600 mothers/caregivers and 300 health workers)

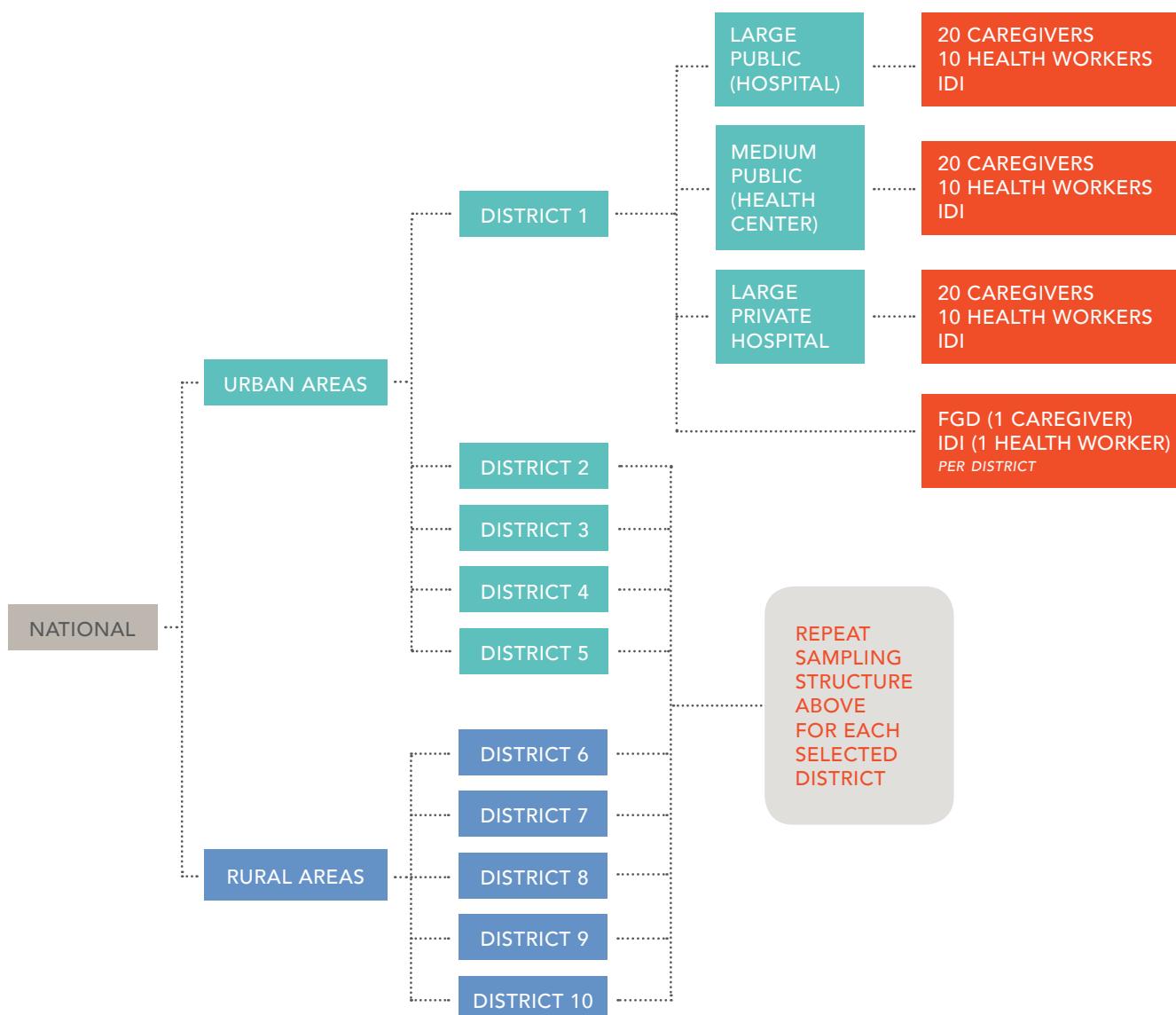
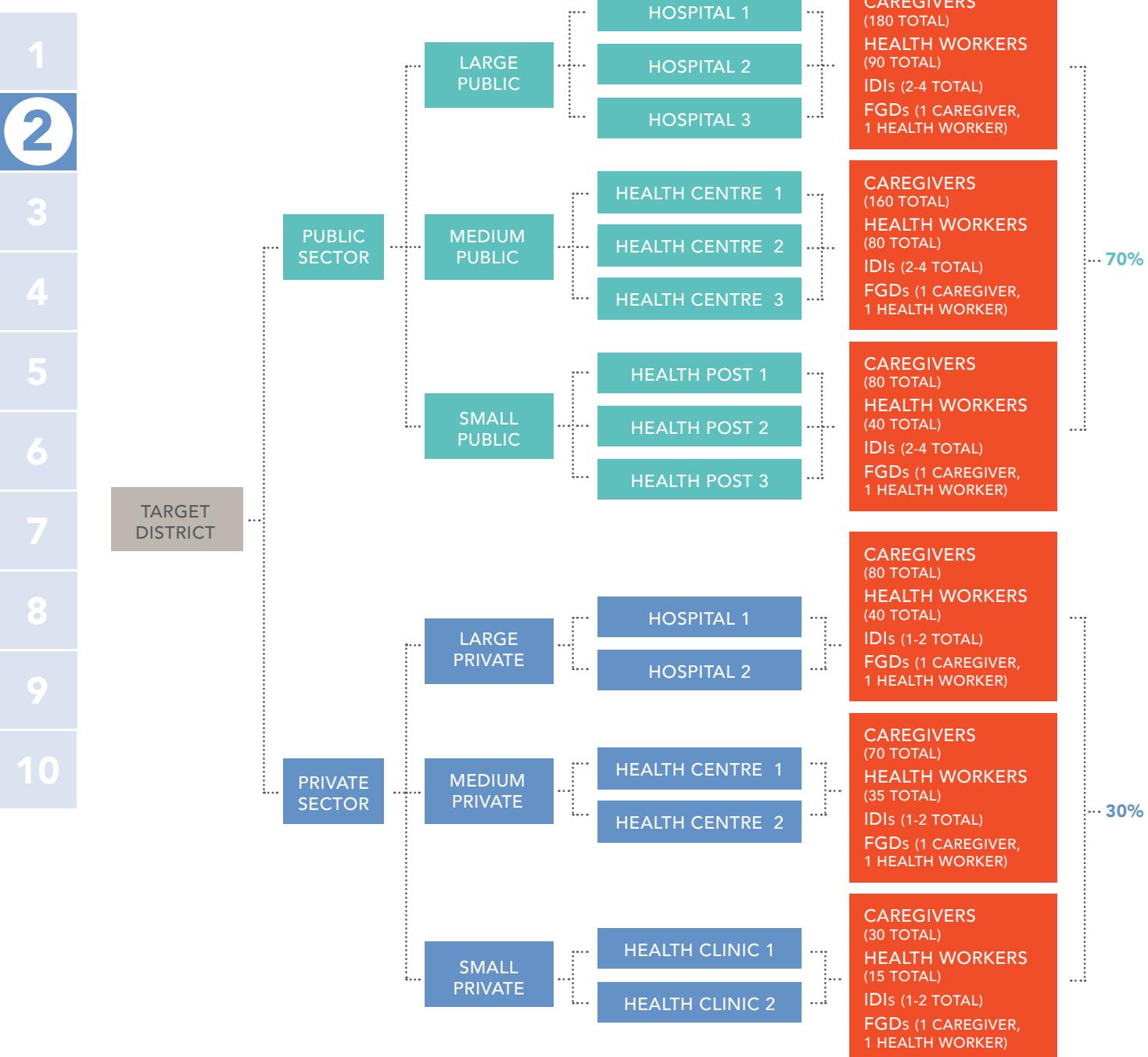


FIGURE 4. Example of sampling within ONE district

Note:

Teams should visit as many facilities as needed in order to make up the target sample size, aiming for 70% public / 30% private, across a variety of health facility sizes and types.

