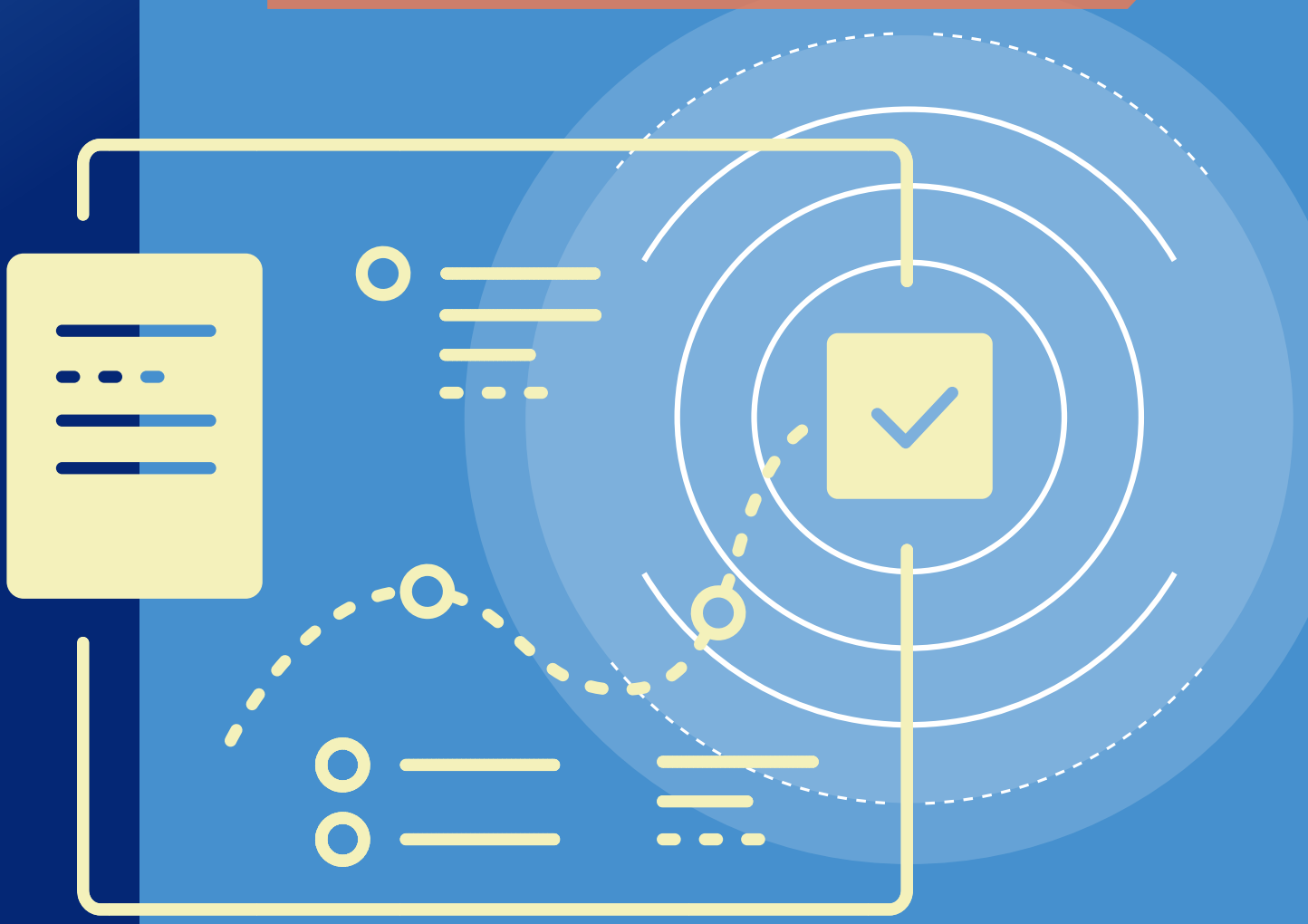
# Integrated post-validation and post-verification surveillance for **neglected tropical diseases**

## A planning toolkit



World Health Organization

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Integrated post-validation and post-verification surveillance planning toolkit for neglected tropical diseases: a planning toolkit

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# Acknowledgements

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# Abbreviations

| | |
|---|---|
| DMP | data management plan |
| HIV | human immunodeficiency virus |
| ITRP | infection threshold response plan |
| LF | lymphatic filariasis |
| M&E | monitoring and evaluation |
| MDA | mass drug administration |
| Mf | microfilaraemia |
| MMDP | morbidity management and disability prevention |
| NTD | neglected tropical disease |
| PRG | project review group |
| PTS | post-treatment surveillance |
| PVS | post-verification or post-validation surveillance |
| RDT | rapid diagnostic test |
| SOP | standard operating procedure |
| SWOT | strengths, weaknesses, opportunities and threats |
| TAS | transmission assessment surveys |
| TBS | thick blood smear |
| WASH | water, sanitation and hygiene |
| WHO | World Health Organization |

# Introduction

## Background

*Ending the neglect to attain the Sustainable Development Goals: a road map for neglected tropical diseases 2021–2030* ("the road map") sets targets to control, eliminate or eradicate 20 neglected tropical diseases (NTDs) and disease groups *(1)*. These diseases disproportionately affect impoverished populations and cause significant morbidity and disability among those affected. Globally, at least 1.74 billion people require interventions against NTDs *(1)*.

The road map includes disease-specific targets for eradication (i.e. permanent global reduction to zero of the worldwide incidence of infection caused by a specific pathogen), elimination of transmission (i.e. reduction to zero of the incidence of infection caused by a specific pathogen in a defined geographical area) and elimination as a public health problem (i.e. achievement of measurable targets set by WHO in relation to a specific disease) *(1)*. Two NTDs (dracunculiasis and yaws) are targeted for eradication, three (onchocerciasis, leprosy and gambiense African trypanosomiasis) for elimination of transmission and eight for elimination as a public health problem; the remainder are targeted for control. Countries are encouraged to include these targets in their national policies and prioritize resources for programme and surveillance activities, ensuring that they can meet the set criteria and requirements.

Achievement of elimination is an important public health success, which the World Health Organization (WHO) officially acknowledges after an independent review of a country-submitted dossier. Each elimination target is associated with a specific term for documentation of the achievement: certification for eradication; verification for elimination of transmission; and validation for elimination as a public health problem. Achievement of WHO certification, verification or validation, however, does not mean there is no future risk of disease recrudescence, as countries remain at risk of re-introduction of transmission from imported cases as long as transmission continues elsewhere. In addition, countries validated for elimination of a disease as a public health problem remain at risk of resurgence of transmission.

According to projections included in the road map, more than 40 countries are targeted to be in a post-verification or post-validation phase for at least one disease by the end of 2025, including four for onchocerciasis and 19 for lymphatic filariasis (LF) *(1–3)*. Surveillance after a disease is eliminated is critical to protect the gains that have been achieved. Signs of recrudescence that are identified early can lead to timely and effective responses that address the increased incidence and again eliminate transmission or reduce burden below the elimination thresholds. However, after the verification or validation process has been completed, resources are often depleted and funding for post-verification or post-validation surveillance (PVS) may be unavailable or insufficient to cover the long period of time over which surveillance may be required.

One approach to decrease the amount of resources needed and improve the sustainability of PVS for NTDs is to integrate PVS with other existing surveillance platforms to develop newly integrated platforms that share resources. Integrated surveillance makes use of a single infrastructure to collect, collate, analyse, interpret and disseminate information relevant for two or more diseases. By removing duplication and inefficiencies, integrated surveillance can reduce the resource envelope required for surveillance activities. However, identifying suitable existing surveillance systems, evaluating the compatibility of their attributes and assessing the value of integration is not always straightforward. This WHO integrated PVS planning toolkit for NTDs ("the toolkit") was developed to support NTD programmes in this effort.

## Purpose and audience

The toolkit is designed to guide NTD programme staff and health ministries (or their equivalent) in identifying and evaluating options for sustainable and integrated approaches to surveillance after elimination has been verified or validated. The primary user is intended to be national NTD programmes and their partners in countries approaching

elimination of an NTD. Secondary users may include national surveillance officers, other staff within health ministries, local community members, WHO staff and global stakeholders supporting elimination efforts.

The toolkit offers a pathway for identifying and evaluating opportunities to integrate PVS with existing or proposed surveillance systems. It also provides step-by-step guidance on how to collaborate with other health programmes to assess the feasibility of integrating PVS and develop a roadmap towards integrated PVS. The toolkit is designed to:

- Collate data on key attributes of the target NTD to inform an ideal PVS system.
- Assemble information on potentially compatible existing surveillance systems.
- Identify compatible surveillance systems that best fit the PVS needs of the target NTD.
- Provide a framework to assess feasibility of integrating with compatible surveillance systems.
- Support the development of an integrated PVS plan.
- Provide a framework for evaluating the success of integration.
- Support advocacy to identify funding for integrated PVS for NTDs.

The ultimate end product for users of the toolkit is an actionable plan for conducting integrated PVS of a target NTD, as well as the protocols and standard operating procedures required to implement the integrated PVS plan. For more details on the specific mechanisms and principles of conducting integrated surveillance, please consult the *Integrated disease surveillance and response technical guidelines, third edition (4)*.

## *Approach to development*

The toolkit was developed through a global consultative process led by WHO, with technical support from PATH and funding from the Gates Foundation. It draws on the experience of national NTD programmes and other stakeholders working on NTD elimination. The approval of this WHO technical product was assessed against the 2022 document *WHO public health goods technical products on norms/standards, data and research (TPs) quality assurance companion: guidance for TP development*. The approach to development is outlined below.

1. Project review group (PRG). WHO formed a PRG to establish the scope of the toolkit, propose content, provide feedback on drafts and approve revisions. The group met mostly through virtual meetings to develop an outline and drafting plan and to review the progress of the toolkit's development.

2. Literature search and expert interviews. The PATH team conducted a literature search consisting of a non-systematic, semi-structured review of published literature available via the PubMed® online database and a supplementary grey literature search for relevant literature that had not undergone peer-review or was otherwise uncaptured by the original search terms. A publication was deemed to be relevant if it provided insight into NTD surveillance approaches, guidelines or toolkits in development, or highlighted relevant digital or novel tools that may contribute to integrated NTD surveillance. Between published peer-reviewed literature and grey literature, a total of 196 documents were reviewed at the full-text stage. In total, 31 interviews (a mix of key informant and small group discussions) were conducted with 42 individuals from WHO, research institutions, funding agencies and national NTD programmes.

3. Drafting and Gather tool development. An initial draft of the toolkit narrative document and accompanying Gather and Synthesize Excel tool were developed using insights from the literature review and key stakeholder interviews. This initial drafting was completed by PATH, with feedback and direction from WHO.

4. Technical consultations. WHO convened a series of virtual technical consultations with PRG in 2023 and 2024 as well as one face-to-face meeting at the 72nd meeting of the American Society of Tropical Medicine and Hygiene (Chicago, 18–22 October 2023) to review the draft content and propose improvements.

5. Peer review. The first round of peer review was completed by PRG in December 2023. Feedback incorporated into the draft toolkit in advance of toolkit pilots.

6. Pilot testing. WHO facilitated pilot application of the toolkit in Bangladesh (October 2024 – February 2025), Nigeria (March 2024 – July 2024) and Senegal (April 2024 – October 2024).

7. Review. PRG discussed the outcomes and suggested revisions proposed after the pilots. These were incorporated into the toolkit. Consensus on the proposed revisions were developed using an informal approach that stipulated a priori that judgements for each change would be made with complete consensus achieved through group discussions. Should complete consensus fail to be reached, judgements would be considered final with more than two thirds votes of participants. Meeting participants were actively asked for dissenting views, which were discussed. During actual deliberations, group discussions helped to reach full consensus. A webinar facilitated by the Global Onchocerciasis Network for Elimination (GONE) was conducted to further disseminate the results of the pilot and collect final input on the toolkit.

8. WHO conducted the final technical editing of the toolkit narrative, associated annexes and tools.

### *Declarations of interests and their management*

The "Declarations of interests for WHO experts" form was completed by PRG participants, peer reviewers and all contributors. All external experts, in accordance with WHO policy, disclosed any potential conflicts of interest that might affect, or might reasonably be perceived to affect, their objectivity and independence in relation to the subject matter of meetings and toolkit content. WHO reviewed each of the declarations and concluded that none could give rise to a potential or reasonably perceived conflict of interest related to the content discussed at meetings or covered in the toolkit.

## *Target NTDs used to guide the initial toolkit development*

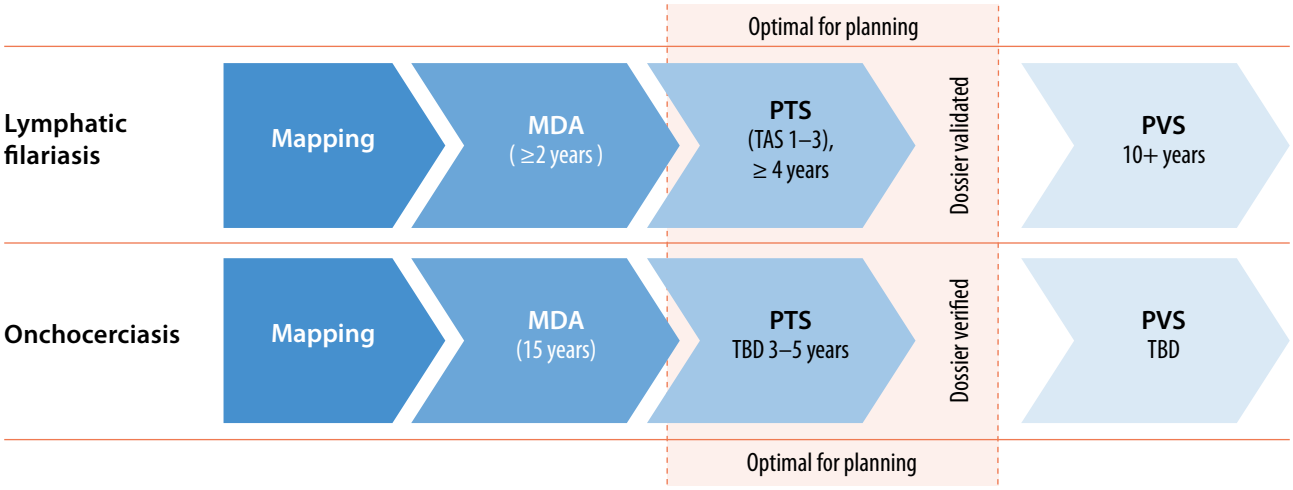
LF and onchocerciasis were used as target NTDs to guide the initial development of the toolkit, because they are among the diseases that have seen substantial progress towards elimination, have different transmission pathways and have the most immediate need for PVS approaches. While the toolkit was developed with an initial focus on these two diseases, the general planning guidance and structured decision-making process can be applied to other NTDs approaching elimination.

This toolkit is not intended to define best practices or guidelines for PVS of specific NTDs, but rather to support national NTD programmes in developing a sustainable approach to PVS using the resources available while global guidance for PVS for most NTDs is still under development. The toolkit has been developed to easily incorporate new WHO disease-specific guidance into the planning process as it becomes available. NTD programme managers should contact WHO for the most recent guidance on PVS activities for onchocerciasis *(5)* and LF *(6)*.

## *Timing*

The toolkit will be most useful for countries during the period of post-treatment surveillance (PTS), which is conducted after mass drug administration (MDA) for NTDs amenable to preventive chemotherapy is stopped, and while preparing the WHO dossier for validation or verification. Using the toolkit before validation or verification is achieved permits development of a PVS plan while the resources, staff, momentum and data from the NTD programme are still available. In addition, for some NTDs, a PVS plan may be a necessary component of the dossier. Fig. 1 outlines the optimal timing and anticipated timeline for PVS planning for LF and onchocerciasis.

**Fig. 1. Timeline for control, elimination and planning post-validation or post-verification surveillance activities for lymphatic filariasis and onchocerciasis**




MDA: mass drug administration; PTS: post-treatment surveillance; PVS: post- validation or post-verification surveillance; TBD: to be determined.

## *Implementation level*

While the toolkit is most appropriate for national planning for PVS during the dossier development process, it may also be used to guide PVS planning at a subnational level in countries where some states or districts have achieved elimination of LF or onchocerciasis in advance of other regions of the country. Before using the toolkit, programmes should determine if the PVS plan they are developing is intended for national or subnational implementation, as the opportunities for integration and decision-making are likely to be affected by the level of implementation.

## *Summary of the planning process*

The toolkit provides step-by-step guidance for the six phases of the integrated PVS planning process: (i) Start-up, (ii) Gather, (iii) Synthesize, (iv) Assess, (v) Plan and (vi) Implement. Associated tools are available as annexes and web tools to support activities in each section (e.g. the Gather and Synthesize Excel tool). The final output of this process is an actionable plan to implement integrated PVS for the target NTD. Fig. 2 outlines the purpose, activities and resource needs for each phase in the process.