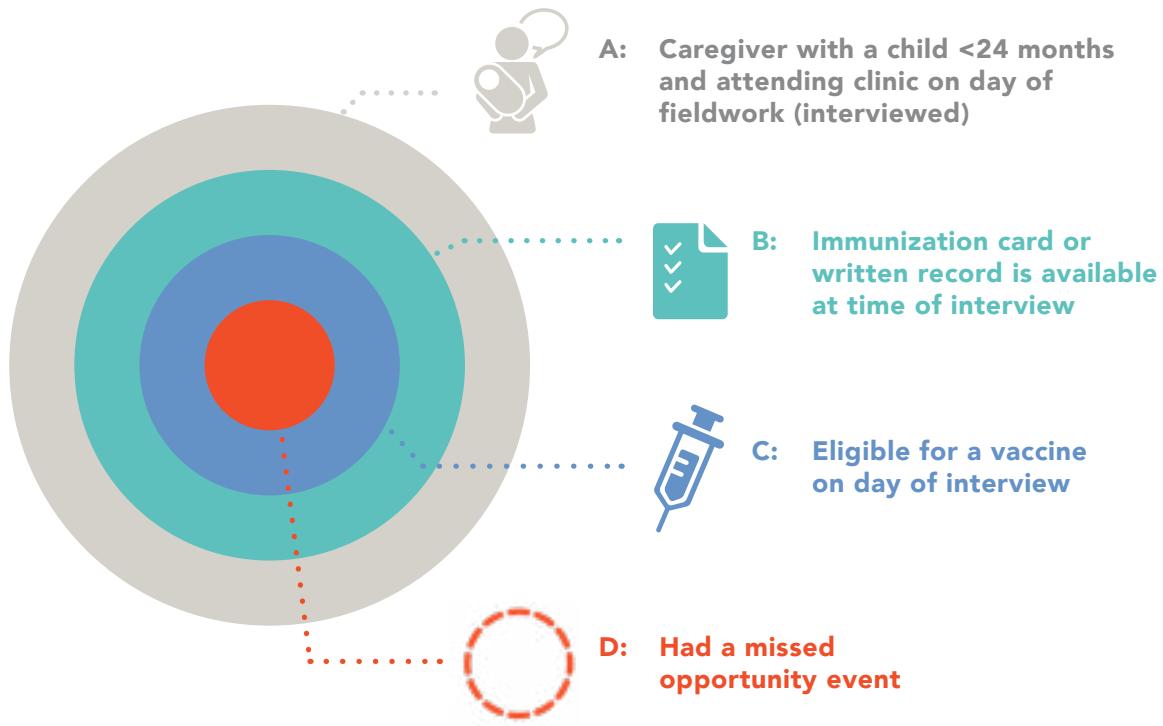


TASK

2.4**Agree on sample size, the number of field teams needed and the number of days for field work**

Task 2.4 provides guidance to the MOV Strategy Team on the survey design and sample size considerations, with an emphasis on a programmatic approach recommended for facilitating interventions to reduce MOV.

FIGURE 5. Survey design: Potential estimates of interest



Depending on the needs of the immunization programme, potential estimates of interest may include:

1. Proportion of interviewed caregivers that have a card or record available for the child <24 months = **B / A**
2. Proportion of interviewed caregivers that have a child that was eligible for a vaccine (i.e. proportion eligible for a missed opportunity) = **C / A**
3. Proportion of interviewed caregivers with available documentation that have a child that was eligible for a vaccine = **C / B**
4. Proportion of interviewed caregivers that have a child that had a missed opportunity = **D / A**
5. Proportion of interviewed caregivers with available documentation that have a child that had a missed opportunity event = **D / B**
6. Proportion of children eligible for a missed opportunity that had a missed opportunity event = **D / C**

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The third GVAP goal to extend immunization equitably to all people means that every eligible individual is immunized with all appropriate vaccines. The reaching every community strategy, as outlined in the Global Vaccine Action Plan calls for “an understanding of the barriers to access and use of immunization”. This MOV guide outlines a strategy focused on reaching every child at every opportunity through an assessment and action plan to reduce missed opportunities for immunization. In this environment, any missed opportunities are a problem.

The MOV Strategy Team should first ask themselves if quantification of a population parameter is necessary. *Will a precise estimate of the magnitude of MOV change the resulting actions taken, either in scope or scale?* If the answer is no, following the general guidelines provided here can capture data that provides information on whether there are any missed opportunities occurring and why. Health facilities may be purposively or randomly sampled depending on the target population and the objectives of the assessment.

If the MOV Strategy Team believes that quantification of the magnitude of MOV events is required for effective planning, then an appropriate survey design should be planned. Designs for the objective of estimation of a population parameter with a stated precision should start with sample size calculations. Annex B provides guidance on calculating sample size and choosing a sampling design for the objective of estimating a population parameter from a well-defined target population. However, the next section provides survey design guidance for programmatic purposes.

Sample size considerations: Programmatic approach

The following guidance provides a simplified design for programmatic purposes.

The MOV Strategy Team may choose to conduct an assessment at the national, regional or district level. In each case, a target sample size of 600 mother/caregiver (exit) interviews and 300 health worker interviews should be collected for the analysis of causes of MOV. In health systems with low home-based record (vaccination card) availability, larger samples may be needed. Time and resources permitting, a larger sample size will allow for more detailed sub-analyses, such as an estimation of missed opportunities by vaccine antigen, age, reason for visiting the health facility and other demographic sub-classifications.



Decisions about sample size and scope will likely depend on the availability of time, as well as financial and human resources. In general, each team of two interviewers is expected to complete at least 31 interviews (20 exit, 10 health worker, and 1 in-depth with a key informant) per day. In addition, each team should complete one or two focus group discussions (FGD), in total, during field work. FGDs should be done at different facilities than the interviews, and therefore can be conducted on different days. Based on this field work activity schedule, as well as the number of days available for field work, the distances to be travelled and terrain in different countries, the MOV Strategy Team should be able to determine the number of interviewers and supervisors needed to form the field teams. Whenever possible, interviewers and supervisors should be drawn partly from the MOH and other in-country immunization partners, rather than completely from a research/academic institute.

- The current methodology uses the pragmatic approach of triangulation of data from qualitative interviews (focus group discussions and in-depth interviews) to compensate for any (perceived) data gaps;
- A concerted effort should be made to spread data collection across many health facilities. This helps capture some of the variability in missed opportunities

The programmatic sampling approach has been simplified to achieve the following:

1. To **minimize the burden** of the assessment by completing field work in three days or less. Limiting the number of days of field work may risk introducing a systematic bias against assessing MOV in smaller facilities wherein EPI services are less frequent and the number of patients seen daily is low. However, the triangulation of data from in-depth interviews will minimize the impact of this bias;
2. To **minimize the cost** of the field work and channel any remaining funds towards implementing the interventions to reduce missed opportunities;
3. To **prioritize “identifying” and advocating** MOV as a problem rather than calculating a statistically precise “estimate” (with a narrow confidence interval).

The following recommended practices will improve the strength of the assessment design:

1. Spread data collection across several unique health facilities (for example, 20 interviews in each of 30 health facilities [n=600], rather than 40 interviews in each of 15 health facilities [n=600]);
2. Where possible, assess a mix of health facilities in terms of **size** (small/medium/large), **type** (private/public) and **location** (rural/urban), etc.
3. If the private sector (private practitioners, civil society organizations (CSOs), faith-based organizations (FBOs), etc.) provides vaccination services in the geographic area being assessed, the MOV Strategy Team should ensure that **private health facilities make up a proportionate sample of assessed health facilities**. When this proportion is not known, the Strategy Team should aim for a target of **30%** of the total assessment sample.
4. Conduct a fixed number of interviews at each health facility selected:
 - 10 exit interviews with caregivers of infants 0-11 months old;
 - 10 exit interviews with caregivers of children 12-23 months old;
 - 10 KAP questionnaires of health workers (interviewer- or self-administered);
5. Aim to speak with mothers/caregivers attending the facility for different purposes:
 - If possible, a 50/50 mix of immunization vs. other services is ideal.

District selection is expected to be performed by the MOV Strategy Team. Keeping in mind that the results of the MOV Assessment are not intended to be nationally representative, a minimum of 25% of districts/counties (usually at least 8-10) or other administrative subdivisions should be included. To the extent possible the selection of districts/counties should cover the full range of geographic and service experiences (including rural/urban, public/private, size of facility, and performance level of each district/facility).

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Sampling of health facilities is purposive. Within each district, the MOV Strategy Team will pre-select at least three health facilities for the assessment (a mix of public/private, as well as large/medium/small facilities).

Example of district and health facility selection using a simplified, purposive sampling strategy:

TABLE 2 Selection of assessment districts in Country X (8-10 districts selected)					
URBAN DISTRICTS (SELECT 4 OR 5)			RURAL DISTRICTS (SELECT 4 OR 5)		
Government HF (large)	Government HF (small or medium)	Private HF	Government HF (large)	Government HF (small or medium)	Private HF
Exit interviews n=10 (0-11 months)	Exit interviews n=10 (0-11 months)	Exit interviews n=10 (0-11 months)	Exit interviews n=10 (0-11 months)	Exit interviews n=10 (0-11 months)	Exit interviews n=10 (0-11 months)
n=10 (12-23 months)	n=10 (12-23 months)	n=10 (12-23 months)	n=10 (12-23 months)	n=10 (12-23 months)	n=10 (12-23 months)
KAP questionnaires n=10 (health workers)	KAP questionnaires n=10 (health workers)	KAP questionnaires n=10 (health workers)	KAP questionnaires n=10 (health workers)	KAP questionnaires n=10 (health workers)	KAP questionnaires n=10 (health workers)
In-depth interview n=1 (key informant)	In-depth interview n=1 (key informant)	In-depth interview n=1 (key informant)	In-depth interview n=1 (key informant)	In-depth interview n=1 (key informant)	In-depth interview n=1 (key informant)
n=2 per district (FGDs with caregivers or health workers)			n=2 per district (FGDs with caregivers or health workers)		

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TASK

2.5 Finalize the budget for the assessment field work

A budget should be easy to prepare based on the decisions in Task 2.4 (above). It is important to include costs associated with the training of field staff, printing of materials, and daily transport during field work. A sample budget template is provided in Annex C.

TASK

2.6 Prepare a draft budget for the post-assessment interventions

It is advisable at this stage to start preliminary discussions around different cost scenarios for potential post-assessment interventions, given what is known about the performance of, and bottlenecks in, the immunization programme. Possible budget items may include training of health workers, printing of promotional materials, printing of job aids, funding for supportive supervision, printing of wall posters, communication and social mobilization, etc.

Potential funders should be contacted during the planning stage. The inclusion of potential funders in the planning and assessment phases increases the likelihood that they will be interested in funding the needed interventions. Some partners may be more active in specific districts and be interested in including such districts in the assessment sample. This should be determined ahead of the assessment phase.

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TASK

2.7 Share the plan with ICC or appropriate body (and partners) for final approval

The MOV Strategy Team should present the proposed plan, budget and timelines to the ICC for approval. The *primary purpose* of the MOV assessment is to use the data and results for advocacy and action (e.g. adapt policies, processes) and design corrective measures to reduce MOV. Unequivocal endorsement from the ICC or similar body is a critical factor for successful implementation of interventions.

TASK

2.8 Clarify whether ethical approval is necessary and commence the application process

In many countries, the MOV assessment has been undertaken as a routine programme evaluation. In such situations, it may be exempt from formal ethical clearance. This should be clarified with the responsible body as early as possible. If formal ethical clearance is needed, the Assessment Coordinator should adapt the generic methodology and data collection tools for submission to the Institutional Review Board (IRB) in a timely manner.⁵

⁵ An IRB review can add up to 1-2 months to the planning stage. This should be determined well in advance.

TASK

2.9

Review generic questionnaires, and if necessary adapt to country context and vaccination schedule

With leadership from the Assessment Coordinator, the MOV Strategy Team should review and adapt the generic exit interview questionnaire (*MOV Methodology, Annex D*) and health worker KAP questionnaire (*MOV Methodology, Annex E*) to the country context. Such adaptations may include updating the generic questionnaires with the local vaccination schedule, health facility classifications and health worker professional qualifications. To maintain comparability of the results with other country assessments, these modifications should be kept to a minimum.



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TASK

2.10

If needed, finalize arrangements for the translation of the updated questionnaires and training materials into the local language(s)

Translation of all instruments, if required, should commence as soon as possible. Training cannot start until translation is completed and validated. If electronic data collection is planned, then additional time will be needed to convert the translated tools into an electronic format and to pilot test the e-platforms.

The tasks for conducting the assessment (Steps 3-6) are presented on the following pages in summary form. A detailed description of each task is provided in the companion document, *Methodology for the Assessment of Missed Opportunities for Vaccination (MOV Methodology)*.

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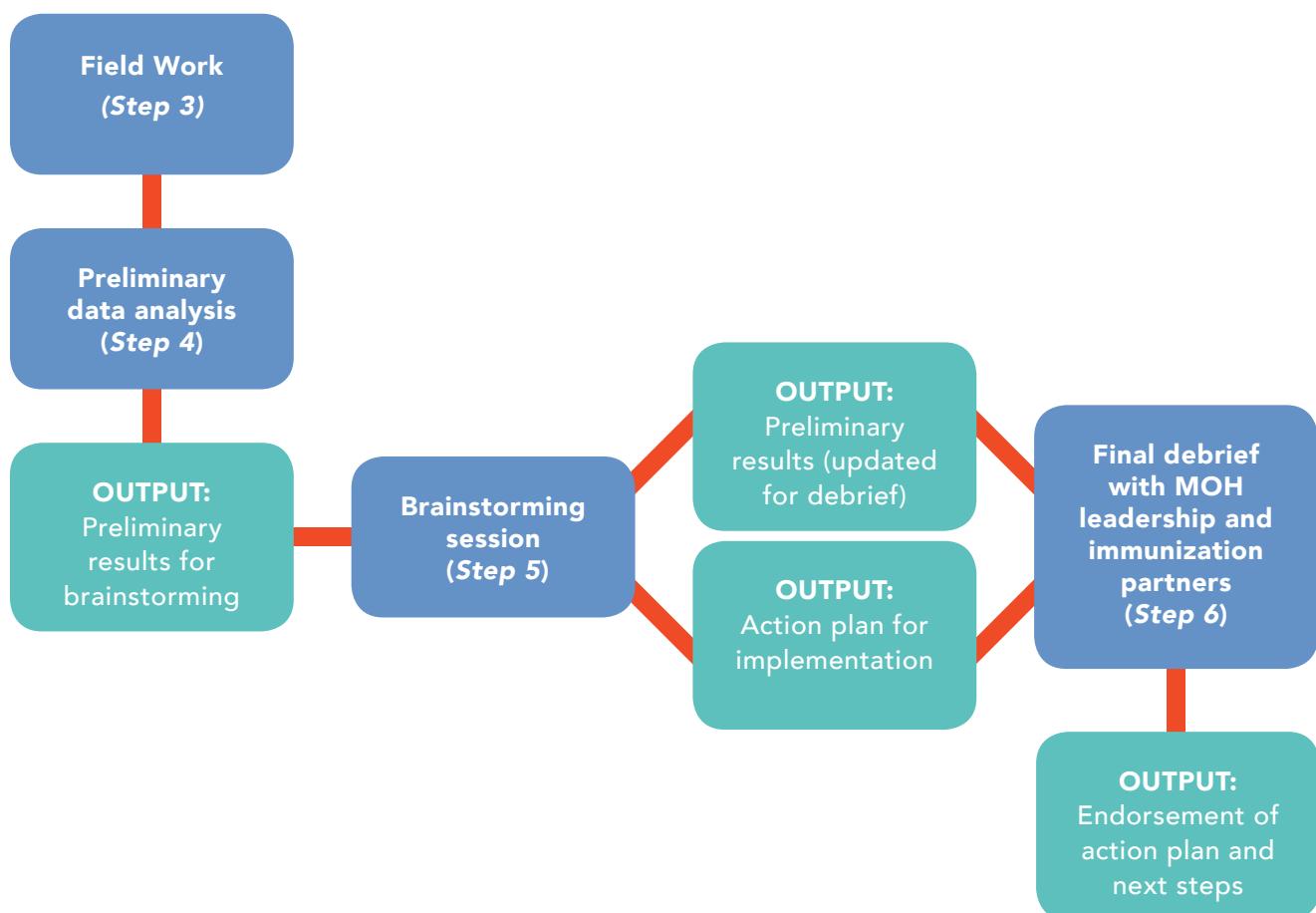
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FIGURE 6. Activities and outputs under Steps 3-6