**Fig. 2. Overview of the phases of the integrated PVS planning process**

# Summary of the planning process

| | Start up | Gather | Synthesize | Assess | Plan | Implement |
|---|---|---|---|---|---|---|
| **Purpose** | Ensure the programme is ready to undertake an integrated PVS planning process. | Gather relevant information about the target NTD and potentially compatible surveillance systems (SS). | Review and synthesize information gathered and develop a shortlist of compatible SS. | Assess the shortlisted compatible systems and determine the best combination of SS to integrate with. | Coordinate with other programs to outline the approach for integrating PVS of your target NTD into the existing SS. | Develop implementation materials for the integrated PVS plan and begin implementing. |
| **Stakeholders engaged** | • Neglected tropical disease (NTD) programme staff<br>• Ministry of Health (MOH)<br>• Partners involved in implementing activities for target NTDs | • PVS steering group<br>• Interviews with various stakeholders from non-target NTD surveillance systems | • PVS steering group:<br>• NTD programme staff<br>• MOH leadership<br>• Non-target NTD SS or implementing partners | • PVS steering group<br>• NTD programme staff<br>• MOH leadership<br>• Surveillance or implementing partners | • Expanded PVS steering group<br>• NTD programme staff<br>• MOH leadership<br>• Implementing partners | • Expanded PVS steering group<br>• NTD programme staff<br>• MOH leadership<br>• Implementing partners |
| **Activities** | 1.Complete readiness check.<br>2.Obtain buy-in from MOH leadership.<br>3.Establish PVS steering group, which includes representatives from the NTD programme and the MOH. | 1.Identify attributes of ideal PVS plan for target NTD, including regions to target for surveillance.<br>2.Validate ideal plan with the full steering group.<br>3.Gather information about existing non-target SS.<br>4.Overlay SS characteristics with requirements for the target NTD to identify compatible SS. | 1.Use the compatibility matrix to evaluate each SS and produce a quantitative compatibility ranking.<br>2.Select a shortlist of SS based on the ranked list and the relevant PVS guidance from WHO. | 1.Conduct Strengths, Weaknesses, Opportunities, Threats analysis to determine the best combination of SS.<br>2.Identify any remaining gaps with the selected combination of SS. | 1.Expand PVS steering group<br>1.Outline changes to be made to existing SS.<br>1.Re-affirm stakeholder buy-in from MOH and existing SS.<br>1.Draft integrated PVS plan.<br>1.Review integrated PVS plan with full PVS steering group. | Develop materials for pilot implementation:<br>1.Protocols & standard operating procedures.<br>2.Training plan for health system workers.<br>3.Data management plan.<br>4.Community sensitization plan.<br>5.Monitoring & evaluation framework.<br>6.Infection detection strategy and response plan. |
| **Resource and time requirements** | • 1–3 months (5 hours per week)<br>• 1–2 people to organize activities | • 3–4 weeks (20 hours per week)<br>• 1–2 people to conduct desk review | • 1 week (8 hours)<br>• 1 person to enter data into tool | • 1 week (15–30 hours)<br>• 2 people to prepare materials<br>• Full PVS steering group for **in-person decision-making workshop**. | • 3–4 weeks (20 hours per week for 1–2 people leading the process)<br>• Optional second **in-person workshop with expanded PVS steering group**. | • 6–8 weeks |

MDA: mass drug administration; MOH: health ministry or equivalent; NTD: neglected tropical disease; PTS: post-treatment surveillance; PVS: post-validation or post-verification surveillance; SS: surveillance systems.

# Start-up

## *Purpose and overview*

The purpose of the Start-up phase is to ensure that the NTD programme is ready to begin planning for integrated PVS. The programme will use the readiness check to ensure that the country (or subnational area) is at the correct stage in the process of elimination to begin planning a PVS strategy and has sufficient resources and appropriate buy-in from the health ministry or equivalent (MOH). Through this phase, the programme will be able to decide whether to move forward with the PVS planning process or to postpone it until the time is right (i.e. until sufficient resources are available and high-level MOH support is in place). Once the programme has decided to move forward, an Integrated PVS Steering Group will then be established to help guide the PVS planning process and lead an initial stakeholder mapping.

## *Approach*

### Step 1. Complete the readiness check.

NTD programme managers should review the checklist below to ensure that the programme is ready to implement the toolkit. If the answer is yes to each question, check the box on the left.

1. **Timing:** NTD programme managers and their team should review the current status of the country and the milestones achieved by the country towards elimination. PVS planning can begin when some areas of the country are approaching elimination; for example, after MDA has been halted in some but not all areas. Development of PVS strategies can also contribute to the validation or verification dossier development and, in cases where the country has already been validated or verified, PVS implementation is critical to ensure that the country maintains its gains.

   — Is this the right time for your country to start planning for PVS? Is one of the following true?*

   - a) The country (or a subnational area) is in the post-treatment surveillance period;
   - b) The country is in the process of preparing its elimination dossier;
   - c) The country has already submitted its elimination dossier but has not yet implemented PVS.

   * Note that if surveillance is intended to be implemented at the subnational level, then only a) applies.

2. **Resources:** Implementing this toolkit and developing an integrated PVS plan will require time, effort and commitment from the NTD programme. Review the expected time outlined in the toolkit overview (Fig. 2) to confirm you and your team have capacity to conduct this planning process.

   — Do you have sufficient time and personnel to allocate to this planning process? These resources would need to cover activities from the Start-up phase until the Plan phase outlined in Fig. 2.

- If not, do you have resources, or access to resources, to hire a consultant for some aspects of the process (i.e. the desk review in the Gather phase and the stakeholder consultations in the Plan phase)? Or do you have an implementing partner that can support these aspects of the process?

3. **Ministry of Health support:** High-level buy-in from the MOH is essential to the integrated PVS planning process. Their support will help facilitate coordination and collaboration with other health programmes and MOH departments, which may help mitigate challenges when planning for implementation of integrated surveillance at both the national and subnational levels. Engaging leadership at the right level will provide broader oversight, ensuring the integrated PVS aligns with national health priorities, while also addressing the specific needs of subnational areas, particularly those where implementation will begin. Before proceeding, determine whether coordination is needed at both national and subnational levels, even if the initial implementation is intended for a specific subnational area. This will help to ensure alignment between national policies and subnational implementation, avoiding duplication of efforts and ensuring scalability.

   — Have you received the approval and buy-in of higher-level ministry staff at the level of the Permanent Secretary, Head of Communicable Diseases, or equivalent, as well as relevant subnational authorities where applicable?

4. **Data availability:** To use this toolkit, you will need access to maps of endemicity as well as information on the characteristics of the NTD in the country, including vectors, parasite species, distribution of infection by age, high-risk populations and diagnostic methods available. This information is generally requested for development of the elimination dossier.

   — Do you have access to maps of endemicity and other associated data for your target NTD(s)?

   — Do you have access to information on surveillance systems being implemented by other (non-NTD) health programmes and MOH departments that could be leveraged for NTD surveillance?

   — If you do not already have access to any of this information, do you know who you would need to contact in order to obtain it?

If all of the boxes have been checked for the questions above, the NTD programme is ready to start planning for integrated PVS of the target NTD. If the programme has any unchecked boxes, they should address those gaps before proceeding with the toolkit.

## Step 2. Establish an Integrated PVS Steering Group.

To facilitate the implementation of the toolkit and ensure consistent coordination and buy-in across key stakeholders, it is recommended that countries establish an Integrated PVS Steering Group (steering group) consisting of 5–10 members. The chair of the steering group is usually the NTD programme manager or another senior NTD programme official. Below are the steps to be taken to establish the steering group.

1. **Identify key stakeholders to join the Integrated PVS Steering Group.**

   The steering group should be composed of approximately 5–10 members including the following individuals:

   — NTD team members to drive the work forward (1–3 people)

   — Champions of integrated surveillance work within the MOH (1–2 people)

   — Representative of laboratories involved in target NTD activities (1–2 people)

- Representatives of key partners involved in eliminating or implementing surveillance of the target NTD (one per organization)
- A surveillance officer from the MOH who is not from the NTD programme (one person)
- A WHO country office representative, as an adviser.

2. **Outline the purpose and terms of reference for the Integrated PVS Steering Group.**

   The steering group will perform six main roles in the development of integrated PVS for the target NTD:

   - Lead the use of the integrated PVS toolkit and the step-by-step integrated PVS planning process.
   - Provide technical input and feedback.
   - Facilitate connections with relevant government agencies involved in surveillance systems or health surveys that may be identified for integration.
   - Participate in all processes related to evaluating potential for integration.
   - Provide information and guidance on proposed PVS activities.
   - Ensure smooth and effective communication among stakeholders.

   Annex 1 includes sample terms of reference for a steering group and Annex 2 a sample invitation letter that can be edited and sent to prospective members of the steering group.

   **It is imperative that steering group members review this document**, or are familiarized with a summary of the toolkit process, before the first meeting. This will avoid confusion and save considerable time and energy during the toolkit's implementation.

3. **Schedule a first official (kick-off) meeting.**

   This meeting will serve as an opportunity to present an overview of the integrated PVS planning process, discuss expectations of the steering group and review the proposed timeline for implementation. If time allows, this may also be an opportunity to discuss and validate the characteristics of an ideal PVS system for the target NTD. Annex 3 includes a sample agenda and web tool 2a a sample slide deck for this meeting.

## Step 3. Conduct preliminary stakeholder mapping.

An initial stakeholder mapping exercise should be conducted and revised regularly throughout the process. The purpose of the mapping is to identify key departments in the MOH, parastatal entities (such as public health institutes) and outside organizations (such as nongovernmental organizations) that are involved in the design and implementation of disease surveillance systems that could overlap with the populations and endemic areas of the target NTD. Potential stakeholders include representatives of other NTD programmes, vector-borne disease control programmes for diseases such as malaria, other non-NTD disease programmes (e.g. HIV or vaccine preventable disease programmes),

**Types of stakeholders to engage:**

- *Ministry of Health leadership*
- *Target NTD programme*
- *Implementing partners*
- *Other NTD programmes*
- *Non-NTD disease programmes (i.e. HIV, malaria and vaccine preventable diseases)*
- *Health promotion programmes (i.e. WASH and nutrition)*
- *National reference laboratories*
- *Routine public health surveillance departments (i.e. epidemiology or surveillance units or emergency operations centres)*
- *Public health institutes*
- *Other government partners (i.e. education department)*

national reference laboratories and routine public health surveillance departments (i.e. epidemiology or surveillance units or emergency operations centres).

Stakeholder engagement should be considered an ongoing effort, so the steering group should continue to bring in relevant stakeholders as needed throughout the toolkit phases. Early inclusion of these groups will facilitate the identification of potentially compatible surveillance systems for integration and will assist with engagement later in the process once compatible systems to integrate with have been identified. As the process evolves, continuous stakeholder review will ensure that new, relevant entities are included as their expertise or resources become essential.

# Gather

## *Purpose and overview*

The purpose of the Gather phase is three-fold: to collate all relevant information about the target NTD to identify the attributes of an ideal PVS system; to collect information on existing or proposed surveillance systems that may be suitable for integration; and to compare PVS needs with the characteristics of existing or proposed surveillance systems to find those that are potentially compatible with PVS for the target NTD. The Gather and Synthesize Excel tool (web tool 1) will help organize information and facilitate identification of potentially compatible surveillance systems.

To begin the Gather phase, the elimination dossier (if drafted), the national NTD master plan or equivalent strategy document for the target NTD, and any previously compiled data on the target NTD pertaining to current surveillance methods, should be available. The preliminary stakeholder mapping conducted during the Start-up phase will allow other surveillance system leads within the MOH to be contacted to help complete the *Other systems* sheet in the Gather and Synthesize Excel tool as needed. Under the leadership of the steering group, the Gather phase could be conducted with the help of a well-connected national level consultant or external partner, or by programme staff within the MOH who are familiar with multiple disease surveillance programmes in the country. Instructions for completing the Excel tool can be found in the Gather and Synthesize Excel Tool user guide (Annex 4).

## *Approach*

### Step 1. Conduct a desk review.

Documents and data to be reviewed include the NTD elimination dossier (if drafted), NTD master plan or country road map, regional WHO data portals and reports on epidemiology or MDA coverage, as well as any post-MDA surveillance conducted for transmission assessment surveys (TAS). These materials will be used to begin refining the characteristics of an ideal PVS surveillance system using the Gather and Synthesize Excel tool's *Reference* sheet.

The steering group should confirm that all available materials have been collected before moving forward with the Gather and Synthesize Excel tool.

### Step 2. Align on the characteristics of the ideal PVS system for the target NTD.

To determine the most appropriate integrated PVS system, the steering group should start by defining the characteristics or attributes of an ideal surveillance system – even if this is currently hypothetical – for the target NTD as if it were to be developed for that NTD alone. The epidemiology of the target NTD in the years prior to elimination will determine the geographical areas, age groups, high-risk populations, vector species and sample types that would define the characteristics of an ideal PVS system for this NTD. The ideal PVS system for the target NTD may vary within the country. If this was not covered during the steering group's kick-off meeting, the group should re-convene to discuss these characteristics and come to a consensus on the ideal PVS system for the target NTD.

Some key questions to guide this discussion include:

- **Vector/parasite**
  - What vector species transmits the target NTD in the country? Does it vary by region?
  - Would vector-based surveillance be an important component of the ideal PVS system?
- **Geography**
  - Which parts of the country should be considered for surveillance? How should the areas be prioritized? For LF, consider using the WHO *Post-validation surveillance district prioritization tool (7)*.
  - How many parts of the country need to be covered to gather sufficient data for effective surveillance?
  - Should surveillance be implemented at the administrative 1 level (i.e. province), administrative 2 level (i.e. district), etc.?
- **Population**
  - What is the human target population in which to conduct surveillance of the target NTD?
  - What age groups would have never received MDA?
  - What age groups/gender historically had the highest infection prevalence?
  - Are there any sub-populations that historically experienced higher rates of infection than the general population?
- **Sample collection**
  - What type(s) of sample should the ideal PVS system collect (i.e. blood – whole or serum, vector, stool, wastewater)? For additional considerations regarding integrated serosurvey collections, reference the *Toolkit for integrated serosurveillance of communicable diseases in the Americas (8)*.
  - If considering vector surveillance, what vector collection method would work best for the ideal PVS system?
  - When should the ideal PVS system collect samples (i.e. particular season or time of day)?
  - How frequently should the samples be collected for effective surveillance?
  - Is there a minimum sample size that would be needed for effective surveillance?
  - How many samples should be collected in a given year/campaign/area for effective surveillance?
  - How long would sample collection continue for as part of the ideal PVS system?
- **Commodities**
  - What diagnostic tests would be needed to detect the target NTD in the field? How will these tests be procured?
  - Do the diagnostic tools require specialized training to use?
  - What treatment would ideally be provided to people with identified infections of the target NTD? How will these treatment commodities be procured?
  - Who else should be tested or treated if a person with a confirmed infection is identified (household, surrounding households, etc.)?
  - Based on the surveillance activities discussed, what laboratory tests would need to be conducted for effective surveillance?
  - Is specialized training required to process those tests?
  - What tests, reagents or specialized equipment are needed for laboratory testing? How will these tests or reagents be procured?

Please reference Annex B of the *Integrated disease surveillance and response technical guidelines, third edition (4)* for more details on assessing surveillance and response options. Once the steering group has reached consensus on the ideal attributes of the PVS systems by region of the country, they are ready to proceed to the next step and enter those agreed upon characteristics into the Gather and Synthesize Excel tool.

### Step 3. Complete the Gather portion of the Gather and Synthesize Excel tool.

Once all available documents have been assembled and consensus on the ideal PVS system for the target NTD has been established by region or district of the country, the Gather and Synthesize Excel tool should be used to guide retrieval of needed information. This tool is a macro-enabled Excel workbook that documents the characteristics for an ideal NTD PVS surveillance system and collates relevant characteristics of existing surveillance systems that could be leveraged for integrated PVS. The tool combines this information to generate an initial qualitative overlay that highlights the existing systems that are most closely matched with the surveillance requirements of an ideal NTD PVS system, visually demonstrating opportunities for an integrated NTD PVS system. Instructions for completing the Gather portion of the Gather and Synthesize Excel tool can be found in the Gather and Synthesize Excel tool user guide (Annex 4).

Once the Gather portion of the Excel tool has been completed, it is recommended that the steering group convene a follow-up meeting to review the data collected in the tool. This will enable the steering group to identify any additional stakeholders to meet with or any existing surveillance systems that have been considered. They should also validate the accuracy of the data that have already been gathered prior to the Synthesize phase.

# Synthesize

## *Purpose and overview*

The purpose of the Synthesize phase is to review and synthesize the information collected during the Gather phase to develop a shortlist of potentially compatible systems that could be leveraged for an integrated PVS system for the target NTD. The Synthesize phase starts with a subset of the surveillance systems considered to be the most feasible for integrated surveillance. This smaller list of the most compatible surveillance systems from the Gather phase qualitative overlay in the *Other systems* sheet of the Gather and Synthesize Excel tool are those with the most green-coloured characteristics.

The Synthesize phase uses a selection of variables from the Gather and Synthesize Excel tool *Other systems* sheet to generate a quantitative estimate of the comparative feasibility of integrating PVS for the target NTD with existing or proposed surveillance systems. This translation from qualitative to quantitative evaluation will occur using automatic inputs from the completed *Other systems* sheet, requiring minimal additional input while maintaining flexibility for potential adjustments.

## *Approach*

### Step 1. Convene a workshop to complete the Synthesize phase.

The steering group should convene an in-person workshop to complete the Synthesize phase; a planning guide is included in Annex 5. Participants should include members of the steering group, other key officials identified during the stakeholder mapping exercise, and relevant non-NTD stakeholders such as data managers and system administrators. Additionally, the WHO country representative and the WHO regional focal point for the target NTD should be sent an official letter of invitation from the MOH. It is recommended to share this invitation as soon as the workshop date is set, at least 3 weeks before the date chosen for the workshop to begin. When choosing the date for this workshop, it is important to ensure that there are no conflicting department or ministry-wide meetings scheduled for those dates, as full participation from all stakeholders is critical to the success of the workshop.

The amount of time needed for this workshop will depend on the approach chosen by the steering group. During the pilot phase for this toolkit, a 2-day workshop was convened to complete both the Synthesize and the Assess phases. Many participants noted that a longer workshop may have been more successful. However, each steering group convening these workshops must weigh the costs and benefits of different workshop structures against their own budgetary needs.

All participants should receive relevant background details on the goals and expectations of integrated PVS of the target NTD. This will be facilitated by sharing background materials as described in the Synthesize and Assess workshop handout (Annex 6) to all attendees in advance of the meeting. A sample agenda (Annex 7) and template slide deck with recommended discussion points (web tool 2b) are included in this toolkit.