STEP 3

Conduct field work for the rapid assessment of MOV

WHO	 Assessment coordinator, MOV Strategy Team, MOH and in-country immunization partners
WHEN	1-2 weeks duration, depending on training needs and travel distances

TASK 3.1	 Print questionnaires and/or prepare electronic tablets or smartphones for data collection
TASK 3.2	 Train field teams (supervisors and interviewers) on the assessment process and logistics (3 days)
TASK 3.3	 Conduct exit interviews with the mothers/caregivers of children 0-23 months old, in the selected health facilities (2-3 days - in the mornings)
TASK 3.4	 Extract vaccination data from health facility registers for children with no home-based records (in the afternoons following exit interviews)
TASK 3.5	 Administer health worker KAP (knowledge, attitude and practices) questionnaires (2-3 days - in the afternoons)
TASK 3.6	 Conduct focus group discussions with mothers/caregivers (1/2 day)
TASK 3.7	 Conduct focus group discussions with health workers (1/2 day)
TASK 3.8	 Conduct in-depth interviews with the pre-determined number of key informants (senior staff and health administrators)

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The MOV strategy uses a bottom-up approach that seeks to assess the reasons for missed opportunities as well as potential interventions at the vaccination point. The assessment strategy uses triangulation from multiple assessment components, as listed in the schematic below:

STEP 3: Schematic for understanding the contributions of the MOV assessment components

EXPECTED OUTCOMES	ASSESSMENT COMPONENTS
Identify the magnitude, extent and causes of missed opportunities	<ul style="list-style-type: none">• Health facility exit interviews (interviewer-administered)• Health worker KAP questionnaires (interview- or self-administered)• Focus group discussions (with mothers/caregivers and health workers)• In-depth interviews (with senior staff and health administrators)
Identify potential interventions to reduce MOV	<ul style="list-style-type: none">• Focus group discussions (with mothers/caregivers and health workers)• In-depth interviews (with senior staff and health administrators)• Work group brainstorming sessions

Please refer to [MOV Methodology](#) for details on each task under the field work component of the MOV assessment.



Analyze preliminary data and identify key themes

WHO	 Assessment Coordinator, Data Manager, qualitative expert/social scientist, and representatives from MOH and partner organizations
WHEN	1-2 days, during and immediately following field work

TASK 4.1	 Tally data from sampled questionnaires for analysis, or download preliminary data from the electronic data collection platform
TASK 4.2	 Collate the facilitator notes taken during the qualitative interviews (FGDs and IDIs)
TASK 4.3	 Conduct a quick preliminary data analysis, to identify key themes and major results for discussion in Step 5
TASK 4.4	 Prepare for detailed analysis of complete data, as well as data cleaning

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TASK**4.1****Tally data from sampled questionnaires for analysis, or download preliminary data from the electronic data collection platform**

Data collation should begin during field work (with uploaded data) and be completed as soon as teams return to the central level. A Data Manager or the Assessment Coordinator should be responsible for this step.

Experience in countries that have completed the MOV assessments shows that this step is greatly facilitated by the use of electronic data collection platforms (electronic tablets or smartphones). When possible, use of such electronic tools is encouraged. If data is collected on paper forms, a random sample of forms should be entered into a database for quick analysis in preparation for the brainstorming sessions (Step 5) and debrief presentation to MOH and partners (Step 6). Steps 5 and 6 usually take place 1-2 days after completion of field work. For the first phase of the analysis, a simple analytic software such as *Visual Dashboard* in *Epi Info™* is ideal. This can produce simple frequencies and easily updates simple charts automatically. More detailed analysis can later be conducted using *Stata®* or *SAS®* software.

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TASK**4.2****Collate the facilitator notes taken during the qualitative interviews (FGDs and IDIs)**

Where possible, a social scientist should be included as a member of the field team and s/he would be responsible for conducting the qualitative interviews. The social scientist can then submit preliminary analysis of results and important verbatim quotes for inclusion in the presentations for the brainstorming and debrief sessions. Where a social scientist is not available, the Assessment Coordinator should compile important verbatim quotes and themes discussed during the focus group sessions for this purpose.

TASK

4.3

Conduct a quick preliminary data analysis, to identify key themes and major results for discussion in Step 5

The Data Manager and the Assessment Coordinator should work together to compile the preliminary results from the different assessment components into a set of presentation slides.⁶ The preliminary nature of these data and results should be emphasized. However, experience shows that the final results rarely differ markedly from the conclusions drawn at this stage. It will be nearly impossible to derive an “estimate” of the proportion of missed opportunities at this stage of the analysis. This requires further data cleaning, reclassification and stratification (Task 4.4).

TASK

4.4

Prepare for detailed analysis of complete data, as well as data cleaning

Detailed data analysis should commence as soon as possible after the completion of field work. Final results should feed into the planning of the post-assessment interventions. If analysis cannot be performed in-country due to time and capacity constraints, it should be outsourced as soon as possible. If outsourced, every effort should be made to keep the key players at the MOH fully engaged throughout the analysis and report writing phases. The final report and any resulting manuscripts should be co-authored and pre-approved by the MOH.

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⁶ A sample slide deck “Preliminary results for brainstorming” can be found, along with samples of all training materials, at: www.who.int/immunization/programmes_systems/policies_strategies/MOV/en/

Brainstorm on proposed interventions and develop an action plan for implementation

1	WHO	 Assessment Coordinator, field teams and MOH-EPI leadership and partner organizations
2	WHEN	1 day, following field work
3		
4		
5	TASK 5.1	✓ Present the preliminary data from Step 4 and ask for reactions from the group
6	TASK 5.2	✓ Facilitate a brainstorming discussion on ideas for reducing MOV in the selected district(s)/the entire country
7	TASK 5.3	✓ Develop a detailed framework, work plan and chronogram for reducing MOV over the next 6 -12 months
8	TASK 5.4	✓ Assign roles and responsibilities to different partners using the work plan from Task 5.3, including a clear supervision, monitoring and evaluation plan
9		
10	TASK 5.5	✓ Propose existing systems, opportunities and activities to ensure community participation during the intervention phase

TASK**5.1****Present the preliminary data from Step 4
and ask for reactions from the group**

All participants in the assessment, as well as MOH leadership and key immunization partners should reconvene to debrief and discuss the preliminary data compiled. Before presenting the data analysis results, each field team should be given a few minutes to comment on their field experiences, including challenges experienced and key findings that may not have been captured by the questionnaires. Best practices seen in the visited health facilities should also be highlighted and included by the Assessment Coordinator in the debrief slides and final report.