The workshop attendees should use the information collected in the Gather phase to complete the Synthesize portion of the Gather and Synthesize Excel tool (web tool 1), following the instructions in the Gather and Synthesize Excel tool user guide (Annex 4). As the Excel tool is completed, detailed notes should be taken to qualify the major points of decision, so that stakeholders who are unable to attend are provided with clear context as to why and how key decisions were made.

# Assess

## *Purpose and overview*

The purpose of the Assess phase is to assess the potentially compatible surveillance systems shortlisted during the Synthesize phase and determine the best surveillance system or combination of systems with which to integrate the targeted NTD(s) for PVS. During the Assess phase, the steering group will review the shortlist of potentially compatible systems identified during the Synthesize phase and gather additional information such as key enabling factors that could facilitate or inhibit successful integration (i.e. system compatibility, feasibility of integration and relative cost of integration). Using a strengths, weaknesses, opportunities and threats (SWOT) analysis, the steering group will identify and assess possible systems or combinations of systems that meet WHO guidance for PVS of the target NTD and offer the best chance of detecting signals that could indicate recrudescence of the target NTD in PVS settings. Once the final selection of surveillance system(s) to integrate with has been made, a gap analysis will be conducted to determine if any additional dedicated surveillance activities or resources are needed to ensure a comprehensive and effective PVS system for the target NTD.

## *Approach*

### Step 1. Gather additional information about the shortlisted surveillance systems.

Using the below categories as a guide, the steering group should gather additional information on the shortlisted systems by leveraging local knowledge, anecdotal information and other relevant sources not incorporated during the Gather phase.

### *Data quality*

Data quality plays a key role in accurate and early detection of a disease transmission signal. A surveillance system that maintains high-quality data across priority geographies for the target NTD would be better positioned for reliable early detection of resurgence. Consider the following questions when assessing the consistency and reliability of data generated by the system.

- Do the surveillance units from the priority geographies consistently report to the surveillance system?
- Does the surveillance system regularly capture full and complete data for its current surveillance targets in the priority geographies identified for the target NTD?
- Are there regular data quality audits to ensure surveillance data are accurate and complete?
- Do the data quality audits report an acceptable level of accuracy and completeness?
- Are the data collected by the surveillance system easily accessible through an electronic data capture platform?

— Can the data management system incorporate the additional data points needed for PVS of the target NTD?

While no system is perfect, knowing the relative reliability of each system being considered for integrated PVS will help inform the final selection of system(s) to integrate with.

## *Quality and consistency of implementation*

An effective integrated PVS system for the target NTD will build on existing systems that are reliably and consistently implemented in accordance with the cadence and geographical footprint outlined in its protocols and standard operating procedures (SOPs). Factors that impact implementation consistency include availability and transportation of human resources and supplies, conflict or environmental disasters and financing. Adequate financing is essential for the establishment and maintenance of an integrated surveillance system. When assessing the quality and consistency of implementation, consider the following questions.

— Does the surveillance system have sufficient and stable resources to implement the full scope of activities in its stated geographies?

- Are there any ongoing or anticipated disruptions to surveillance activities in priority geographies for the target NTD (i.e. insufficient resources, conflict, environmental disasters)?
- Does the surveillance system routinely implement surveillance activities in accordance with its predetermined cadence?
- Are staff trained regularly on the surveillance implementation plans?
- Is there sufficient supervision of the surveillance system (quality control checks, etc.) to ensure the activities are being implemented in accordance with the system's SOPs?

A system that does not meet the criteria outlined in this section should not be ruled out immediately. These are attributes that can be improved with proper resourcing and investment. However, for the purposes of PVS planning, any limitations in quality or consistency of implementation for a given system should be taken into account when comparing it with other potentially compatible systems.

## *Laboratory capacity and ability to transport, store, and analyse samples*

Depending on the NTD, an ideal PVS plan may include various types of sample collection, including both human and vector samples. Consider the following questions when assessing whether a surveillance system has (or would be able to build) sufficient laboratory capacity and ability to transport, store and analyse the appropriate samples.

If the PVS system calls for analysis of human blood samples, consider the following questions.

— Does the surveillance system currently collect human blood samples (i.e. for thick blood smears, TBS)?

- If yes:
  - Does the system have a reliable method for providing supplies and rapid diagnostic tests (RDTs) to data collection points routinely?
  - Does the surveillance system have a reliable method for transporting and storing human blood samples?
  - Does the laboratory processing the samples have sufficient capacity and resources for regular analysis of the existing samples?
  - Could the same laboratory be used for analysis of the samples needed for PVS of the target NTD?
- If no:
  - Is the surveillance system a wet system (i.e. does it already collect other biological specimens)?
  - Could the system be adapted to incorporate the collection of human blood samples?

- Is there interest and flexibility from the department that runs the surveillance system to adapt the system to incorporate collection of human blood samples?

If the PVS system calls for analysis of vector samples, consider the following questions.

— Does the surveillance system currently collect the relevant vector samples?

- If yes:
  - Does the system have a reliable method for providing supplies and equipment to appropriate data collection points routinely?
  - Does the surveillance system have a reliable method for transporting and storing samples?
  - Does the laboratory processing the samples have sufficient capacity, equipment and resources for regular analysis of the existing samples?
  - Could the same laboratory be used for analysis of the samples needed for PVS of the target NTD?
- If no:
  - Does the surveillance system collect other vector samples?
  - Does the surveillance system collect any vectors that are non-targets for the current surveillance activities but would be relevant for PVS of the target NTD?
  - Does the entomological surveillance team have the capacity to collect vector samples for the target NTD, in addition to their current activities?

## *Sustainability*

The sustainability of the existing system is an important consideration when finalizing the selection of surveillance systems to integrate with. If an existing system is likely to be disrupted or discontinued before PVS activities are completed, it may be unwise to spend time and resources integrating activities into that system. Potential reasons for disruption include changes in funding sources, anticipated cessation of funding, disease elimination or health demographic changes that would render the system unnecessary. Consider the following questions when assessing the sustainability of the potential system to integrate with.

— Is this surveillance system monitoring a disease that is approaching elimination?

— Does the surveillance system have sustainable and regular funding?

— Are there any anticipated disruptions in the system between now and the end of PVS for the target NTD (i.e. a 10-year period for LF)?

## *Anticipated cost of integration*

While the specific changes needed and associated costs of integration will be detailed in the Plan phase, the relative cost of integrating new activities for PVS of the target NTD into the existing surveillance system is likely to influence the final selection of system(s) and should therefore be reviewed during the Assess phase. The steering group should conduct an initial review of any potential changes to be made to each shortlisted surveillance system in order to incorporate the new activities, evaluate the relative costs for each option and determine if resources are available to cover those costs. Significant initial investment may be required to strengthen laboratory capacities, data systems and human resource capacity if the system is not already equipped with the necessary capacities.

— What would it cost to make the necessary adjustments to a given surveillance system to accommodate PVS activities for the target NTD? *Consider the changes that would need to be made to the existing system in order to incorporate PVS activities for the target NTD. For each change, consider the implication in terms of personnel costs, administrative costs, transportation costs, laboratory operations costs and commodities costs.*

- If the system requires a change in the type of sample or data being collected in order to incorporate PVS of the target NTD, what would it cost to make those changes to the existing surveillance system?
- If the system requires changes to extend the existing surveillance system's geographical coverage in order to incorporate PVS of the target NTD, what would it cost to make those changes to the existing surveillance system?
- If the system requires changes to the target population in order to incorporate PVS of the target NTD, what would it costs to make those changes?
- If the system requires changes to the sample size in order to detect a true signal of recrudescence for PVS of the target NTD, what would it costs to make those changes?
- If the system requires changes to the timing and frequency of surveillance activities in order to incorporate PVS of the target NTD, what would it costs to make those changes?
- What would it cost to establish a direct link to action when a recrudescence signal is detected for the target NTD as part of the existing surveillance system?

### *Strategic alignment and buy-in from existing programmes*

Strategic alignment and buy-in for integrated surveillance from non-NTD programmes and departments that manage the existing surveillance systems will be essential for smooth and effective integration. While some of this alignment and buy-in can be encouraged by leaders from the MOH who sit on the integrated PVS steering committee, this stage in the process should be used to think through any major roadblocks that might disrupt or delay the plans for integrated PVS. Consider the following questions:

- Does the other programme team see the value of integrated surveillance and appreciate how it will improve the health system overall?
- Has the other programme expressed interest in integrating PVS for the target NTD into their system?
- Has the other programme been responsive to questions throughout this process?
- Is there any anecdotal information worth noting on the relative ease of working with the other programme?

Once the steering group has gathered this additional information for their shortlisted surveillance systems, the steering group should review any available WHO guidance for PVS of the target NTD, as well as the agreed upon outline of the ideal PVS system. Using those sources as a guide, the steering group should identify the single system or possible combinations of the shortlisted surveillance systems that would meet the WHO guidance for PVS and address the different aspects of the ideal PVS system.

## Step 2. Outline possible combinations of systems that meet available WHO PVS guidance.

Some NTDs may require only one type of surveillance system for effective PVS. This is the case for human onchocerciasis under the current WHO guidance established in 2016. For others, including LF, WHO guidance calls for collecting multiple types of data to effectively survey for reintroduction or recrudescence (Table 1).

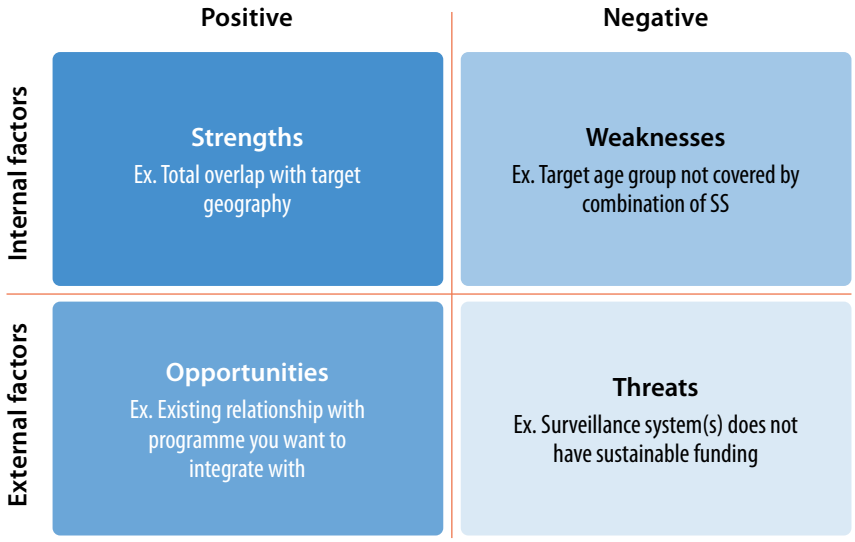
**Table 1.** **WHO guidance for PVS of onchocerciasis and lymphatic filariasis as of June 2025**

| PVS guidance for human onchocerciasis |
|---|
| WHO recommends that a post-elimination surveillance system be set up to "detect possible renewal of parasite transmission both in previously endemic and in non-endemic areas as well as in areas where imported cases might be expected to occur *(5)*. The guidance recommends conducting entomological assessments using the O-150 PCR with *Onchocerca volvulus*-specific deoxyribonucleic acid probes to determine the absence of infective-stage larvae of *O. volvulus* in the vector population. |
| **PVS guidance for LF** |
| Guidance for LF PVS can be found in the second edition of the M&E manual for national elimination programmes and is summarized below *(6)*. PVS for LF should start in areas that have passed TAS3 or IIS3 prior to achieving the criteria for elimination as a public health problem nationally. Ideally, LF PVS should be integrated with surveillance strategies on existing platforms. Surveillance should be prioritized in areas that were previously under MDA and are considered to be at greatest risk of recrudescence. A combination of at least two of the following four platforms should be used: (i) health facility screenings, (ii) existing standardized surveys, (iii) molecular xenomonitoring and (iv) surveys targeted to high-risk areas or high-risk groups. Activities aim to detect a signal, defined as detection of a LF biomarker that alerts the programme that transmission may be continuing in a community. The response to signals depends on the surveillance platform used and the type of signal identified. A signal warrants treatment of infected individuals and a follow-up survey or targeted treatment of communities. |

## Step 3. Conduct a SWOT analysis to select the most appropriate combination of surveillance systems to integrate with.

A SWOT analysis evaluates a project or activity based on four key factors that can be divided into two categories: internal (strengths and weaknesses) and external (opportunities and threats). This toolkit uses a SWOT analysis to evaluate a single system or combinations of surveillance systems to identify the system or combination of systems that best meets the PVS requirements for the target NTD in the country or subnational implementation area (Fig. 3).

**Fig. 3.** **Sample SWOT analysis**




Ex: example; SS: surveillance systems.

A separate SWOT analysis should be conducted for each system or combination of systems identified by the steering group in the previous step. Review the SWOT analyses side by side to determine which system or combination of systems is most appropriate to meet the needs of the target NTD. The most appropriate system or combination of systems will maximize sustainability, geographical and population coverage, and depth of information attained for PVS of the target NTD, while minimizing the costs of integration.

To conduct the analyses, the steering group should complete empty versions of the SWOT matrix shown in Fig. 3, clearly outlining the strengths, weaknesses, opportunities and threats of each system or combination of systems. To assist with this analysis, the steering group should review the level of compatibility and overlapping characteristics identified in the Gather and Synthesize phases, as well as the additional characteristics explored in Step 1 of the Assess phase above.

SWOT considerations are described in more detail below.

## *Internal factors*

Internal factors are the aspects of the surveillance system or combination of systems that are within the control of the system managers. They include resources, capabilities, skills and assets. These factors can be further divided into strengths and weaknesses.

- **Strengths**: Identifying the strengths of a surveillance system helps leverage existing resources and capabilities. It allows assessment of the advantages or unique benefits of a particular system or combination of surveillance systems over other systems or combinations. Perhaps one system covers one half of the target geography, and the second system covers the rest. Independently, covering only half the target geography would be seen as a weakness or limitation, but, taken together, the combined coverage is seen as a strength of that combination of systems.

  Question to consider for this box:

  - What makes this particular system or combination of systems an ideal match for PVS of the target NTD?

- **Weaknesses**: Weaknesses are the negative attributes of the system or combination of surveillance systems that would limit the effectiveness of an integrated PVS plan. These are aspects of the systems that are possible to overcome, but would require additional time, resources and effort to address. One example would be if the system or combination of surveillance systems does not currently collect the correct type of samples from the target population, but it would be feasible to add an additional sample collection because the systems are already set up for managing biological samples.

  Questions to consider for this box:

  - What aspects of the system or combination of systems are not currently a good match for PVS of the target NTD?
  - What changes would need to be made to the existing system(s) in order to integrate PVS of the target NTD?

## *External factors*

External factors are the aspects of the surveillance system or combination of systems that are outside the control of the surveillance system managers. These can include demographic health trends, possible cessation of funding or the level of commitment from integrating partners. These external factors can be divided into opportunities and threats.

- **Opportunities**: This section captures favourable conditions that could be used in support of the integrated PVS plan with a particular system or combination of systems. For example, using a school-based surveillance platform for onchocerciasis PVS may present an opportunity to help consolidate school-based health programmes. This opportunity could be used to garner additional support for integration or advocate for additional resources to help implement the integrated PVS system.

  Question to consider for this box:

  - What unique opportunities does this system or combination of systems present that might make it more advantageous to integrate into these systems?

— **Threats**: Threats are unfavourable situations or conditions that could jeopardize the combination of surveillance systems. These are risks or challenges that the steering group should be aware of but may not fully be able to avoid. For example, even if a system is highly compatible and is considered the right system to integrate with, there may be a threat of overloading that system and diminishing its efficacy for its current surveillance activities.

Question to consider for this box:

- What external factors related to the system or combination of systems might threaten the quality and consistency of data from the integrated PVS plan (i.e. sustainability, quality and consistency of implementation, level and consistency of resourcing)?

### *Review of the SWOT analyses and final selection*

Once SWOT analyses have been conducted for each of the combinations of systems under consideration, the steering group will review the analyses side by side and vote on the preferred combinations of systems to integrate with. Once the final selection has been made, a final gap analysis will be conducted, as outlined in step 4.

## Step 4. Conduct a final gap analysis of the selected surveillance systems or combination of systems.

Once the final selection has been made, the ideal integrated PVS system outlined in the Gather phase should be revisited along with the previously noted WHO guidance in Table 1 to determine if there are any critical aspects of the PVS system not met by the final selection of surveillance system(s) to integrate with. To support this gap analysis, consider the following questions:

Does the selected system or combination of surveillance systems:

— Collect the right type of data in accordance with the ideal PVS system?

— Collect the data in sufficient quantity and quality in line with the ideal PVS system?

— Collect the data at an appropriate cadence in accordance with the ideal PVS system?

— Collect adequate data across the target geography outlined in the ideal PVS system?

— Collect adequate data from the target population outlined in the ideal PVS system?

If the answer is no for any of these questions, it may be necessary to develop a dedicated surveillance activity for the target NTD to gather the additional data needed and supplement the data collected through the integrated PVS system.

# Plan

## *Purpose and overview*

Once one or more existing or planned surveillance system(s) has been selected for integration with the target NTD, the steering group must develop an actionable integrated PVS plan. The purpose of the Plan phase is to develop the integrated PVS plan.

During this phase, the steering group should be expanded to include a wider group of stakeholders, including those who implement or oversee the selected system(s), and take on the broader responsibilities of implementing an integrated surveillance system for the target NTD. The group should meet multiple times to discuss the changes needed to integrate surveillance of the target NTD into the selected surveillance systems, agree how and when those changes will be implemented, and establish roles and responsibilities for managing integration. These decisions should be documented in the integrated PVS plan.