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TASK**5.2****Facilitate a brainstorming discussion on ideas for reducing
MOV in the selected district(s)/the entire country**

As a lead up to the development of an action plan for reducing MOV, the brainstorming sessions should include:

- A discussion of the key findings from the MOV assessment to identify main causes of missed opportunities (plenary);
- Brainstorming on potential interventions to address the causes identified (in work groups of 3-5 persons);
- A listing or chronogram of activities to reduce MOV, to be implemented over the next 6-12 months (from each work group of 3-5 persons):
 - » Each activity should have a clear timeline
 - » The technical assistance needs for each activity should be assigned to one of the partners with comparative advantage in that area of work
 - » Whenever possible, the listed activities should leverage existing funding streams and be aligned with current country plans;
- A presentation of each working group's draft action plan for discussion (in plenary)



TASK

5.3

Develop a detailed framework, action plan and chronogram for reducing MOV over the next 6-12 months

Following the completion of Task 5.2, compile ideas from all working groups into a comprehensive list of activities, responsible persons, timelines and potential funding sources. Include this in the debrief presentation (Next Steps and Follow-up activities).

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TASK

5.4

Assign roles and responsibilities to different partners using the action plan from Task 5.3, including a clear supervision, monitoring and evaluation plan

Ensure that immunization partners with expertise in different aspects of the programme are willing and able to assume their respective roles and responsibilities (e.g. communications, health worker trainings, policy refinement or dissemination, improvements in the cold chain, funding of interventions). These may need to be negotiated further following the debrief presentation.



TASK

5.5

Propose existing systems, opportunities and activities to ensure community participation during the intervention

Long-term sustainability of immunization programmes requires ongoing community participation and community demand for high quality services. Civil service organizations (CSOs) and community development committees should be invited to the final debrief session (Step 6). Use the opportunity to solicit their input and assistance with implementing the proposed interventions.

STEP
6

Debrief with MOH leadership and immunization partners on proposed next steps

WHO	 All immunization partners and related programmes (such as family planning, ante-natal services, reproductive health, etc,) with leadership by MOH
WHEN	½ day, following brainstorming and development of the implementation action plan

TASK 6.1	 Present the summary objectives of the assessment, the process of the field work and the preliminary results and recommendations from Step 5
TASK 6.2	 Present the proposed action plan and request feedback and/or endorsement of the action plan from the MOH and partner leadership
TASK 6.3	 During the debrief, commence discussions on funding of the interventions or including them in existing immunization or health system improvement plans

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TASK

6.1

Present the summary objectives of the assessment, the process of the field work and the preliminary results and recommendations from Step 5

The objectives and results of the assessment components and the districts covered should be presented in a set of PowerPoint slides. See more details in the *MOV Methodology*.

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TASK

6.2

Present the proposed action plan and request feedback and/or endorsement of the action plan from the MOH and partner leadership

Sufficient time should be allocated to discuss the proposed action plan. Additional ideas raised should be included and the action plan should be endorsed before the conclusion of the debrief meeting. Please note that every detail of the action plan for reducing MOV may not be fully developed during the debrief meeting. The MOV Strategy Team should take notes and continue working on the plan in the weeks following the debrief meeting.



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During the debrief, commence discussions on funding of the interventions or including them in existing immunization or health system improvement plans

To ensure that the proposed intervention activities are implemented in a timely manner, concrete discussions on new funding sources or the re-programming of existing funds should commence during the debrief. New ideas for including the MOV strategy in upcoming funding applications should also be explored.

The major outputs of Step 6 include:

- 1. Endorsement of a detailed action plan** for reducing MOV, with **clear implementation timelines**.
- 2. Identification/commitment of catalytic funding** and/or plans for integration with existing programmes
- 3. Plans for social mobilization and development of communication materials.**

A detailed action plan is crucial to ensure the proposed interventions for reducing missed opportunities are integrated into the EPI work plan. It should also form the basis for more in-depth discussions at the highest MOH level possible. The majority of the proposed interventions will likely not require additional funds. This is especially true for most of the practice changes to take place at the health facility level/vaccination point. In fact, these practice changes can commence immediately, while the action plan is being discussed further at the national level. Further details are provided in the [MOV Intervention Guidebook](#).

The tasks for implementing the interventions (Steps 7-10) are presented on the following pages in summary form. A detailed description of each task is provided in the companion document, [Intervention Guidebook for Reducing Missed Opportunities for Vaccination \(MOV Intervention Guidebook\)](#).

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Implement the interventions

1

WHO



Health facility staff, MOH and MOV Strategy Team, immunization partners

2

WHEN

6-12 months following the assessment phase

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TASK
7.1

Based on the findings of the MOV assessment, implement interventions to address specific findings, e.g. additional tailored trainings; mass media to build community demand; etc.

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TASK
7.2

Provide additional policy guidance, directives, job aids and other communication materials from the national level

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TASK
7.3

Using the *MOV Intervention Guidebook* as a starting point, encourage local/tailored solutions for reducing MOV in each health facility

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TASK

7.1

Based on the findings of the MOV assessment, implement interventions to address specific findings, e.g. additional tailored trainings; mass media to build community demand; etc.

It is important that the proposed interventions to reduce MOV target the problems that were identified during the assessment. These problems may differ by district or by type of health facility (e.g. urban/rural or public/private). The overall intent is to promote supportive policies, evidence-based service delivery guidelines, capable service providers and managers, strong logistics to ensure availability of supplies, and to stimulate broad acceptance of immunization by both communities and health workers.

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TASK

7.2

Provide additional policy guidance, directives, job aids and other communication materials from the national level

The MOV Strategy Team should work with the MOH and ICC to develop or revise policy, regulations and guidance to address specific issues identified in the assessment, e.g. the vaccination of children who are older than 12 or 24 months, implementation of the multi-dose vial policy, addressing false contra-indications, etc. Measures should be taken to ensure that such new or updated policies are adequately communicated, reinforced and implemented at the point of vaccination.

TASK

7.3

Using the *MOV Intervention Guidebook* as a starting point, encourage local/tailored solutions for reducing MOV in each health facility

The *MOV Intervention Guidebook* provides guidance and options for interventions at the national, district or health facility level. The *MOV Intervention Guidebook* should assist the MOV Strategy Team in designing workable solutions for the different levels of the health system. It also provides suggestions for supportive supervision, monitoring and evaluation of proposed activities.

STEP
8

Provide supportive supervision and monitor progress

1

WHO



MOH and MOV Strategy Team, with support from key immunization partners

2

WHEN

6-12 months following the assessment phase

3

**TASK
8.1**



Establish a clear monitoring and supervision plan

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**TASK
8.2**



Provide funds for supportive supervision and corrective actions

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**TASK
8.3**



Provide monitoring charts and ensure compliance, with visible display of monthly coverage estimates

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8.1 Establish a clear monitoring and supervision plan

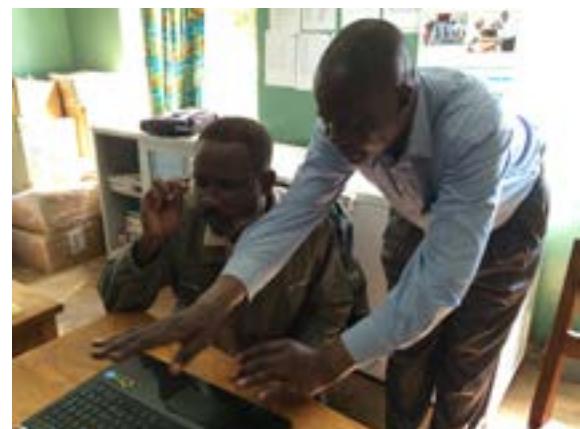
Develop a monitoring and evaluation plan at the **same time** as the intervention is being designed, and implementation is being planned. Monitoring should be seen as part of the intervention, not performed as a separate activity. Monitoring should focus on both a) what was done (e.g. number of trainings held) and b) immediate results (outputs) from the effort (e.g. number of people trained), with emphasis on the latter (results-based monitoring). When deciding what and how to monitor, keep in mind the following:

- key questions you want to answer from monitoring data
- needs/desires of each key stakeholder
- burden of data collection/reporting
- availability of existing data that will be directly affected by the intervention

Indicators should be designed with careful consideration of a number of factors – see checklist for high performing indicators⁷. Not all information needs to be quantifiable; indicators can also use qualitative data.

During the first 6-12 months of intervention, emphasis should be placed on ongoing **supportive supervision**. The focus of the supervisory visits should be on the consistent implementation of the interventions to reduce MOV and to correct any identified problems. To avoid duplication of efforts, the monitoring and supervision plan should strengthen existing supervisory systems whenever possible. These need to be systematized and consistent, preferably conducted monthly and from the next higher level of the health system. The MOV Strategy Team should provide templates for reporting to higher levels. A collation method should also be established for onward reporting and feedback to affected health staff. However, the supervisory visits should not be designed merely for reporting to higher levels, but rather to support practice changes to improve vaccination coverage as well as overall efficiency of service delivery.

This step should be carried out during the early stages of the intervention, and is distinct from the rapid field evaluation of outcomes, described in Step 9 below.



⁷ A useful checklist for the selection of high performing indicators can be found online: https://wmich.edu/sites/default/files/attachments/u350/2014/Indicator_checklist.pdf

TASK

8.2 Provide funds for supportive supervision and corrective actions

The supervision and monitoring of the implementation of MOV activities should take advantage of existing supervisory systems. However, in some countries, additional funding for supervisory visits may be required during the initial phases, and these should be budgeted for, as appropriate. Should supervisory visits reveal the need for certain corrective actions (e.g. additional training, job aids, etc.), funds for implementing these should also be accounted for in estimating the intervention budget.

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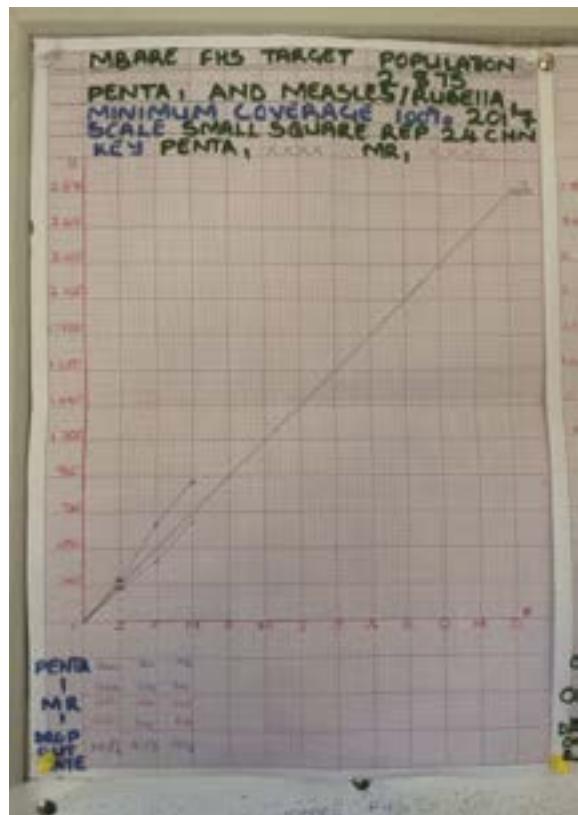
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TASK

8.3 Provide monitoring charts with visible display of coverage estimates, and ensure compliance

Administrative coverage is one method of monitoring change following implementation of the intervention. A simple way to do so is to place the emphasis on **numerator tracking for different antigens**, as this is sufficient to monitor changes from month to month, or to compare with similar months from previous years. Clear and easy-to-use wall monitoring charts should be printed and distributed to all health facilities. The charts should provide a blank space for personalization, such as facility/village name, date, etc. More detail on this, including examples of monitoring charts are provided in the *MOV Intervention Guidebook*.



STEP
9

Conduct rapid field evaluation of outcomes/ impact of interventions (12-18 months later)

WHO



MOH and MOV Strategy Team, with support from key immunization partners

WHEN

12-18 months following Step 7-8

**TASK
9.1**



Following 12-18 months of implementation of activities, conduct evaluation of effectiveness of the interventions in selected health facilities

Following 12-18 months of implementation of interventions and supportive supervision, a re-assessment of MOV should be conducted in a random subset of the original health facilities (Step 3). For a proper comparison, this evaluation should use a similar methodology, and the same tools, as the initial assessment. The objective is to assess any **changes** in service delivery practices, reduction in MOV, and possibly in vaccination coverage that may have occurred as a result of the interventions.

The rapid field evaluation should seek to evaluate intermediate outcomes related to the specific interventions, such as changes in the knowledge, attitudes and practices of the health care workers, or differences in themes raised by the qualitative assessment components.

The MOV Strategy Team should ensure that the results of this evaluation are shared widely and that the MOH leadership is updated with the outcomes. Areas that need strengthening should be identified and further supported. The long-term objective is to ensure that reducing MOV becomes a regular part of normal clinical practice in all health facilities, private as well as public.

Where there were no MOV interventions in some parts of the country/districts, such locations could serve as controls to further illustrate the impact of the interventions on service quality and vaccine coverage. Similarly, monthly numerator tracking from year to year (prior to and post-intervention) can be used to estimate changes in vaccination coverage pre- and post-intervention.

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Given the simplified sampling structure (random yet convenience) of children used to assess the rate of MOV in the initial assessment, ruling out selection bias influencing the results may not be entirely possible. A simple evaluation of programmatic outcomes may be sufficient for general use for most countries, however those wishing to invest additional resources for a more robust statistical evaluation can consider doing so.

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Complete details on designing and conducting an appropriate outcome evaluation, including guidance on sampling, managing potential confounders, and methods for measuring intermediate outcomes, are provided in the *MOV Intervention Guidebook*.

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STEP 10

Incorporate into long term immunization plans to ensure gains are sustainable

WHO



MOH and MOV Strategy Team, with support from key immunization partners

WHEN

Ongoing

**TASK
10.1**



To ensure sustainability, include interventions to reduce MOV in long-term immunization plans (e.g. cMYP and annual EPI workplan)

The MOV strategy should not be conceived as a stand-alone project or a one-time activity to increase vaccine coverage. Rather, it is a health system-wide service improvement effort targeted at vaccination as well as other health services. From the outset, the MOV Strategy Team should ensure that MOV intervention activities and processes are included as part of country plans such as the cMYP and the annual EPI work plans. The intervention activities should be routinized and sustained, by ensuring the commitment of sufficient funding and political will. Periodic supportive supervision and monitoring of MOV should continue on a monthly or quarterly basis, as part of the regular monitoring and supervision plan for health services in general.