The steps below can be used to develop the integrated PVS plan; the example sub-steps may be useful for achieving each primary step. A country should consider these steps for each potential surveillance system to be integrated. This may require the steering group to repeat the process of planning separately with stakeholders for each surveillance system if more than one system is being leveraged for PVS, as would be the case for programmes following the WHO guidance on PVS for LF *(6)*.

The final integrated PVS plan, validated by key stakeholders, is the output of this phase and should include guidance on critical integration details such as who will do what, by when and using which methods to facilitate integration of the selected surveillance systems. An outline of an integrated PVS plan can be found in Annex 8.

## *Approach*

### Step 1. Expand the Integrated PVS Steering Group.

Once the surveillance system(s) have been selected for integration, the steering group should be expanded to include key stakeholders associated with the selected surveillance system(s). Stakeholders may include various departments of the MOH, including the departments responsible for training of staff engaged in collecting surveillance data; supervision of surveillance staff; data information systems; data analysis and reporting. Stakeholders outside the MOH could include parastatals, such as national public health institutes, or implementing partners, such as nongovernmental organizations, who are responsible for collection or analysis of surveillance data. The WHO NTD focal point should continue to serve as an adviser for the steering group.

The steering group should send invitations to new members introducing the role of the group and the previously established TOR. New steering group members should expect to perform four main roles in the development and implementation of the integrated PVS plan for the target NTD, namely:

- validating the information used to select the surveillance system(s);

- contributing technical input to draft the integrated PVS plan;
- providing detailed information and instructions for the implementation of integrated PVS activities; and
- ensuring smooth and effective communication among stakeholders.

Once they have accepted, new members should be oriented to the overall integrated PVS planning process, the progress made to-date and the proposed timeline for implementation.

## Step 2. Outline and agree on any proposed changes to the selected surveillance system(s).

Any plan for successful integration of two or more diseases in a single surveillance system will entail changes or additions to the existing system(s). The steering group should clearly outline these changes so that each necessary step towards integration is understood by decision-makers within all of the integrating surveillance systems. This can be done through a series of Plan phase consultations with key decision-makers.

To prepare for the Plan phase consultations, the steering group should develop an agenda and slide deck to guide the discussions. A sample slide deck for these consultations is available as web tool 2c and can be adapted based on local contexts. The agenda for the consultations may include the following:

1. Review of the integrated PVS planning process to-date and the key reasons driving the selection of surveillance systems to integrate with.
2. Presentation of the current limitations of the systems and proposed changes to allow for integration of surveillance.
3. Discussion and alignment on the proposed changes for the surveillance systems in question.

In addition to discussions with key decision-makers, the steering group may also wish to consider engaging broader stakeholders who may have a role to play in the successful implementation or management of the integrated PVS system. For example, if reintroduction through cross-border transmission of the target NTD is of particular concern, the steering group should organize a consultation with cross-national stakeholders to discuss the best ways to coordinate disease surveillance activities.

### *Framing questions to guide the discussions on proposed changes to the existing systems*

Many of the possible changes that may need to be made to an existing surveillance system to include surveillance for the target NTD will depend upon the output of the preceding Synthesize and Assess phases. To keep these potential changes organized, it may be useful to organize the Plan phase consultations around a list of crucial questions:

- **What?** i.e. what changes may need to be made to the type of samples or data collected in the existing surveillance system to make it useful for the target NTD?
- **Where?** i.e. what changes may be needed to extend the existing surveillance system's coverage to make it compatible with the target NTD?
- **Who?** i.e. what changes may need to be made to the existing surveillance system's target population to make it compatible with the target NTD?
- **How many?** i.e. what changes may need to be made to the existing surveillance system to collect however many data points will be required to detect a signal of recrudescence for the target NTD?
- **When?** i.e. what changes may need to be made to when surveillance activities will occur and with what frequency?

- **What then?** i.e. what changes may be needed for the existing surveillance system to establish a direct link to action when a recrudescence signal is detected for the target NTD?

When considering these questions, the steering group should plan for the proposed changes as well as both the potential barriers to implementing those changes and the potential magnitude of costs associated with making them. While a fully detailed budget is not necessary in the Plan phase, a general understanding of what changes will be more, less or equally expensive than existing surveillance system activities will be beneficial for comprehensive stakeholder engagement.

Each of the changes proposed during this section of the Plan phase should reference existing WHO guidance on PVS for the target NTD wherever possible to ensure that the integrated PVS system operates to the highest possible international surveillance standards.

### *What?*

First, determine what changes may need to be made to the type of samples or data collected in the existing surveillance system in order to incorporate PVS of the target NTD. If new data need to be collected at the various data collection points for the existing system, it is important to consider the logistics and costs for incorporating new sample collection.

- **Barriers:** What are the likely barriers to adding additional types of samples or data collection to the existing surveillance system(s)? These might include sample collection, storage, transportation or analysis.

- **Likely costs:** Are the costs associated with making these changes likely to be significantly higher, lower or similar to the costs of existing surveillance system activities in their current geographies? Costs to consider may include trainings, supply of commodities and equipment needed to conduct new data collection methods; transportation costs for safely transporting collected samples to the appropriate laboratory facilities; laboratory training, supply of commodities and equipment costs to process those samples; and costs for adjusting existing data collection forms or databases to incorporate new data.

### *Where?*

Determine if the geographical areas included in the existing surveillance systems are sufficient to ensure full surveillance coverage of target geographies. If existing systems need to be extended into new geographies, this would likely be very expensive, and characterizing the costs associated with such a move would be an important step to determining feasibility. These costs would likely derive primarily from ensuring that commodity distribution networks and programme staff are adequately prepared to support surveillance activities in all targeted geographies. It will also be important to determine whether different areas of a country or within a subnational implementation unit require unique integration approaches. In addition, it is important to consider what, if any, cross-border coordination needs to be in place to prevent reintroduction.

- **Barriers:** What are the likely barriers to extending existing surveillance systems to new geographies? These may include logistical barriers such as the establishment of commodity networks, personnel barriers including the hiring of new programme staff, or security barriers for extending into areas of conflict.

- **Likely costs:** Are the costs associated with making these changes likely to be significantly higher, lower or similar to the costs of existing surveillance system activities in their current geographies? Geographic changes are likely to be the most expensive type of change that could be made when extending existing surveillance systems. For this reason, major changes in geographical extent for existing surveillance systems are not recommended unless the MOH deems them to be necessary for extended NTD surveillance provision.

### *Who?*

The population included in a surveillance system is a critically important factor in the system's ability to detect an early signal of resurgence of an NTD. Thus, determining the target populations for the combined PVS system will be a key component of a fully outlined road map to implementation. Who gets targeted for surveillance will have an impact on what types of methods are used to conduct programme outreach, and any changes to the target population for

an existing surveillance system should be reflected in the training and sensitization materials distributed among health system workers to ensure that target populations are reached effectively. In practice, this may require the development of new manuals or SOPs for conducting community surveys in novel demographic settings during the Implement phase.

- **Barriers:** What are the likely barriers to extending existing surveillance systems to new target populations? These could potentially include barriers around the acceptability of surveillance activities in new populations, security barriers for reaching populations that experience armed conflict, or accessibility barriers for targeting hard-to-reach populations.

- **Likely costs:** Are the costs associated with making these changes likely to be significantly higher, lower or similar to the costs of existing surveillance system activities in their current target populations? Higher costs could potentially be incurred in overcoming barriers to accessibility for targeting hard-to-reach populations. For example, reaching these populations may require increased fuel and vehicle maintenance costs depending on the quality of roads near their locations.

### *How many?*

In addition to possible target population adjustments, the sample sizes collected by existing surveillance systems may need to be increased. For example, if a Demographic and Health Survey would normally collect 100 data points in a district but target NTD surveillance requires 1000 data points from the same survey apparatus, these additional data collections need to be taken into account to detail how the additional data will be collected, what resources will be needed to collect these data and what the timeline will be for making the necessary changes to existing data collection strategies.

- **Barriers:** What are the likely barriers to changing the number of data points collected by existing surveillance systems? Barriers may include finding the additional human resource capacity needed to collect and process large numbers of samples for expanded surveillance activities or financial barriers due to increased material costs.

- **Likely costs:** Are the costs associated with making these changes likely to be significantly higher, lower or similar to the costs of current data collection practices in the existing surveillance systems? While costs may be increased in order to collect more data points, economies of scale could potentially be leveraged to keep costs manageable while providing subsidiary benefits to other disease surveillance activities in the same area.

### *When?*

A consolidated schedule should be created with clearly defined cadences for each surveillance activity included in the integrated surveillance scheme. These cadences should ensure a frequency of data collection that conforms closely to the epidemiological needs of the target NTD under ideal scenarios, considers timing factors such as disease or vector population seasonality and nighttime parasite detection methods, and recognizes the realities of existing health system budgetary constraints. For example, if the ideal NTD surveillance system would be best served by integrating with an annual population survey, but the only one available in the proper implementation unit occurs every 4 years, it may be worth exploring whether a scaled-down biennial survey (once every 2 years) could be implemented as a middle ground approach while still benefiting from the existing survey apparatus.

- **Barriers:** What are the likely barriers to modifying when or how often data points are collected by the existing surveillance systems? These could include logistical barriers relating to overlap in timing with other scheduled population surveys or seasonality issues depending upon the integrating surveillance systems in question.

- **Likely costs:** Are the costs associated with making these changes likely to be significantly higher, lower or similar to the costs of existing data collection cadences? If all NTD data are collected during scheduled collection time points for the existing surveillance system, then this might not specifically incur additional costs.

### *What then?*

Once all the planned changes to the existing surveillance systems are implemented, it will be crucial to ensure that the integrated PVS system contains a direct link to action. This will need to be outlined by a response plan that provides a mechanism for confirming any signal detected by the surveillance system, as well as defining how treatments, preventive services or other response activities will be distributed in the event of a confirmed instance of target NTD recrudescence.

- Will active response teams be deployed to confirm signals by conducting additional surveys or targeted treatment?
  - What is the predetermined signal or threshold for action? For LF, refer to the predetermined thresholds of recommended epidemiological surveys before validation *(6)*. Consult WHO for platforms where thresholds may not have been established.
- Will existing community health workers have additional treatment commodities delivered to them?
- Will focal MDA activities be feasible or appropriate as a response to confirmed cases?

A general outline of the planned response activities and any additional resources needed for these activities should be estimated during the Plan phase consultations, as well as any need for enhanced protocols for surveillance in areas that have been identified as potential recrudescence hotspots. Guidance on full implementation details and protocol development are included in the Implement phase.

## *Facilitating consensus building around the proposed changes to the existing systems*

After the proposed changes have been outlined, it is important for the steering group to ensure that all primary stakeholders at the MOH are aligned with the proposed plan for integrated PVS for the target NTD.

During the Plan phase consultations, the list of proposed changes should be reviewed in consultation with representatives from the existing surveillance systems involved in the integrated PVS plan, with space for them to provide feedback and suggest revisions. This will create a feedback loop that allows stakeholders to have a participatory role in plan development, sharing contextual information on what changes will or will not be feasible in practice, as well as providing additional input on how to streamline or improve the integrated PVS system. This will also help to ensure collective buy-in for the final design of the integrated PVS system.

Once all proposed changes have been agreed upon in principle, they should be documented in the first section of the integrated PVS plan. In some contexts, it may also be relevant to document these commitments in a Memorandum of Understanding (MOU) between parties at the MOH, outlining the nature of the relationship between the involved departments. Further, having a point person for each department will facilitate the timely sharing of information and any future problem-solving processes.

### Step 3. Convene a Plan phase workshop to operationalize the agreed upon changes.

Once the necessary changes to each integrating surveillance system have been outlined, the steering group should organize a Plan phase workshop to discuss the logistics of how to effectively integrate surveillance of the target NTD into the selected existing surveillance systems and align roles and responsibilities. At a minimum, the group should discuss the internal system governance structures, clearly delineate stakeholder roles and responsibilities and include data analysis and share-out patterns. They may also want to include data-sharing and workflow agreements, as relevant. The group may also consider defining a legal framework and mandate for the integrated surveillance system, although a memorandum of understanding may be sufficient in many cases.

To prepare for the Plan workshop, the steering group should develop an agenda and slide deck to guide the discussion. The sample slide deck in web tool 2d can be adapted based on the context. The meeting agenda may include the following items:

1. Review the changes to the selected surveillance systems.

2. Brainstorm the key operational and logistical components of the integrated PVS plan.

3. Validate and finalize the components of the integrated PVS plan with the expanded steering group.

Finally, and once agreed with all key stakeholders, the operational approach should be documented in the integrated PVS plan, ensuring that each department involved in the integrated system clearly understands the cost-sharing, budgetary and logistical implications of the changes defined in the Plan phase.

## *Brainstorm topics for the operational and logistical components of the integrated PVS plan*

Below are several key discussion topics that should be included in the Plan phase workshop and documented in the final integrated PVS plan. For a more detailed list of potential operational considerations, please reference the matrix in Annex A (IDSR core functions and activities by health sector) in booklet 1 of the *Integrated disease surveillance and response technical guidelines, third edition (4)*.

### *Legal framework and governance structures*

If deemed necessary by the MOH, a consolidated legal framework should be identified that ensures all actions taken to conduct integrated PVS for the target NTD are within the scope of the ministry's authority. Any relevant laws, regulations or policies governing the programme should be referenced at this stage, as well as all ethical approval guidelines that apply to the use of population data for the country or implementation unit in question.

### *Roles and responsibilities*

A crucial aspect of the integrated PVS plan will be the assignment of roles and responsibilities for personnel within each department. Deciding who will be responsible for what element of the plan will allow for efficient problem-solving and identification throughout the PVS period. Each change to an existing system should have a point-person or department assigned to supervising its completion.

### *Data-sharing and analysis workflows*

The collection of new types of data will likely require changes to the data-sharing and analysis practices of the integrating surveillance system departments at the MOH. The steering group should draft guidelines for a data-sharing and data-management workflow, including how, with whom, when and at what frequency or periodicity data will be shared from the integrating surveillance system point of contact with the target NTD programme. This could include the drafting of regular reports, the direct file transfer of raw data or the granting of access to District Health Information System version 2 databases containing integrated surveillance information. These data-sharing considerations should be built into a consolidated data analysis plan that contains regularly scheduled data share-outs for the target NTD programme as well as the point of contact in each contributing surveillance system. Additional details on consolidated data-management planning can be found in the Implement phase.

### *Managing biological samples and ethical considerations*

Data collection under the joint surveillance system may involve shared management of biological samples. The shared management of samples between relevant programmes should be specified in the protocol, including where the samples will be stored, how they will be transported and who will analyse them. The various uses of the biological samples should also be clearly outlined in consent forms and other relevant documentation.

## *Monitoring and evaluation frameworks*

Concrete steps to measure the success of implementation must be included in the planning process. These steps should be focused on evaluating the process and function of the integrated PVS system, rather than solely on the surveillance data being collected. This framework should identify *how* success will be measured (i.e. detection of cases, cost savings, data quality and completeness of key indicators, decreased time from diagnosis to treatment), *when* progress will be measured against predetermined programme benchmarks (i.e. monthly, annually or via irregularly timed spot-checks), and *who* will be responsible for conducting these monitoring steps and disseminating the results. General considerations should be decided upon in the Plan phase, whereas guidance for full implementation details on SOP creation can be found in the Implement phase.

These evaluative steps should support iterative improvement, ensuring that issues in quality control or programme workflow are identified and resolved. Surveillance system managers may decide to use a template for monitoring each activity in the integrated PVS plan, ensuring that no elements of the plan are excluded from the cycle of evaluation and improvement.

## *Budgetary and cost-sharing arrangements*

Alignment on a resourcing strategy at this stage is essential to prevent future roadblocks to implementation arising from budgetary disagreements. Every change to the existing systems being integrated will likely require some cost element, either up-front during initial integration or down-the-line, to support ongoing activities such as data management, commodity sourcing or potential case response activities. Each of these cost elements needs to be agreed upon in principle by the integrating system leads so that everyone involved knows who will be paying for what and how these expenditures will be tracked and reported.

The WHO planning guide for quality health services *(9)* recommends that programmes seeking to create a resourcing strategy engage with ministry of finance, donor organizations, technical partners and related technical programmes to understand the resources needed and specify how those needs will be met, while making a conscious effort to build upon existing funding mechanisms wherever possible.

## *Timeline for implementation*

The integrated PVS plan should, at this stage, define a basic timeline for implementation of integrated PVS, ideally including a pilot period where the integrated system can be tested and iterated upon by the programme. This timeline should include specific milestones for integration and deadlines for achieving key activities and deliverables. If the future of PVS in a country or district is uncertain due to lack of clarity on future funding availability, building in regular check-in points to revisit the timeline post-implementation may be appropriate.

### Step 4. Develop an integrated PVS plan.

Following the Plan phase workshop, the steering group should document all the decision points in a written integrated PVS plan. The plan should summarize the approach agreed for PVS of the target NTD(s), outline the changes necessary to implement that approach effectively while leveraging the existing systems, and the operational and logistical details to guide implementation of the integrated surveillance approach. See Annex 8 for the integrated PVS plan outline, which provides a suggested framework for the plan. While this template offers a starting place, the final integrated PVS plan should be tailored to the country context and target NTD(s).

### Step 5. Finalize and gain high-level approval for the integrated PVS plan.

At this point, a comprehensive list of all proposed changes to existing surveillance systems for integration and the relevant operational frameworks to achieve them have been developed. They have been documented in the integrated PVS plan, with contributions and commitments from the key stakeholders on the steering group. The steering group should now complete a final review of the full plan to determine what, if any, areas are left to be addressed and consider what additional contingency plans should be developed for unforeseen changes or unexpected events that may impact the surveillance landscape.

## *Preparing for uncertainty*

While the plans developed to this point will be comprehensive, they will all likely rest upon certain assumptions regarding the landscape of both the target NTD under surveillance and the diseases whose surveillance systems are being integrated with. A crucial step in risk mitigation for the integrated PVS system will be to challenge these assumptions by developing a range of epidemiological and financial scenarios under which key parameters may vary substantially. For example, it may be prudent to create a broad outline for the continuation of integrated PVS for the target NTD under scenarios where funding declines over time, increases slightly or disappears completely. The same hypothetical exercise should be undertaken for any disease that an integrating surveillance system is intended to monitor. For example, if a PVS system is integrated with facility-based HIV surveillance, and HIV becomes substantially less prevalent in a target implementation unit, how would the programme respond to such a development?

## *Final assessment*

While it is unlikely that any one system identified for integration will perfectly align with every desired change for the target NTD PVS, the goal of the Plan phase is to make the best set of feasible changes to achieve the highest quality PVS system possible. To conduct a final assessment of the integrated PVS plan, the steering group should refer back to the Assess phase of the toolkit where they used SWOT analyses of the integrating surveillance platforms to identify weaknesses and threats for the proposed integrated PVS system.

- Have all the weaknesses been addressed?
- Has each threat been adequately mitigated to the utmost extent possible?

If not, the steering group should determine what additional steps can be taken to mitigating outstanding areas of concern. If there are areas of unaddressed financial need that were identified in the Plan phase, advocacy strategies should be developed to meet these funding gaps.

## *Submission of the finalized plan for Ministry of Health approval*

As a final step in the Plan phase, the final integrated PVS plan should be circulated to all relevant leaders or decision-makers within the MOH for approval by the NTD programme manager or disease focal point. These stakeholders should have been engaged throughout the process and kept up to date on the steering group's progress, so the content of the plan should be familiar to them. However, formal approval and commitment from the MOH to proceed with the integrated PVS plan is crucial to facilitate smooth implementation during the next phase. In addition, if there are funding gaps that will prevent the implementation of the integrated PVS plan, leadership within the MOH may be able to help facilitate discussions with key donors and the national government to identify funding opportunities. Once final MOH approval has been received, the steering group is ready to proceed to the Implement phase.

# Implement

## *Purpose and overview*

Building upon the Plan phase, the Implement phase is pivotal in transitioning from the development of a strategic roadmap for integrated PVS to tangible action and operationalization.

The core objective of this phase is for the steering group and associated stakeholders to develop a comprehensive, step-by-step approach to developing and validating protocols and SOPs, formulate a comprehensive training plan for health system workers, design a robust data management plan (DMP), formulate a monitoring and evaluation (M&E) framework for the integrated PVS system, initiate community sensitization efforts, and to develop both thresholds for response and a response plan.

The following sections delineate roles and responsibilities, outline the resources required and provide templates for successful implementation. Resources such as the M&E framework *(10)* and the Sustainability framework *(11)* (companion documents to the road map) will be contextualized to meet the unique challenges of integrating PVS of the target NTD into diverse healthcare infrastructures and varying country contexts.

## *Approach*

### Step 1. Develop and validate protocols and standard operating procedures.

The steering group should develop a protocol that describes the purpose and objectives of integrated PVS, as well as the methods for data collection, data management, data analysis, reporting, confirmation of signals and response. SOPs should then be generated, detailing step-by-step instructions on how to implement the various activities described in the protocol. The creation of protocols and SOPs are fundamental to ensuring the consistency and quality of the actions identified using the toolkit, facilitating effective training, ensuring compliance with international standards, enabling precise M&E, and securing the longevity of NTD control and elimination efforts.

### *Protocol development*

1. **Identify changes proposed in the Plan phase that require new protocols:** Asses the current system to identify gaps or areas for improvement.

2. **Outline a new protocol with input from surveillance system:** After identifying the necessary changes, gather input from technical experts, system users and other stakeholders to draft a preliminary outline of the new protocol, highlighting key changes and additions.

3. **Develop SOPs:** Create detailed SOPs for each new step or activity. These SOPs should be clear, concise, and incorporate best practices and compliance requirements.

4. **Review and feedback:** Once the SOPs are developed, present them along with the new protocol to a review committee or focus group for feedback.

5. **Comprehensive training:** Develop and conduct a training programme that covers both theoretical and practical aspects of the new protocol, ensuring it addresses the needs and suggestions of the system users.

6. **Iterative process:** It is important to recognize that developing a new protocol is an iterative process. Continuous feedback should be gathered post-training to make necessary adjustments and ensure it remains effective and up to date with technological and situational changes.

### *SOP formulation*

1. **Identify all activities:** List all discreet activities included in the surveillance system that will need SOPs and identify who will be implementing that activity. A template is provided in Annex 9 for this activity.

2. **Document design:** Utilize protocols to create user-friendly SOP documents. A standard operating procedure template can be found in Annex 10.

3. **Content development:** Describe the procedures in a systematic and logical sequence. Define terminologies and abbreviations and include detailed instructions for each step of the process.

4. **Review and feedback:** Initiate a review cycle with all stakeholders for feedback. Include personnel who will be directly using these SOPs for their valuable practical insights.

5. **Revision and updating:** Establish a schedule for regular SOP review and incorporate a mechanism for continuous feedback to enable ongoing refinement.

6. **Change management:** Develop a change management *(12)* protocol to guide the process for updating SOPs when there are changes in technology, regulations, or other significant factors.

## Step 2. Formulate a comprehensive training plan for health system workers.

The integration of new diseases into an existing PVS system necessitates a specialized training plan for the previously trained health system workers, including laboratory technicians, epidemiologists and entomologists. This plan is crucial for updating their skills and knowledge, and ensuring they are well-informed about the new integrations and proficient in any new procedures. Such training not only maintains consistency in surveillance and intervention processes but also enhances the system's adaptability and responsiveness to the evolving nature of NTDs.

Steps for developing a training plan for health system workers in PVS:

1. **Needs assessment:** Perform a detailed analysis to pinpoint gaps in knowledge and skills among health workers in PVS, focusing on how current expertise in other diseases can be directed towards effective PVS of the target NTD.

2. **Curriculum development:** Create a training curriculum tailored to the identified needs, encompassing key aspects of NTD surveillance (i.e. epidemiology, data management and field operations). Identify ways to integrate this training into existing surveillance training curricula.

3. **Resource allocation:** Allocate resources, including expert trainers, materials and finances, to support the specialized training needs of existing surveillance staff.

4. **Stakeholder engagement:** Involve relevant stakeholders such as government health departments, community leaders, and international health organizations for collaborative support and expertise.

5. **Delivery method selection:** Choose appropriate training methods (e.g. workshops, e-learning, on-the-job training) that are accessible and effective for the target group of health workers.

6. **Pilot training curriculum:** Implement a pilot training session to refine the curriculum and delivery methods based on feedback and observed effectiveness.

7. **Training implementation:** Roll out the training programme to ensure that all health workers involved in PVS are included.

8. **Monitoring and evaluation:** Continuously monitor the training process and evaluate the outcomes to measure effectiveness and identify areas for improvement.

9. **Continuous education and updates:** Establish a system for ongoing education and information updates to ensure health workers remain abreast of the latest knowledge and practices in NTD surveillance.

Developing a robust training plan for health system workers is not a one-off task but an ongoing process that needs to be integrated into broader health system strengthening efforts. By investing in the capacity of health workers, health systems not only enhance PVS for NTDs but also improve the overall health infrastructure's resilience against future health threats.

### *Resources*

WHO

- Needs assessment evaluation *(13)*
- Effective teaching: a guide for educating healthcare providers *(14)*
- Transforming and scaling up health professionals' education and training *(15)*
- Training in monitoring and epidemiological assessment of MDA for eliminating LF *(16)*

## Step 3. Design a robust data management plan.

Updating the DMP for an existing data management system involves a careful evaluation of the current data management infrastructure to integrate new data elements effectively. This revised plan ensures not only the quality, integrity and accessibility of surveillance data but also assesses how the current system can be adapted to meet new requirements. It involves refining protocols for data collection, storage, sharing and use to ensure accuracy, reliability and efficiency. The updated DMP must align with ethical standards and regulatory requirements, particularly concerning patient privacy, and proactively address potential data-related risks. This process is essential for aligning stakeholder roles, streamlining resource allocation and setting benchmarks for evaluation to prevent implementation issues. Moreover, it is crucial for fulfilling funding agency mandates, thereby ensuring the operational success and sustainability of the PVS system. Annex 11 provides steps for developing a DMP.

### *Resources*

Harvard Medical School

- DMP tool and DMP templates *(17)*

NetHope

- Data Management Plan Template *(18)*

## Step 4. Develop a monitoring and evaluation framework for PVS systems.

Monitoring and evaluation are critical components in the PVS strategy for sustaining the elimination of NTDs from a country. This process acts as a dual-purpose mechanism: it ensures accountability by confirming that surveillance

activities align with the integrated PVS plan, and it functions as a conduit for learning and dynamic planning. Through ongoing M&E, stakeholders can continually assess the impact and efficacy of the surveillance activities, discern what methodologies are yielding the desired health outcomes and identify which practices require modification. Such reflective oversight allows for the strategy to be adaptively fine-tuned, ensuring that the surveillance system remains robust and responsive to potential epidemiological shifts or re-emergence risks, thus upholding the country's NTD-free status. Please reference the *Integrated disease surveillance and response technical guidelines, third edition* for additional considerations on the development of robust monitoring and evaluation frameworks *(4)*.

## Routine monitoring and reporting

Routine monitoring of the implementation of the integrated PVS plan is a cornerstone of ensuring sustained success. The establishment of such monitoring hinges on the continuous and systematic collection of both quantitative and qualitative data, underpinned by well-defined key indicators that are aligned with the overarching goals of the integrated PVS plan. Quantitative data might include the number of new cases detected, the populations at risk or the coverage of intervention programmes, providing tangible metrics of progress. Meanwhile, qualitative data, such as patient experiences or community engagement levels, offer nuanced insights into the programme's reach and the quality of its execution. These indicators serve as vital signposts that flag deviations from expected outcomes, allowing for timely adjustments in strategy and operations. Furthermore, routine monitoring is crucial for maintaining vigilance against the re-emergence of NTDs, supporting early detection and rapid response to any signs of recrudescence. It not only validates the effectiveness of the integrated PVS plan but also fosters accountability, enhances transparency for stakeholders and ensures the efficient allocation of resources.

## Evaluation

An evaluation framework for PVS systems is critical in ascertaining the overall success and impact of a programme aimed at maintaining eradication or elimination of NTDs. Unlike periodic monitoring activities that provide ongoing performance data, comprehensive evaluations are strategically timed to coincide with key milestones and the conclusion of programme cycles. These evaluations are vital for highlighting not only the programme's achievements and impacts but also for understanding the effectiveness of its implementation strategies and interventions. The framework for such an evaluation should be designed to address several key questions and components:

- Assess the extent to which the integrated PVS plan has achieved its intended goals and objectives. This involves comparing initial programme targets with actual outcomes to determine the level of success.
- Examine the effectiveness of various PVS activities. Identify which strategies were most effective and which were less successful, providing a comprehensive view of PVS operations.
- Document the significant changes and achievements facilitated by PVS implementation. This should include epidemiological impacts, behavioural changes within communities and alterations in health system practices.
- Analyse any adjustments made to the original plan or implementation structures that contributed to the programme's success. This examination should detail why changes were needed and how they improved PVS outcomes.
- Compile key learnings and recommendations for future iterations of the integrated PVS plan or for the development of similar surveillance systems. Focus on transferable strategies that have the potential for broader application.
- Conduct thorough assessments of data quality, tracing the flow of information from the community to national levels. Propose methods to improve data collection, validation and reporting processes.
- Perform a detailed process evaluation to understand how integrated PVS was executed. Investigate the fidelity of implementation to the designed protocols, the efficiency of operations and the management of resources.

— Include an economic evaluation, such as a cost–benefit analysis or return on investment assessment, to quantify the economic impact of the integrated PVS plan versus the results achieved.

## *Resources*

WHO

— Implementing and monitoring; WASH-NTD indicators and logframe. In: WASH and health working together: a 'how-to' guide for neglected tropical disease programmes *(19)*

— Programme Dashboard Template *(20)*

— Online (free of charge) course on NTD M&E framework *(21)*

— Leprosy elimination: indicators to be monitored and post-elimination surveillance *(22)*

— Leprosy elimination monitoring tool *(23)*

### Step 5. Initiate community sensitization efforts.

Communities are crucial in the frontline defence against NTDs, and their existing engagement in health surveillance plays a pivotal role. Integrating PVS into these existing community sensitization efforts involves aligning new messaging with ongoing initiatives. This integration ensures that community members not only recognize the signs and symptoms of NTDs but also understand how PVS complements and enhances current surveillance activities. The key is to build upon the established trust and knowledge within the community, connecting the new PVS elements with familiar concepts and practices.

Sensitization campaigns, therefore, should be adapted to include PVS information in a way that resonates with and builds upon existing community knowledge and attitudes towards health surveillance. These campaigns aim to dispel myths and misconceptions about NTDs, but now with the added component of how PVS specifically contributes to disease detection and response. By incorporating PVS into the narrative, communities can see the continuity and evolution of surveillance efforts, reinforcing their trust in and support for health interventions.

Furthermore, it is crucial that the community sensitization plan for PVS acknowledges and integrates with the cultural contexts of communities. This cultural sensitivity ensures that PVS activities are not only seen as a continuation of existing efforts but also as being respectful and relevant to local beliefs and practices. Such an approach enhances the likelihood of successful PVS initiatives, ensuring they resonate with the community and contribute to long-term sustainability. A community that is well-informed and engaged in PVS, in tandem with ongoing efforts, is more likely to sustain healthful practices and actively participate in the prevention and control of NTDs.

## *Community engagement principles*

The principles of community engagement in the WHO community engagement guide *(24)* provide the value base for common and shared appreciation of purpose. A combination of principles is important for a community sensitization plan.

1. **Trust:** Establishing trust and respect is fundamental in collaborative community work. Trust-building should start early and be enhanced by direct interactions, joint planning and shared decision-making, underpinned by transparency and accountability.

2. **Accessibility:** Accessibility is critical for successful engagement. Geographical, linguistic, cultural and socioeconomic barriers must be addressed to ensure equitable participation, especially among marginalized groups.

3. **Contextualization:** Effective community engagement must be tailored to the community's perspective, valuing local language, culture and context to make participation feel impactful rather than burdensome.

4. **Equity:** Equity should be the core of public health initiatives to tackle social determinants of health. This involves cross-sectoral collaboration and community engagement strategies that are intrinsically linked to the health equity agenda.

5. **Transparency:** Transparency is essential in community engagement, enabling participatory processes and decision-making, thereby fostering trust and supporting other factors vital for effective engagement.

6. **Autonomy:** Community engagement should empower communities and individuals, promoting autonomy and allowing influence on policy and advocacy for change. This requires integration of engagement at all levels of governance, providing participation opportunities and scaling best practices internationally.

Steps for developing a community sensitization plan include:

1. **Stakeholder mapping:** Identify and engage key community stakeholders already involved in NTD surveillance, such as local leaders, schools and health workers. Emphasize the importance of integrating PVS into existing efforts and how they can aid in this process.

2. **Cultural competence:** Conduct cultural assessments to adapt the sensitization plan to local beliefs and practices, ensuring that PVS integration respects and complements the existing surveillance culture.

3. **Message development:** Develop messages that not only emphasize the importance of PVS for NTDs but also show how it aligns with and enhances current community efforts. Messages should be clear, relatable and demonstrate the benefits of PVS within the existing surveillance context.

4. **Communication channels:** Identify and utilize the most effective existing channels for message dissemination, such as local radio, social media or community gatherings, to introduce PVS as a natural extension of current activities.

5. **Training community facilitators:** Train local educators and influencers, who are already familiar with NTD surveillance, to effectively communicate the integrated PVS message and encourage participation.

6. **Materials and resources:** Develop materials (flyers, posters, multimedia content) that incorporate PVS information into the existing NTD narrative, making them engaging and informative within the community's current understanding.

7. **Sensitization campaigns:** Implement campaigns, including meetings, workshops and school programmes, to raise awareness about PVS as a complementary tool to existing NTD surveillance efforts.

8. **Feedback mechanisms:** Set up feedback channels to gauge community response to the integrated PVS approach, allowing for the adaptation of strategies to better suit community needs.

9. **Monitoring and evaluation:** Continuously monitor the effectiveness of the sensitization plan and evaluate its impact on community engagement and the overall success of surveillance efforts.

A well-orchestrated community sensitization plan not only enlightens the community about the pivotal role they play in PVS but also transforms them into active agents of change. By integrating community education and engagement into the fabric of NTD surveillance, health systems ensure that the mantle of vigilance against these diseases is a collective effort, upheld not only by the medical community but also by every member of society.

## Resources

WHO

- Community engagement: a health promotion guide for universal health coverage in the hands of the people *(24)*
- Online (free of charge) course on onchocerciasis training of health workers at national and district levels on skin-NTDs *(25)*

### Step 6. Develop thresholds for response and a response plan.

## Infection Threshold Response Plan

The Infection Threshold Response Plan (ITRP) is an operational blueprint that comes into play when infection levels threaten to breach the thresholds of elimination and ensures that there is no ambiguity or delay in response, which is crucial for maintaining the integrity of elimination efforts. It outlines clear decision-making protocols, designates roles and responsibilities, and sets in motion the logistical machinery needed for a rapid and coordinated response. This plan includes contingencies for resource mobilization, from financial to human capital, and delineates the communication strategies necessary to keep all stakeholders, from community members to international partners, informed and engaged.