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Annex A. Summary Table of the MOV Strategy

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STEP 1	STEP 2
WHAT Plan for an MOV assessment and intervention	WHAT Prepare for the assessment and secure commitment for follow-up interventions
WHO MOH, with support from all in-country immunization partners	WHO MOV Strategy Team, MOH and other key immunization partners
TIMING AND DURATION 2–4 months before field work	TIMING AND DURATION 1-2 months before field work
TASK 1.1 Decide whether an MOV strategy is needed TASK 1.2 Achieve high-level support from the MOH TASK 1.3 Identify an Assessment Coordinator and members of the MOV Strategy Team (preferably multi-partner; may be a sub-committee of the Inter-agency Coordinating Committee (ICC) or similar body) TASK 1.4 Identify funding sources from within and/or outside the EPI programme TASK 1.5 Prepare a schedule of activities and include in annual work plan, with approval of the Inter-agency Coordinating Committee (ICC) or similar body	TASK 2.1 Collect, compile and review available information on the immunization programme, including recent programme reviews and coverage estimates TASK 2.2 Decide on the scale of the MOV work (national or only in selected low-coverage districts(s)) TASK 2.3 If appropriate, select subnational areas for field work TASK 2.4 Agree on sample size, the number of field staff needed and the number of days for field work TASK 2.5 Finalize the budget for the assessment field work TASK 2.6 Prepare a draft budget for the post-assessment interventions TASK 2.7 Share plan with ICC or appropriate body (and partners) for final approval of the plan TASK 2.8 Clarify whether ethical approval is necessary and commence the process. TASK 2.9 Review generic questionnaires, and if necessary adapt to country context and vaccination schedule TASK 2.10 If needed, finalize arrangements for the translation of the updated questionnaires and training materials into the local language(s)
EXPECTED OUTCOMES <ul style="list-style-type: none"> » High level commitment from MOH » MOV strategy included in the annual EPI work plan » National MOV Strategy Team constituted 	EXPECTED OUTCOMES <ul style="list-style-type: none"> » Finalized chronogram for MOV activities » Finalized budget for MOV assessment » Draft budget for MOV post-assessment interventions » Exemption from ethical approval process, or approval, as appropriate » Finalized questionnaires and training materials for field work training (including plans for translation, if needed)

STEP 3	STEP 4	STEP 5	STEP 6
WHAT Conduct field work for the rapid assessment of MOV WHO Assessment coordinator, MOH and in-country immunization partners	WHAT Analyze preliminary data and identify key themes WHO Assessment coordinator, data Manager, qualitative expert/social scientist, field teams and representatives from MOH and partner organizations	WHAT Brainstorm on proposed interventions and develop an action plan for implementation WHO Assessment coordinator, field teams, MOH-EPI leadership and partner organizations	WHAT Debrief with MOH leadership and immunization partners on proposed next steps WHO All immunization partners and related programmes (such as family planning, ante-natal services, reproductive health, etc.) with leadership by MOH
TIMING AND DURATION 1-2 weeks duration, depending on training needs and travel distances	TIMING AND DURATION 1-2 days	TIMING AND DURATION 1 day	TIMING AND DURATION ½ day
<p>TASK 3.1: Print questionnaires and/or prepare electronic tablets or smartphones for data collection</p> <p>TASK 3.2: Train supervisors and interviewers on the assessment process and logistics</p> <p>TASK 3.3: Conduct exit interviews with the mothers/caregivers of children 0-23 months old, in the selected health facilities</p> <p>TASK 3.4: Extract vaccination data from health facility registers for children with no home-based records</p> <p>TASK 3.5: Administer health worker KAP (knowledge, attitude and practices) questionnaires</p> <p>TASK 3.6 : Conduct focus group discussions with mothers/caregivers</p> <p>TASK 3.7: Conduct focus group discussions with health workers</p> <p>TASK 3.8: Conduct key informant interviews with the pre-determined number of senior staff and health administrators</p>	<p>TASK 4.1: Tally data from sampled questionnaires for analysis, or download preliminary data from the electronic data collection platform</p> <p>TASK 4.2: Collate the facilitator notes taken during the qualitative interviews (FGDs and KIIs)</p> <p>TASK 4.3: Conduct a quick-and-dirty analysis of preliminary data, to identify key themes and major results for discussion in Step 5</p> <p>TASK 4.4: Plan for detailed analysis of complete data, as well as data cleaning</p>	<p>TASK 5.1: Present the preliminary data from Step 4 and ask for reactions from the group</p> <p>TASK 5.2: Facilitate a discussion on ideas for reducing MOV in the selected district(s)/the entire country</p> <p>TASK 5.3: Develop a detailed framework, action plan and chronogram for reducing MOV over the next 6-12 months</p> <p>TASK 5.4: Assign roles and responsibilities to different partners using the action plan from Task 5.3, including a clear supervision, monitoring and evaluation plan</p> <p>TASK 5.5: Propose existing systems, opportunities and activities to ensure community participation during the intervention phase</p>	<p>TASK 6.1: Present the summary objectives of the MOV assessment, the process of the field work and the preliminary results and recommendations as refined in Step 5</p> <p>TASK 6.2: Present the proposed action plan and request feedback and/or endorsement from the MOH and partner leadership</p> <p>TASK 6.3: During the debrief, commence discussions on funding of the interventions or including them in existing immunization or health system improvement plans</p>
EXPECTED OUTCOMES <ul style="list-style-type: none"> » Printed questionnaires and interview guides » Field staff fully trained on assessment process » Field staff proficient in completing the questionnaires on paper or on the tablets » Completed exit interviews, KAP questionnaires and qualitative interviews (focus group discussions and key informant interviews) 	EXPECTED OUTCOMES <ul style="list-style-type: none"> » Basic frequencies from the quantitative data to elicit discussions in Step 5 » Critical quotes from the focus group discussions that capture the key findings » A list of proposed interventions to reduce MOV from all assessment components 	EXPECTED OUTCOMES <ul style="list-style-type: none"> » List of proposed activities to reduce MOV (to be prioritized by MOH) » Frame work and 6-12 month work plan for reducing MOV » Outline of roles and responsibilities of different partners » Possible funding sources and links/synergies with existing work plans 	EXPECTED OUTCOMES <ul style="list-style-type: none"> » Finalized recommendations » Finalized and endorsed action plan, with clear implementation timelines » Catalytic funding and/or plans for integration with existing programmes » Plans for social mobilization and communication materials

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	STEP 7	STEP 8	STEP 9	STEP 10
1	WHAT Implement the interventions WHO Health facility staff, MOH and MOV Strategy Team, immunization partners	WHAT Provide supportive supervision and monitoring WHO MOH and MOV Strategy Team, with support from key immunization partners	WHAT Conduct rapid field evaluation of outcomes/ impact of interventions WHO MOH and MOV Strategy Team, with support from key immunization partners	WHAT Incorporate into long term immunization plans to ensure gains are sustainable WHO MOH and MOV Strategy Team, with support from key immunization partners
2	TIMING AND DURATION 6-12 months	TIMING AND DURATION 6-12 months	TIMING AND DURATION 12-18 months following Step 7/8	TIMING AND DURATION Ongoing
3	TASK 7.1: Based on the findings of the MOV assessment, implement interventions to address specific findings, e.g. additional tailored trainings; mass media to build community demand; etc. TASK 7.2: Provide additional policy guidance, directives, job aids and other communication materials from the national level TASK 7.3: Using the <i>MOV Intervention Guidebook</i> as a starting point , encourage local/ tailored solutions for reducing MOV in each health facility	TASK 8.1: Establish a clear monitoring and supportive supervision plan TASK 8.2: Provide funds for supportive supervision and corrective actions TASK 8.3: Provide monitoring charts and ensure compliance with visible display of monthly coverage estimates	TASK 9.1: Following 12-18 months of implementation of activities, conduct evaluation of effectiveness of the interventions in selected health facilities	TASK 10.1: To ensure sustainability, include interventions to reduce MOV in long-term immunization plans (e.g. cMYP and annual EPI work plans)
4	EXPECTED OUTCOMES » Interventions implemented nationally or in selected districts/health facilities	EXPECTED OUTCOMES » Supportive supervision reports with corrective measures » Monitoring charts completed and visibly displayed in all health facilities	EXPECTED OUTCOMES » Reduction in MOV reported in evaluations » Increase in number of children vaccinated when compared to previous year's numbers » Reduction of MOV and general health service improvement are ingrained as a routine process in evaluated health facilities » Results of evaluations shared with ICC or similar body	EXPECTED OUTCOMES » MOV interventions and processes included as part of country plans such as cMYP and annual EPI plans » Funding is available for implementation
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Annex B: Sample size estimation for quantification of the magnitude of MOV in a defined target population (See Figure 5)

The target population may be national, or sub-national. To begin, identify or create a sampling frame of all health facilities (HF) in the target population. The assessment collects information at the facility level, however the primary outcomes, MOV (eligible) or MOV (missed opportunity event), are child-level outcomes. Children are nested within health facilities, making it necessary to account for the cluster design in both the design and analysis phases of the assessment. (Note that accounting for the clustering would impact standard errors only. For descriptive (no CIs, p-values, ORs) percentages only [as proposed in Task 2.4], you do not need to account for clustering.)

Design considerations:

1. Choose the **primary** estimate of interest from the six listed in Figure 5 .
2. State an expected value (proportion) for the primary estimate
3. State a desired precision
4. Calculate the effective sample size (ESS) (see Table B1 below for examples).
5. Inflate the sample size to account for the cluster design (children nested with HFs) based on an assumed intra-class correlation (ICC). The design effect = $1 + (\text{average } \# \text{ of responses per HF} - 1) * \text{ICC}$. If the primary estimate is based on denominator A (see Figure 5), the average number of responses per HF is your target # of interviews. If the primary estimate is based on a denominator of B or C, then the average # of responses is the expected number of those children. See details on adjusting the ESS to account for a cluster design in the WHO cluster survey guidelines (http://www.who.int/immunization/monitoring_surveillance/routine/coverage/en/index2.html).
6. If the primary estimate is based on denominator A (number of interviewed caregivers) the adjusted ESS should then be inflated for potential non-response. If the estimate chosen has a denominator of B (number of interviewed caregivers where documentation of immunizations is available) or C (number of children eligible for a MOV) then an extra step, after inflation for non-response, is required. An assumption of what proportion of the sample will meet the condition for B (or C) will need to be made, and then appropriate inflation to account for this sub-sample should be done. See the WHO cluster survey document for more details.
7. The number of HFs = adjusted sample size from step 6 divided by the average # responses indicated in step 5 .
8. The sample of HFs should be a random sample from a list of all HFs in the target population. The following are options:
 - a. Simple random sample from a list of all HFs in the target population
 - b. Systematic sampling to facilitate implicit stratification by first ordering the list of HFs by some characteristic of interest (e.g. urban or rural, or public or private). Implicit stratification can help spread the sample across different sub-populations.

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- c. Stratified random sample to facilitate explicit stratification whereby a given number of HFs are sampled from defined strata. (urban/rural, public/private, system level). Would want to account for stratification as well as clustering in the analysis, and may require stratum-level weights if the allocation is not proportional to the total number of facilities in each strata.
 - 9. Sampling weights for each select child cannot be calculated appropriately given the nature of the purposive sampling of caregivers exiting the HF on a specific day. The MOV Strategy Team should understand that the sample of caregivers and children is NOT a representative sample of the target population as a whole. Nor should they assume that the sample is a representative sample of caregivers/children attending the HF. **Strategies to obtain a random sample of caregivers/children are resource intensive and are not recommended for the MOV strategy.** The convenience sampling is a limitation that can lead to a biased estimate and/or under-estimation of the standard error. However, data triangulation is expected to reduce the impact of this bias for programmatic purposes.

Note: Depending on the number of HFs in the target population, and whether stratified random sampling is done, one may face finite population issues. We recommend that a sampling statistician be involved to assist with the sample size calculation and choosing an appropriate sampling design.

TABLE B1

**Effective sample size (ESS)¹ to estimate a proportion
with precision for alpha = 0.05**

PRECISION FOR 95% CI	EXPECTED PROPORTION										
	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	
	95% ²	90%	85%	80%	75%	70%	65%	60%	55%	50%	
	±2%	457	865	1225	1537	1801	2017	2185	2305	2377	2401
	±3%	203	385	545	683	801	897	972	1025	1057	1068
	±4%	115	217	307	385	451	505	547	577	595	601
	±5%	73	139	196	246	289	323	350	369	381	385
	±6%		97	137	171	201	225	243	257	265	267
	±7%		71	100	126	147	165	179	189	195	196
	±8%		55	77	97	113	127	137	145	149	151
	±9%		43	61	76	89	100	108	114	118	119
	±10%		35	49	62	73	81	88	93	96	97

1 Sample size to achieve stated precision, where precision is defined as: in repeated sampling, 95% of the point estimates will be within the interval $x\% \pm y\%$ (column \pm row) if the true proportion is $x\%$ (column). Formula for Wald (asymptotic): $ESS = 1.962^2 p(1-p)/e^2$ where p is the expected proportion, and e is the desired precision.

2 For a given precision, the sample size is the same for 5% and 95%, 10% and 90%, etc. The formula, which contains p and $(1-p)$, shows why this is true.

Annex C. Budget template for an MOV Assessment

DRAFT Budget: Missed Opportunities for Vaccination Assessment - COUNTRY NAME						
ITEM	# OF UNITS	# OF DAYS	DETAILED DESCRIPTION	MULTIPLIER	UNIT PRICE (LOCAL CURRENCY)	TOTAL COST (LOCAL CURRENCY)
Training						
Conference facilities for workshop			Training of field teams on MOV assessment methodology			
Tea break and lunch			Lunch and snacks for field teams (if not included in conference package)			
Translation of tools and materials (if needed)			Translation of tools into local language, if necessary			
Printing of materials			Printing of training manuals, assessment tools (questionnaires, etc.)			
TRAINING TOTAL						
Field Work						
Vehicle rental			Additional vehicles that need to be procured for field teams			
Fuel estimate			Fuel Estimate, (Avg Km to and from Field + Daily runs x number of days)			
Daily subsistence allowance (DSA) for drivers			DSA for Drivers, based on number of cars and field work days, including travel days			
DSA for field staff			DSA for field teams, based on number of field work days, including travel days			
DSA for supervisors			DSA for supervisors, based on number of field work days, including travel days			
Lunch allowance for district and health facility staff			Lunch allowance for field partner(s), e.g. EPI Logistician during field work for x days			

	ITEM	# OF UNITS	# OF DAYS	DETAILED DESCRIPTION	MULTIPLIER	UNIT PRICE (LOCAL CURRENCY)	TOTAL COST (LOCAL CURRENCY)	TOTAL COST (USD)
1	Snacks or drinks for FGD participants (HW)			Lunch/ Snacks for FGD Participants				
2	Snacks or drinks for FGD participants (care givers)			Lunch/ Snacks for FGD Participants				
3	Air time and internet allowance			For communication and coordination between MOH teams and county/ district EPI logisticians, and for uploading forms to the internet				
FIELD WORK TOTAL								
4	Brainstorming and Debrief							
5	Conference facilities for debrief meeting			Immunization stakeholders forum, Dissemination				
6	Snacks or drinks			Lunch/ Snacks				
BRAINSTORMING AND DEBRIEF TOTAL								
7	Additional costs and contingency							
8	Additional costs - Bioethics clearance							
9	Contingency - 5%							
ADDITIONAL COSTS TOTAL								
TOTAL COST							-	
EXCHANGE RATE:							1 USD=	

Notes	MOH Comments		
Budget assumptions	per province	total	Districts to be visited
# Provinces			
# Districts			
HFs to visit			
# of interviewers			
# of supervisors			
Days in Field (incl. 2 travel days)			



For more information visit:
[http://www.who.int/immunization/
programmes_systems/policies
strategies/MOV/en/](http://www.who.int/immunization_programmes_systems/policies_strategies/MOV/en/)

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World Health Organization

Department of Immunization,
Vaccines and Biologicals
CH-1211 Geneva 27
Switzerland

Fax: + 41 22 791 4227

Email: vaccines@who.int

Web: www.who.int/immunization/en