The creation of such a plan is a comprehensive exercise that involves data analysis, risk assessment to understand potential barriers to response, and partnership building to ensure that the multisectoral collaboration needed for a rapid response is possible. Regular simulations can be inbuilt to test the robustness of the plan and to keep the response teams primed for action. Please reference the *Integrated disease surveillance and response technical guidelines, third edition (4)* for additional considerations on setting thresholds for an ITRP.

Consider the following for the ITRP:

1. **Establish threshold:** Analyse historical data and modelling projections to set evidence-based thresholds for action and define what constitutes an "alert" and an "action" threshold. Thresholds should also align with WHO guidance.

2. **Response protocols:** Develop clear protocols for response at different levels of the health system once thresholds are crossed.

3. **Resource allocation:** Identify financial, human and material resources needed for a response.

4. **Communication plan:** Develop a plan for communicating with the public, media and other stakeholders during an outbreak.

5. **Simulation and adaption:** Conduct drills and simulation exercises to test the ITRP and use findings to make necessary adjustments.

6. **Monitoring and evaluation:** Establish indicators for monitoring the implementation of the ITRP and regularly evaluate the plan's effectiveness.

## Resources

WHO

- Online (free of charge) course on sustainability framework for action against NTDs 2021–2030 Course *(26)*

The World Bank

- Public health surveillance toolkit *(27)*

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# Annex 1

# Integrated PVS steering group terms of reference

The template terms of reference for the integrated PVS steering group below should be used as a starting point and be tailored to the needs of the particular integrated PVS planning process.

## *Steering group for integrated post-validation or post-verification surveillance for [target NTD] in [country or subnational area]*

### ***Terms of reference***

### *Background*

The World Health Organization (WHO) road map for neglected tropical diseases 2021–2030 sets targets for controlling, eliminating or eradicating 20 neglected tropical diseases (NTDs) by 2030. Now that ***[country or subnational area]*** has eliminated ***[target disease]***, it is critical to identify and implement sustainable and effective solutions for maintaining post-validation or post-verification surveillance (PVS) to monitor for recrudescence. A country-led approach should be used to develop a sustainable PVS plan that draws on existing surveillance systems and available resources both within and outside of NTD programmes.

Under the leadership of the ***[country]*** **health ministry** or its equivalent (MOH), this integrated PVS steering group ("steering group") will oversee the development of an integrated PVS plan for ***[target NTD]*** in [country or subnational area], using the Integrated PVS Planning Toolkit for NTDs ("the toolkit") as a guide to identify and assess options for sustainable and integrated approaches to surveillance of ***[target NTD]***.

### *Role and functions of the steering group*

The purpose of the steering group is to oversee and provide technical input to the development of a comprehensive and sustainable integrated PVS plan for ***[target NTD]***.

The specific responsibilities of the steering group include:

- Leading the use of the toolkit and the step-by-step integrated PVS planning process.
- Providing technical input and feedback throughout the integrated PVS planning process.
- Facilitating connections with relevant government agencies involved in surveillance systems or health surveys that may be identified for integration.
- Participating in all processes related to evaluating potential for integration.
  - Validating the information used to select the surveillance system(s).
  - Contributing technical input to draft the integrated PVS plan.

- Providing detailed information and instructions for the implementation of integrated PVS activities.
- Ensuring smooth and effective communication among stakeholders.

## Membership and operations

The steering group will ideally have 5–10 members. The composition of the group will strive for gender balance and appropriate representation from the NTD programme (1–3 people), the MOH leadership (1–2 people) and key partners involved in eliminating or implementing surveillance of the target NTD (one per relevant organization). The WHO focal point for NTDs should be invited as an adviser.

## Responsibilities of integrated PVS steering group members

Members of the steering group have a responsibility to provide the NTD programme with high-quality, well-considered evidence- or experience-based advice and recommendations on matters described in these terms of reference. The role of the steering group is to provide advice and recommendations to the NTD programme on the integration of PVS for ***[target NTD]*** into existing or proposed surveillance systems for ***[country or subnational area]***. Steering group members may be approached by non-MOH sources for their views, comments and statements on particular matters with respect to PVS and asked to state the views of the steering group or details related to steering group discussions. Steering group members may provide their personal, expert views on these matters while clarifying that these do not represent the official position of the steering group or MOH.

## Structure

The Chairperson and alternate will be selected by the NTD programme. They should either be the NTD programme manager or another senior NTD programme official. The function of the Chairperson will be to set the agenda for each meeting, to facilitate each meeting, to ensure minutes are captured and to assist in preparing meeting reports.

## Working procedures

The Chairperson of the steering group will develop a plan for routine operations of the steering group. The steering group will meet occasionally upon invitation from the chair, guided by the planning process outlined in the toolkit. The NTD programme or MOH may invite additional observers from bilateral agencies, donors and civil society organizations, among others, to attend meetings. Relevant staff from WHO headquarters and regional offices may also attend to support the integrated PVS planning process. In addition to attendance at meetings, review of documents may also be solicited from steering group members throughout the PVS planning process.

# Annex 2

# Integrated PVS steering group invitation template

The invitation letter template below should be edited to reflect the relevant context for the particular integrated PVS planning process.

**Attachments:** Be sure to include the Integrated PVS Planning Toolkit for NTDs and the integrated PVS steering group terms of reference (Annex 1) as attachments to this email.

Subject: Integrated PVS steering group for [target NTD] invitation

***[Insert relevant branding]***

***[Location]***
***[Date]***

Dear ***[name]***,

On behalf of the ***[lead programme within the ministry of health]***, I am writing to solicit your interest in serving on a steering group that will be responsible for the development of an integrated post-validation or post-verification surveillance (PVS) system for ***[target NTD]***.

As ***[country or regional area]*** approaches elimination of ***[target NTD]***, it is critical to identify and implement sustainable and effective solutions for maintaining PVS to monitor for recrudescence. The Integrated PVS Steering Group will oversee the integrated PVS planning process to develop a sustainable PVS plan for ***[target NTD]*** that draws on existing surveillance systems and available resources both within and outside of NTD programmes. The attached integrated PVS planning toolkit for NTDs will be used to guide the process. The specific expectations of steering group members are outlined in the attached terms of reference.

In the formation of the steering group, we are striving for gender balance, as well as diversity in participant background and technical areas of expertise. The final composition of the group will be decided based on these aspects to ensure diversity and representation of steering group members.

Thank you for your time and consideration. **We ask that you let us know of your interest in serving on the Steering Group by *[date to respond by]***. In your response, please copy ***[point of contact]***. We look forward to hearing from you, and please do not hesitate to contact us if you have any questions.

Sincerely,

***[Signature]***

***[Name]***
***[Position title]***
***[Organization]***
***[Email or contact information]***

# Annex 3

# Integrated PVS steering group kick-off meeting agenda template

## *PVS Planning Process for [target NTD] in [country] Integrated PVS steering group technical kickoff meeting agenda*

**Date:** *[insert date]*
**Time:** *[insert start and end times]*
**Location:** *[insert location]*

This meeting will serve as the first (kick-off) meeting of the newly established Integrated Post-Validation/Verification Surveillance (PVS) Steering Group for ***[target NTD]*** in ***[country]***.

**Objectives:**

1. Review expected engagement with the integrated PVS steering group.
2. Brainstorm characteristics of the ideal PVS system for ***[target NTD]***.
3. If time allows, achieve consensus on the key characteristics of the ideal PVS system.

**Agenda**

| Time (***[time zone]***) | Item | Presenter/facilitator |
|---|---|---|
| | Introductions, welcome and opening remarks – 10 min | |
| | Review of integrated PVS steering group terms of reference – 10 min | |
| | Introduction to PVS planning process – 15 min | |
| | Overview of integrated PVS planning: gather phase – 15 min | |
| | *Break – 5 min* | |
| | Defining the ideal PVS systems for ***[target NTD]***<br>1. Review WHO guidance – 5 min<br>2. Recap data on historical transmission patterns – 10 min<br>3. Define priorities for the PVS system – 45 min<br>• Vector/parasite type<br>• Geography<br>• Population<br>• Sample collection<br>• Commodities<br>• Emerging surveillance activities to consider | |
| | Next step: gather data on existing surveillance systems – 15 min | |
| | Closing – 5 min | |

# Annex 4

# Gather and Synthesize Excel tool user guide

## Gather phase

### *Welcome sheet*

The Gather and Synthesize Excel tool opens at an initial welcome sheet that explains the intended purpose and structure of the tool as well as how to navigate effectively between the different Excel sheets. Instructions for unblocking macros for downloadable files are also included on the *Welcome* sheet. These include saving the file directly to your computer's hard drive, right clicking on the file, opening the "properties" menu and selecting the "unblock" button for macros. If macro issues persist, users should check with their IT department to ensure that no institutional firewall settings or Excel version issues are present.

### *Validation sheet*

Data entry is initiated by clicking on the "*Begin Data Entry*" button. The Data Entry workflow begins with the *Validation* sheet, which includes tables for all the fields that are needed to compare the ideal post-verification/validation (PVS) system for neglected tropical diseases (NTDs) with existing surveillance systems to evaluate compatibility.

The first field will be specific to each country where the tool is being implemented. This is the administrative unit (ADM) field, which should be completed with a list of all the first-level ADM1 units (i.e. provinces) or second-level ADM2 units (i.e. districts) for the country in question. The remaining fields will come pre-filled with example options for various surveillance system characteristics that might apply to the target NTD, including the type of parasite and vector that surveillance systems might target, commodities needed, populations targeted and sampling requirements. These options are meant to serve as the pre-set options that will populate the drop-down menus used for data entry in the subsequent Excel sheets. If the lists of options are not comprehensive enough to suit a particular programme's needs, then options can be added to each column. **Note*** The Frequency column must be arranged from most frequent (i.e. daily) to least frequent (i.e. annual) option. This is the way they are arranged by default, but any new items added to the frequency list will need to be in order of decreasing frequency. Once all fields have been reviewed for completeness, users can move on to defining the characteristics of their ideal target NTD PVS system in the *Reference* sheet.

### *Reference sheet*

The next step in the Gather and Synthesize Excel tool is the *Reference* sheet. This sheet provides the relevant characteristics of a target NTD's ideal surveillance system. It is completed by referring to the ideal integrated PVS system outlined in step 2 above. The characteristics to be filled out include a list of the provinces, districts or other subnational ADM implementation units that would be covered by an ideal integrated surveillance system for NTDs; the types of parasites and vectors being targeted for surveillance; the sample types, diagnostics and treatment commodities that would be needed for conducting surveillance and follow-up for identified cases; and the target populations and age groups that would ideally be sampled, as well as the timing and frequency of sampling desired in an ideal surveillance system. A complete list of column definitions can be found at the end of this section.

Data entry for this sheet will ideally be completed by using the built-in drop-down menus that appear when clicking on any empty cell in the sheet. The drop-down menus that appear in each column correspond to those options included in the characteristic column in the *Validation* sheet. A tool user can select one option per cell, or multiple options in the same cell, by selecting them one at a time from the drop-down menus. Free text entry is possible but is not encouraged at this stage, as it will prevent the automatic comparison between matching fields in the *Reference* and *Other systems* sheets that will be critical for the qualitative overlay at the end of the Gather phase. If a desired option is not available from the drop-down menu, additional values can be added to the corresponding column on the *Validation* sheet by typing the desired value into the next available row in that column. No column is strictly required for the tool to function; importantly, any column not filled in the *Reference* sheet will prevent matching and scoring of the corresponding column in the subsequent sheets, and this tool will best support decision-making for NTD surveillance when every column has been filled with a value from the drop-down list.

The toolkit user can determine how many lines to complete in the *Reference* sheet, with a minimum of one line required for the tool to function. If surveillance system requirements are similar in all geographic operating areas, one line may be sufficient to capture the characteristics of the ideal PVS system. However, if the characteristics of the ideal PVS system vary by subnational implementation unit, the differences can be specified by creating a new line in the *Reference* sheet for each unique implementation unit. For example, if one district targeted for surveillance is considered unlikely to experience recrudescence of the target NTD because of historical programmatic control successes, while another district is at higher risk for recrudescence because it shares a border with a highly endemic district in another country, these may require different PVS protocols in an ideal, integrated system and should therefore be given their own lines in the *Reference* sheet.

## *Reference sheet column definitions*

Each column that makes up the *Reference* sheet is defined below (and in the headings of the Excel tool).

**ADM1/ADM2 Unit:** The geographical coverage of an ideal surveillance system for the target NTD (i.e. what administrative divisions would the system operate in in an ideal scenario)? The options for completing this column include a pre-filled list of first or second administrative division units (provinces, districts, etc.) depending on what country and administrative level are selected on the *Welcome* page of the Excel tool.

**Parasite type:** The type of parasite that would be targeted in an ideal surveillance system for the target NTD.

**Sample type:** The type of sample that would ideally be collected in an ideal surveillance system for the target NTD. For example, if blood samples can be run on a multiplex array for NTD detection, that would likely overlap with collection strategies for other surveillance systems that also collect blood samples.

**Diagnostic commodity:** The diagnostic commodity that would ideally be used for identifying infections of the target NTD. This is important to collect because the process for ordering and paying for these commodities may be substantially more or less costly depending on whether or not the commodity type has an existing distribution network for another disease surveillance system in the same geographical area.

**Treatment commodity:** The treatment commodity that would ideally be used for treating identified infections of the target NTD. This is important to collect because the process for ordering and paying for these commodities may be substantially more or less costly depending on whether or not the commodity type has an existing distribution network for another disease surveillance system in the same geographic area.

**Target age group:** The ideal age group to conduct surveillance within for the target NTD. This is often related to the number of years that have elapsed since the most recent exercise on transmission assessment surveys (TAS).
Target populations: The ideal sub-populations (defined by occupational characteristics, ethnicity, mobility, pregnancy, etc.) to conduct surveillance within for identifying infections of the target NTD.

**Time of sampling:** The time of day at which sampling would ideally happen for the target NTD, if desired. For example, blood smears might be most accurate if performed at night.

**Sampling frequency:** The ideal frequency of data collection for surveillance of the target NTD. This is useful to collect because it may be operationally simpler to use existing surveillance systems that have a matching cadence of data collection.

**Vector genus:** (Assuming vector surveillance is a component of the ideal NTD PVS) The vector genus targeted by an ideal surveillance system for the target NTD.

**Vector species:** (Assuming vector surveillance is a component of the ideal NTD PVS) The vector species targeted by an ideal surveillance system for the target NTD.

**Vector collection methods:** (Assuming vector surveillance is a component of the ideal NTD PVS) The methods used to capture insect vectors in an ideal surveillance system for the target NTD.

## *Other systems sheet column definitions*

Columns that appear in the *Other systems* sheet but not the *Reference* sheet are defined below (and in the headings of the Excel tool).

**Capacity to store sample:** The sample storage capacity for each surveillance system listed in the *Other systems* sheet. This value is for qualitative assessment (Yes/No/Limited) and will not be compared with the *Reference* sheet.

**Capacity to transport sample:** The sample transportation capacity for each surveillance system listed in the *Other systems* sheet. This value is for qualitative assessment (Yes/No/Limited) and will not be compared with the *Reference* sheet.

**Trained laboratory staff present:** The availability of trained laboratory staff for each surveillance system listed in the *Other systems* sheet. This value is for qualitative assessment (Yes/No/Limited) and will not be compared with the *Reference* sheet.

**Sample size:** The approximate size of the sample required for analysis in each surveillance system listed in the *Other systems* sheet. This may not be necessary to fill out for every surveillance system type.

**Level of stratification:** Importance of a match between the level at which the existing surveillance system can provide independent estimates and the needs of the target NTD.

**Approximate last date of data collection:** The approximate last date of data collection for the surveillance system in each row of the *Other systems* sheet. This value is for qualitative assessment of when surveillance last occurred and will not be compared with the *Reference* sheet.

**Approximate next date of data collection:** The approximate next date of data collection for the surveillance system in each row of the *Other systems* sheet. This value is for qualitative assessment of when surveillance will occur and will not be compared with the *Reference* sheet.

## *Other systems sheet*

The columns filled out in the *Reference* sheet correspond to the characteristics that will be completed in the *Other systems* sheet. The *Other systems* sheet provides a useful place to organize information on existing or proposed surveillance systems that may be compatible for integrated NTD surveillance.

A wide variety of likely existing surveillance systems have been included in the tool as a starting point, with options broken down into several categories such as facility-based surveillance, standardized household surveys, entomological surveillance/ xenomonitoring, serosurveillance and more. However, as this tool cannot reasonably forecast every possible surveillance system in every NTD-endemic country, each surveillance system category will have additional blank spaces below the examples listed to allow users to input their own surveillance system options. Additionally, if a new integrated surveillance platform that is not yet being implemented in the country is proposed for the ideal PVS system (for example, an integrated serosurveillance system), it can be added in the appropriate

category and its proposed attributes described. For support designing integrated serosurveys, the integrated PVS steering group should review the PAHO *Toolkit for integrated serosurveillance of communicable diseases in the Americas (1)*.

It is not necessary to fill out every row in this Excel sheet for users to generate a comprehensive understanding of the other existing surveillance systems available for integration. Filling out one or more lines per category should allow tool users to compare a reasonable number of systems across diverse system types, which may be a prerequisite for an integrated PVS system if the target NTD is lymphatic filariasis (LF). Review the draft guidance from the WHO manual on monitoring and evaluation for LF for more information *(2)*. As WHO develops PVS guidance for more disease-specific NTDs, additional prerequisites should become available.

To fill out the *Other systems* sheet, tool users can select from the in-built drop-down lists for each surveillance system characteristic, using the menu of options defined in the *Validation* sheet at the beginning of the Gather phase. As options are selected from the drop-down menu, they will be automatically compared with the values defined for the matching characteristics in the *Reference* sheet. If the characteristics are identical, the cell will turn dark green to indicate complete agreement (very high overlap). If the characteristics match partially with those in the *Reference* sheet the cell will turn light green to indicate high overlap, light yellow to indicate medium overlap, or orange to indicate low overlap. Finally, if there is no overlap at all between the characteristics in the *Other systems* sheet and those in the *Reference* sheet, the cell will be coloured dark red to indicate no agreement. If a user inputs their own free-text values instead of using those from the validation tables, the cell will remain uncolored (see example in Fig. A4.1).

**Fig. A4.1. Sample Excel sheet for identifying surveillance systems with relative compatibility when compared with the attributes of the ideal PVS system for the target NTD**

| Surveillance Systems | Districts Included | Sample Type | Diagnostic Commodity |
|---|---|---|---|
| Toggle if column is Not Applicable Here | Applicable | Applicable | Applicable |
| Prenatal Screening | Corail, Côteaux | Serological, Blood - finger prick | Ultrasound, PCR |
| Acute Febrile Illness (AFI) Surveillance | Bainet, Belle-Anse, Trou-du-Nord, S | Blood - finger prick, Insect, Sputur | RDT - Antigen |
| Malaria Surveillance | Bainet | Serological, Blood - venous, Blood | RDT - Antibody |
| HIV Surveillance | Anse d'Hainault | Serological, Blood - venous | |

The colouring in the *Other systems* sheet will provide an initial qualitative overlay of compatibility between the characteristics of the ideal integrated PVS system for the target NTD and the characteristics of the existing or proposed systems that may be available for integration in each country or subnational implementation unit. Tool users should view this overlay as a first step in determining which other existing surveillance systems are potentially compatible for inclusion in an integrated PVS system, removing those systems that are mostly red or yellow, while taking those systems coloured mostly green as candidates for inclusion in the Synthesize phase of the toolkit.

It is advisable to select at least two and no more than six existing or proposed surveillance systems as outputs to bring into the Synthesize phase due to the logistical complexity of comparing more than half a dozen systems at once. There is no strict maximum number, and programmes should ensure that there is reasonable diversity of candidate system categories, particularly if they are building an integrated PVS system for LF. Review the draft guidance from the M&E manual for LF for details *(2)*. The initial *qualitative* overlay for each of these candidate systems will translate directly into *quantitative* scores of compatibility for integration in the Synthesize phase.

# Synthesize phase

## Step 1. Fill-in the compatibility matrix values.

To begin, the *Other systems* sheet's qualitative overlay results are automatically migrated into the Synthesize phase. Each individual surveillance system's characteristics will have their qualitative values (dark green for full overlap, light green for mostly overlapping, light yellow for little overlap, red for no overlap) translated to numeric scores (i.e. 10/10, 7/10, 3/10, 0/10) that will serve as the initial values in the compatibility matrix.

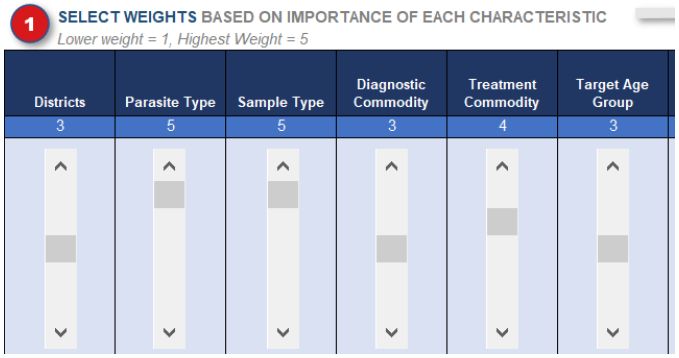
These initial values are meant to serve as a starting point for gauging integration compatibility between the ideal NTD PVS surveillance system and the existing or proposed systems being evaluated. Each value in the matrix can be modified as desired by the toolkit user.

For example, if the *Other systems* sheet value for target populations in the HIV Facility-Based Surveillance system row was light green for partial overlap, it may automatically translate to a high score in the compatibility matrix. If the Integrated PVS steering group determines that, in practice, this system is not very compatible with the needs of the ideal NTD PVS system, the value in the compatibility matrix could be manually lowered to a more appropriate score.

## Step 2. Determine priority weighting.

In addition to the quantitative values transferred from the Gather phase, the compatibility matrix will allow weights to be given to surveillance system characteristics. Adding priority weights to the different surveillance system characteristics allows the Integrated PVS steering group to ensure that the compatibility matrix produces compatibility scores that accurately reflect programme priorities while concurrently taking into account logistical considerations. The Priority Weighting tool is a simple drag and drop numerical counter that allows programmes to assign weights from 1 to 5 to each characteristic in the matrix, with 1 indicating a characteristic that is the lowest and 5 indicating the highest priority for determination of compatibility (see example in Fig. A4.2).

**Fig. A4.2.**




As an initial starting point, default weights have been selected by key informants and global experts for each disease. These weights are provided as defaults in the Excel tool, but each weight value is modifiable in the tool to provide users with maximum flexibility. The Integrated PVS steering group may change priority weight values for different characteristics to determine the impact on compatibility scores for each potential surveillance system being evaluated.

## Step 3. Review compatibility scores.

The priority weights will be multiplied by the prepopulated matrix values for each characteristic, with values added across each surveillance system to automatically calculate a relative compatibility score.

For example: in the example compatibility matrix in Fig. A4.3, hypothetical surveillance system #2 has the highest relative compatibility score with 4.5.

**Fig. A4.3.**

**Example Compatibility Matrix**

| Surveillance options | Characteristic 1 *Priority weight: 4* | Characteristic 2 *Priority weight: 1* | Compatibility Ranking |
|---|---|---|---|
| System #1 | Somewhat Compatible (5) | Highly Compatible (10) | 2.1 |
| System #2 | Highly Compatible (10) | Somewhat Compatible (5) | 4.5 |
| System #3 | Not Compatible (0) | Highly Compatible (10) | 1.0 |

At the end of the Synthesize phase, each existing or proposed surveillance system transferred from the Gather phase *Other systems* sheet will have a quantitative compatibility score generated automatically by the compatibility matrix. These can be easily modified by changing either the initial matrix values or the priority weights attached to each surveillance system characteristic, allowing for the Integrated PVS steering group to iterate on potential compatibility rankings depending on programme priorities.

Once each system has a compatibility ranking, potentially compatible surveillance systems can be quickly sorted to determine the top options (with a suggested minimum of two and a maximum of four systems) to transfer to the Assess phase of the toolkit where the strengths and weaknesses of each system or combination of systems will be evaluated.

## *References for Annex 4*


1. Toolkit for integrated serosurveillance of communicable diseases in the Americas. Washington (DC): Pan American Health Organization; 2022 (https://doi.org/10.37774/9789275125656).
2. Monitoring and epidemiological assessment of mass drug administration in the global programme to eliminate lymphatic filariasis, second edition. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/381838).

# Annex 5

# Synthesize and Assess workshop planning guide

## *Overview*

Once the Integrated PVS Steering Group has gathered information about the ideal surveillance system for the target neglected tropical disease (NTD) and about existing or planned surveillance systems that may be possible to integrate with, it should convene an in-person workshop to complete the Synthesize and Assess phases of the integrated PVS planning process. This key steps for preparing a successful in-person Synthesize and Assess phases workshop are outlined below.

### Step 1: Establish meeting information.

**Purpose of the workshop:** It is important to communicate the purpose or objectives of the workshop clearly to ensure alignment with all attendees. The purpose of the workshop is to select the most appropriate and compatible surveillance system(s) to integrate with for PVS of the target NTD. This will be done through two steps:

1. Synthesize: reviewing and synthesizing the information gathered during the Gather phase and developing a shortlist of compatible systems that would be possible to integrate with.

2. Assess: assessing the shortlisted compatible systems and determining the best surveillance system(s) to integrate with.

**Participants:** Individuals identified during the stakeholder mapping exercise during the Gather phase should be invited to participate in the workshop. These include any members of the steering group, as well as relevant non-NTD stakeholders such as the data managers and system administrators who can provide input on which existing surveillance systems collect the types of data necessary for integrated PVS of the target NTD. Additionally, the WHO country representative and the WHO regional focal point for the target NTD should be sent an official letter of invitation from the Ministry of Health. Make sure you know who is ***required*** to attend the workshop and schedule around those individuals' schedules.

**Duration:** The amount of time allocated for this workshop will depend on the approach chosen by the NTD programme. During the pilot phase for this toolkit, a 2-day workshop was convened to complete the Synthesize and Assess phases. Many attendees noted that a longer workshop may have been more successful. However, each programme convening these workshops must weigh the costs and benefits of different workshop structures against their own budgetary needs and stylistic preferences.

**Meeting lead:** A meeting lead should be identified for the workshop, preferably in advance, who is responsible for high-quality execution of the workshop, including developing a clear agenda, inviting participants and chairing the workshop.

**Note-taker:** If a note-taker is needed, the designated person should understand their role before the meeting starts. This person should talk to the meeting lead about their expectations on how the notes should be recorded, where they should be stored and how they should be disseminated after the meeting.

**Finding a date and time:** When choosing the date for this workshop, it is important to ensure that there are no conflicting department or ministry-wide meetings scheduled for those dates, as full participation from all stakeholders is critical to the success of the workshop.

### Step 2: Send the invitation.

It is recommended to share the invitation as soon as the workshop date is set, at least 3 weeks before the workshop begins. When invitations are sent out, participants should also receive relevant background information on the goals and expectations for integrated PVS of the target NTD, including the integrated PVS planning toolkit and the completed Gather portion of the Gather and Synthesize Excel tool. If the agenda is ready, that can be shared as well.

Make sure to document replies of those who have accepted or declined the invitation so you have an accurate count of participants for the workshop. A follow-up message should be sent after one week to those who have not responded to the invitation.

### Step 3: Prepare for the workshop.

**Prepare workshop materials:** A template slide deck with recommended agenda items and further discussion points is included in this toolkit (web tool 2b). The contents of this presentation should be edited to fit the relevant context for your integrated PVS planning process.

**Identify and request communication tool(s):** Confirm with the venue staff the audiovisual capabilities of the venue and determine if any special requests need to be made.

### Step 4: In-person setup

**Logistics:** The meeting organizers should arrive at least 15–20 minutes early to ensure everything is ready:

- Double-check the physical room set up as well as the audiovisual set up.
- Make sure the meeting room is clean and organized.
- Gather necessary meeting supplies and lay them out on the meeting table or in a designated area in the room (i.e. pens, notepads).

**Catering:** The day of the workshop, it is recommended to double check when the catering is arriving to ensure the food is set up in accordance with the designated time specified in the agenda.

**Note-taking:** Workshop attendees will use the information collected in the Gather phase to complete the Synthesize portion of the Gather and Synthesize Excel tool, following the instructions in the Gather and Synthesize Excel Tool User Guide (Annex 4). As the Excel tool is completed, detailed notes should be taken to qualify the major points of decision so that stakeholders who are unable to attend are provided with clear context as to why and how key decisions were made. It is recommended to have 1–2 designated note-takers taking detailed notes throughout the workshop. These notes will be critical for informing the next phases of the integrated PVS planning process.

### Step 5. Post-workshop follow-up.

It is suggested to send a follow-up email after the workshop to thank participants for attending and to share the meeting notes, highlighting any key decisions that were made during the workshop. This will ensure everyone remains aligned heading into the next phase of the planning process.

# Annex 6

# Synthesize and Assess workshop handout

## Synthesize

## *Purpose and overview*

The purpose of the Synthesize phase is to support the Integrated PVS Steering Group in reviewing and synthesizing the information collected during the Gather phase to develop a shortlist of potentially compatible systems that would be possible to integrate into a consolidated PVS plan for the target NTD.

The inputs for the Synthesize phase should be a list of the most compatible surveillance systems from the Gather phase qualitative overlay in the *Other Systems* sheet of the Excel tool. This shorter list should include only those systems that are viewed as being feasible options for inclusion in an integrated PVS system.

## *Approach*

The Synthesize phase uses a selection of variables from the Gather phase *Other Systems* sheet to generate a quantitative estimate of the comparative feasibility of integrating PVS for the target NTD with existing or proposed surveillance systems. This translation from qualitative to quantitative evaluation will occur using automatic inputs from the completed *Other Systems* sheet, requiring minimal further input from toolkit users while maintaining flexibility for potential adjustments as desired.

### Step 1. Fill-in compatibility matrix values

To begin, the *Other Systems* sheet's qualitative overlay results are automatically migrated into the Synthesize portion of the Excel tool. Each individual surveillance system's characteristics will have their qualitative values translated to numeric scores that will serve as the initial values in the compatibility matrix. These initial values are meant to serve as a starting point and each value in the matrix can be modified as desired by the toolkit user.

### Step 2. Determine priority weighting

Adding priority weights to the different surveillance system characteristics allows the Integrated PVS steering group to ensure that the compatibility matrix produces compatibility scores that accurately reflect programme priorities. Initial weights are provided as a starting point in the Excel tool, but each weight value is modifiable in the tool to provide users with maximum flexibility.

### Step 3. Review compatibility scores

The priority weights will be multiplied by the prepopulated matrix values for each characteristic, with values added across each surveillance system to automatically calculate a relative compatibility score.

For example: in the compatibility matrix shown **on the right**, hypothetical surveillance system #2 is the one that has the highest relative compatibility score with 4.5.

Once each system has a compatibility ranking, potentially compatible surveillance systems can be quickly sorted to determine the top options (with a suggested minimum of two and a maximum of four systems) to transfer to the Assess phase of the toolkit where the strengths and weaknesses of each system or combination of systems will be evaluated.

**Example Compatibility Matrix**

| Surveillance options | Characteristic 1 *Priority weight: 4* | Characteristic 2 *Priority weight: 1* | Compatibility Ranking |
|---|---|---|---|
| System #1 | Somewhat Compatible (5) | Highly Compatible (10) | 2.1 |
| System #2 | Highly Compatible (10) | Somewhat Compatible (5) | 4.5 |
| System #3 | Not Compatible (0) | Highly Compatible (10) | 1.0 |

# Assess

## *Purpose and overview*

The purpose of the Assess phase is to support the integrated PVS steering group in assessing the potentially compatible surveillance systems shortlisted during the Synthesize phase and determining the best surveillance system or combination of systems with which to integrate the targeted NTD(s) for PVS. During the Assess phase, the integrated PVS steering group will review the shortlist of potentially compatible systems identified during the Synthesize phase and gather additional information such as key enabling factors that could facilitate or inhibit successful integration (i.e. system compatibility, feasibility of integration, and relative cost of integration), as needed. Using a strengths, weaknesses, opportunities, and threats (SWOT) analysis, the programme will identify and assess possible systems or combinations of systems that meet WHO guidance for PVS of the target NTD and offer the best chance of detecting signals that could indicate recrudescence of the target NTD in PVS settings. Once the programme makes the final selection of surveillance system(s) to integrate with, a gap analysis will be conducted to determine if any additional dedicated surveillance activities or resources are needed to ensure a comprehensive and effective PVS system for the target NTD.

## *Approach*

### Step 1. Gather additional information about the shortlisted surveillance systems.

The integrated PVS steering group should gather additional information on the quality and sustainability of the existing systems and the potential costs of integrating the target NTD to inform the final selection of systems to integrate, leveraging local knowledge, anecdotal information, and other relevant sources not incorporated during the Gather phase.

### *Data quality*

Consider the following questions when assessing the consistency and reliability of data generated by the system for its current targets.

- Does the surveillance system regularly capture full and complete data for its current surveillance targets in the priority geographies identified for the target NTD?

- Does the system conduct regular data quality audits to ensure surveillance data are accurate and complete?
- Are the data collected by the surveillance system easily accessible through an electronic data capture platform?
- Can the data management system incorporate the additional data points needed for PVS of the target NTD?

While no system is perfect, knowing the relative reliability of each system being considered for integrated PVS will help inform the final selection of system(s) to integrate with.

## *Quality and consistency of implementation*

When assessing the quality and consistency of implementation, consider the following questions.

- Are there any ongoing or anticipated disruptions to surveillance activities in priority geographies for the target NTD (i.e., insufficient resources, conflict, environmental disasters, etc.)?
- Does the surveillance system routinely implement surveillance activities in accordance with their pre-determined cadence?
- Is training regularly conducted to train staff on the surveillance implementation plans?
- Is there sufficient supervision of the surveillance system to ensure the activities are being implemented in accordance with the systems SOPs?

A system that does not meet the criteria outlined in this section should not be ruled out immediately. These are attributes that can be improved with proper resourcing and investment.

## *Sustainability*

Consider the following questions when assessing the sustainability of the potential system to integrate with.

- Is this surveillance system monitoring a disease that is approaching elimination?
- Does the surveillance system have sustainable and regular funding?
- Are there any anticipated disruptions in the system between now and end of PVS for the target NTD (i.e. a 10-year period for LF)?

## *Anticipated cost of integration*

The Integrated PVS Steering Group should conduct an initial review of the potential changes that would need to be made to each shortlisted surveillance system to incorporate the new activities, evaluate the relative costs for each option and determine if there are resources available to cover those costs. Significant start-up investment may be required to strengthen laboratory capacities, data systems, and human resource capacity if the system is not already equipped with the necessary capacities. What would it cost to make the necessary adjustments to a given surveillance system to accommodate PVS activities for the target NTD? *Consider the changes that would need to be made to the existing system in order to incorporate PVS activities for the target NTD. For each change, consider the implication in terms of personnel costs, administrative costs, transportation costs, laboratory operations costs, and commodities costs.*

- If the system requires a change in the type of sample or data being collected in order to incorporate PVS of the target NTD, what would it cost to make those changes to the existing surveillance system?
- If the system requires changes to the timing and frequency of surveillance activities in order to incorporate PVS of the target NTD, what would it costs to make those changes?

## *Strategic alignment and buy-in from existing programmes*

Strategic alignment and buy-in for integrated surveillance from the non-NTD programmes and departments that manage the existing surveillance systems will be critical to a smooth and effective integration process. While some of this alignment and buy-in can be encouraged by leaders from the MOH who sit on the integrated PVS steering committee, this stage in the process should be used to think through any major roadblocks that might disrupt or delay the plans for integrated PVS. Consider the following questions:

- Does the other programme team see the value of integrated surveillance and appreciate how it will improve the health system overall?
- Is there any anecdotal information worth noting on the relative ease of working with the other programme?

Once the integrated PVS steering group has gathered this additional information for their shortlisted surveillance systems, it is time to revisit any available WHO guidance for PVS of the target NTD.

### Step 2. Outline possible combinations of systems that meet available WHO PVS guidance.

Some NTDs may only require one type of surveillance system for effective PVS. This is the case for onchocerciasis under the current WHO guidance established in 2016. For others, including LF, WHO guidance calls for collecting multiple types of data to effectively survey for reintroduction or recrudescence.

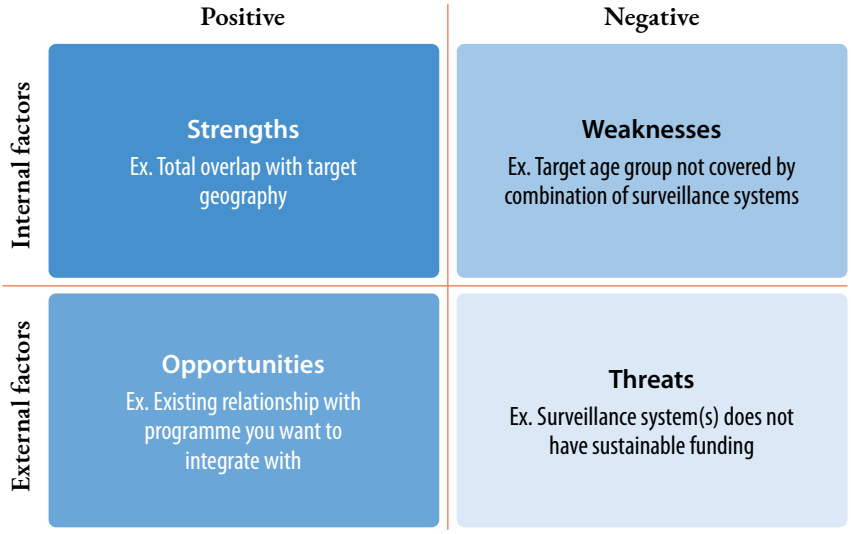
At this stage in the integrated PVS planning process, the integrated PVS steering group should review any available WHO guidance for PVS of the target NTD, as well as the agreed upon outline of the ideal PVS system. Using those sources as a guide, the integrated PVS steering group should identify the single system or possible combinations of the shortlisted surveillance systems that would meet the WHO guidance for PVS and address the different aspects of the ideal PVS system.

| **PVS guidance for human onchocerciasis** |
|---|
| WHO recommends that a post-elimination surveillance system be set up to "detect possible renewal of parasite transmission both in previously endemic and in non-endemic areas as well as in areas where imported cases might be expected to occur" *(1)*. The guidance recommends conducting entomological assessments using the O-150 PCR with *Onchocerca volvulus*-specific deoxyribonucleic acid probes to determine the absence of infective-stage larvae of *O. volvulus* in the vector population. |
| **PVS guidance for LF** |
| Guidance for LF PVS can be found in the second edition of the M&E manual for national elimination programmes and is summarized below *(2)*. PVS for LF should start in areas that have passed TAS3 or IIS3 prior to achieving the criteria for elimination as a public health problem nationally. Ideally, LF PVS should be integrated with surveillance strategies on existing platforms. Surveillance should be prioritized in areas that were previously under MDA and are considered to be at greatest risk of recrudescence. A combination of at least two of the following four platforms should be used: (i) health facility screenings, (ii) existing standardized surveys, (iii) molecular xenomonitoring and (iv) surveys targeted to high-risk areas or high-risk groups. Activities aim to detect a signal, defined as detection of a LF biomarker that alerts the programme that transmission may be continuing in a community. The response to signals depends on the surveillance platform used and the type of signal identified. A signal warrants treatment of infected individuals and a follow-up survey or targeted treatment of communities. |

### Step 3. Conduct a SWOT analysis to select the most appropriate combination of surveillance systems to integrate with.

A SWOT analysis evaluates a project or activity based on four key factors that can be divided into two categories: internal (strengths and weaknesses) and external (opportunities and threats). For this toolkit, we are using a SWOT analysis to evaluate a single system or combinations of surveillance systems to identify the system or combination of systems that best meets the PVS requirements for the target NTD in the country or subnational implementation area (Fig. A6.1).

**Fig. A6.1.** Sample SWOT analysis




## *Review of the SWOT analyses and final selection*

Once SWOT analyses have been conducted for each of the combinations of systems under consideration, the integrated PVS steering group will review the analyses side by side and vote on the preferred combinations of systems to integrate with. Once the final selection has been made, a final gap analysis will be conducted, outlined in step 4.

### Step 4. Conduct a gap analysis to determine if any critical aspects of the PVS system are not met by the final selection of surveillance systems to integrate with.

Once the final selection has been made, the ideal integrated PVS system outlined in the Gather phase should be revisited along with WHO guidance to determine if there are any critical aspects of the PVS system not met by the final selection of surveillance system(s) to integrate with. To support this gap analysis, consider the following questions:

Does the selected system or combination of surveillance systems…

- Collect the right type of data in accordance with the ideal PVS system?
- Collect the data in sufficient quantity in line with the ideal PVS system?
- Collect the data at an appropriate cadence in accordance with the ideal PVS system?
- Collect adequate data across the target geography outlined in the ideal PVS system?
- Collect adequate data from the target population outlined in the ideal PVS system?

If the answer is no for any of these questions, it may be necessary to develop a dedicated surveillance activity for the target NTD to gather the additional data needed and supplement the data collected through the integrated PVS system(s).

Once the final system or combination of systems has been selected and the remaining gaps and possible solutions have been identified, the integrated PVS steering group is ready to proceed to the Plan phase. During the Plan phase, the team should revisit the weaknesses and threats captured in the SWOT analysis to ensure the integrated PVS plan addresses the weaknesses and is prepared to mitigate the threats.

## *References for Annex 6*


1. Guidelines for stopping mass drug administration and verifying elimination of human onchocerciasis: criteria and procedures. Geneva: World Health Organization; 2016 (https://iris.who.int/handle/10665/204180).
2. Monitoring and epidemiological assessment of mass drug administration in the global programme to eliminate lymphatic filariasis: a manual for national elimination programmes, second edition. Geneva: World Health Organization; 2025 (https://iris.who.int/handle/10665/381838).

# Annex 7

# Synthesize and Assess workshop agenda

## *Post-Validation/Verification Surveillance Planning Process for [target NTD] in [country]*

### ***Synthesize and Assess Workshop Agenda***

**Date & time:** *[insert date and times]*

**Venue:** *[insert meeting location]*

**Pre-read:** Integrated Post-Validation or Verification Surveillance Planning Toolkit for Neglected Tropical Diseases

**Background**

Under the leadership of the ***[country]*** Ministry of Health, an integrated post-validation/verification surveillance (PVS) steering group was convened to oversee the development of an integrated PVS plan ***[target NTD]*** in ***[country]***. The steering group is leveraging the Integrated PVS Planning Toolkit for NTDs as a guide to identify and assess options for sustainable and integrated approaches to surveillance of ***[target NTD]***. During the technical kick off meeting that took place on ***[kick off meeting date]***, the Integrated PVS Steering Group met and outlined the characteristics for an ideal PVS system for ***[target NTD]***. The Synthesize and Assess Workshop will build on those discussions and support the steering group in selecting the best system(s) to integrate with for PVS of ***[target NTD]***.

**Meeting objectives**

- Review surveillance systems currently in place in ***[country]***.
- Evaluate compatibility of those surveillance systems with the ideal PVS system discussed during the technical kick off meeting.
- Identify the best systems to integrate with for PVS of ***[target NTD]***.

| Time* | Duration | Topic | Lead |
|---|---|---|---|
| | 30 min | *Registration and refreshments* | |
| | 5 min | Welcome and opening remarks | |
| | 5 min | Integrated PVS planning recap | |
| | 15 min | Review draft WHO guidance for ***[target NTD]*** | |
| | 60 min | Gather process review and Excel demo for ***[target NTD]*** | |
| | 15 min | *Break* | |
| | 60 min | Synthesize phase: review priority rankings for surveillance system characteristics | |
| | 60 min | *Lunch* | |
| | 45 min | Assess Phase for ***[target NTD]*** | |
| | 15 min | Next steps: plan phase | |
| | 15 min | Closing remarks | |

* Note that the exact timing in the agenda is subject to change based on how the discussions progress. The meeting will remain between 08:30 and 17:00 on both days.

# Annex 8

# Integrated PVS plan outline

The outline below details various sections that may be useful to include in an integrated post-validation/verification surveillance (PVS) plan for the target neglected tropical disease (NTD). Each section includes instructions for what information should be included.

## *Integrated post-validation/verification surveillance plan for [target NTD] in [country/subnational area]*

***Outline and instructions for each section***

### *Introduction*

**Instructions:** write an introductory paragraph that indicates the general structure/philosophy of integrated post-validation/verification surveillance (PVS) for the target disease and implementation area (i.e., country or subnational area).

### *Overview of the PVS approach for the target NTD*

**Instructions:** Write a summary of the PVS approach for the target NTD, including how the system or combination of systems selected will help generate the right amount and type of data to maintain surveillance of the target NTD after elimination. The approach should explain the plan for data collection, data analysis, data interpretation, and infection threshold response for each selected systems.

For example, if one of the selected systems was a national malaria indicator survey, consider the following:

- **Malaria Indicator Survey** (include the answers to all the "what, where, who how many, when, what now" questions from the plan workshop)
  - Include data collection plan, timing/frequency, sample size, data analysis and management plan.
  - Highlight any changes that were agreed upon to effectively implement PVS of the target NTD as part of this system.

If the integrated PVS steering group selected multiple systems for the integrated PVS plan, then the details outlined above should be documented for all the selected systems.

Additionally, if the steering group is applying the integrated PVS planning process to more than one disease at a time, then the PVS approach for each disease should be captured here separately.

## *Managing biological samples and ethical considerations*

**Instructions:** Data collection under the integrated surveillance plan may involve shared management of biologicals samples. The plan for shared management of samples between relevant programs should include where the samples will be stored, how they will be transported, and who will analyze the samples.

- If there are still uncertainties with the sample management plan, those should be clearly outlined as well as the plan for resolving those uncertainties.

- Additional details with the biological sample management plan should be included in the protocol and SOPs to be developed during the Implement phase. Furthermore, the various uses of the biological samples should also be clearly outlined in consent forms and other relevant documentation.

## *Data sharing and analysis workflows*

**Instructions:** The collection of new types of data will likely require changes to the data sharing and analysis practices between the NTD programme and the programme that manages the selected surveillance system(s). This section should summarize the draft guidelines for data sharing and data management workflow (or refer to the existing data sharing agreement among programs). This should include how, with whom, when, and at what frequency or periodicity data will be shared from the selected surveillance system point of contact with the target NTD program.

- Examples of activities to consider include: drafting of regular reports, direct file transfers of raw data, or granting of access to District Health Information System 2 (DHIS2) databases containing integrated surveillance information.

- During the Implement phase, these data sharing considerations will be built into a consolidated data analysis plan that contains regularly scheduled data share-outs for the target NTD programme as well as the point of contact in each selected surveillance system. Additional details on consolidated data management planning can be found in the Implement phase.

## *Monitoring and evaluation frameworks*

**Instructions:** In this section, the monitoring and evaluation framework used to evaluate the process and function of the integrated PVS system should be clearly outlined. The framework should identify:

- ***How*** success will be measured (i.e., detection of cases, cost savings, data quality and completeness of key indicators, decreased time from diagnosis to treatment, etc.).

- ***When*** measurements will occur to determine progress against pre-determined programme benchmarks (i.e., monthly, annually, or via irregularly timed spot-checks).

- ***Who*** will be responsible for conducting these monitoring steps and disseminating the results.

The framework should also build-in feedback loops to allow for adjustments to ongoing integrated surveillance.

## *Legal framework and governance structures*

**Instructions:** In this section, the following should be included:

- **Summarize relevant legal framework and regulatory standards.** This section should summarize the legal framework that will ensure all actions taken to create the integrated PVS system reside within the scope of the ministry's authority.

- **Outline governance structure and ethical approval guidelines.** This section should summarize any relevant laws, regulations, or policies governing the programme, as well as all ethical approval guidelines that apply to the use of population data for the country or implementation unit in question.

## *Budgetary and cost-sharing arrangements*

**Instructions:** Alignment on a resourcing strategy at this stage is particularly critical to prevent future roadblocks to implementation due to budgetary disagreements. Every change to the existing systems being integrated will likely require some cost element, and each cost element needs to be agreed upon in principle by the integrating system leads so that everyone involved knows who will be paying for what and how these expenditures will be tracked and reported.

In this section of the plan, outline all the resources needed and specify how those needs will be met. Any outstanding gaps in funding should be clearly identified with a plan for how to respond to them. As a starting approach, it may make sense to identify which of the changes from the table created during the Plan phase consultations will require additional funds. Some examples are standing up new monitoring sites, hiring new entomologists or data collectors, paying for sample collection through IDSR, and purchasing tests and traps. Then, use the approximate numbers of new tests/sites/staff estimated from the Plan phase workshop and multiply those by the expected cost per unit of the new additions to the system. These can be used to generate very rough annual estimates assigned to each partner as agreed upon in the Plan phase workshop. The ideal output at this stage is a short summary table of which partner will cover which costs, see example below.

| **Changes to the existing system(s)** | **Estimated cost** | **Plan for funding** (i.e., repurposing existing budget, soliciting additional funds from donors) | **Responsible team/ programme** |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

## *Roles and responsibilities*

**Instructions:** Outline the roles and responsibilities to integrate PVS of the target NTD into the selected surveillance systems. These can be displayed using a roles and responsibility table summarizing which department is generally handling each action items. Respond to the questions below when completing the table, using the outputs from the Plan phase workshop as a guide. If any roles or responsibilities have not been decided upon for the questions below, these need to be highlighted and followed up in order to present a completed PVS plan. The following questions should be answered for each of the selected surveillance systems.

- For integration into selected system 1, include responsible parties for the following roles:
  - Who will manage procurement of tests or traps or other diagnostic resources?
  - Who will conduct trainings?
  - Who will collect and store samples?
  - Who will process/analyze samples?
  - Who will analyze data?
  - Who will share data between the relevant stakeholders?

| **Role/activity** | **Description** | **Responsible organization/department** |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

## *Timeline for implementation*

**Instructions:** Draft a basic timeline for implementation of the integrated PVS plan, ideally including a pilot period where the integrated system can be tested and iterated upon by the program. For examples of activities to include in the implementation timeline, please review the Implement phase of the toolkit narrative. This timeline should include **specific milestones for integration and deadlines for achieving key activities and deliverables**.

## *Summary action plan*

These evaluative steps should support iterative improvement, ensuring that when issues in quality control or programme workflow do arise, they are both identified and resolved. Integrating surveillance system managers may choose to utilize this template for monitoring each activity in the integrated PVS plan, ensuring that no elements of the plan are excluded from the cycle of evaluation and improvement.

| Proposed changes | Point person(s) responsible for implementing proposed changes | Actions required to make proposed changes | Timeline for implementation of proposed changes | Budget or resource requirements to make proposed changes | Funding source (if identified) | Measure of success for proposed changes |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Add rows as necessary... | | | | | | |

*Source*: Adapted from *Quality health services: a planning guide*. Geneva: World Health Organization; 2020 (https://iris.who.int/handle/10665/336661).

## Annex 9

# Template for identifying activities for standard operating procedures

| Name of procedure | Purpose of procedure | Implementing party | Location of implementation | Timeframe for implementation |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Add rows as necessary... | | | | |

# Annex 10

# Standard operating procedure template

## *Document information*

*Note:* All dates in this document should use the format DD. Month YYYY (e.g. 21. May 2001).

| General information | |
|---|---|
| Organization: | |
| Author: | |
| Document title: | |
| Document number: | |
| Affected departments: | |

| Review/approval | | | | |
|---|---|---|---|---|
| | Position of person reviewing | Department | Action by | Date (DD. Month YYYY) |
| Review | | | | |
| Review | | | | |
| Approval | | | | |

| Document control | | |
|---|---|---|
| Date | Reason for change | Updated by |
| | | |
| | | |
| | | |

1. **Introduction:** The introduction to the standard operating procedure (SOP) provides background information on the procedure. A list of defined terms can be included in this section.

   — **Purpose:** This section describes the focus of the SOP.

   — **Scope and implementation:** This section defines the applicability of the SOP (i.e., the work that will be subject to be the provisions of the SOP).

2. **Definitions:** This section defines the abbreviations and key terms used in the body of the SOP. Pay particular attention to terminologies that appear more than once company-wide and thus might be subject to misinterpretation.

3. **Responsibilities:** This section specifies the person(s) responsible for ensuring that the SOP is implemented. This person can be a single individual, or it can be generic to state that the person performing a certain activity covered by this SOP is the responsible individual.

4. **Procedure description:** The procedure description will be the most detailed section of the SOP as it itemizes and describes the procedures required for a certain process. As a proposal from a structural viewpoint, you may find it useful to include a process map in addition to the step-by-step description.

5. **Risks and controls:** This section is meant to highlight the two important elements of risk management. On the one hand, mention major findings resulting from the process risk assessment. On the other hand, formalize mitigating controls (procedural and reporting) for each of the risks.

| Risk Area | Risk description | Control activity | | | Results reporting, approval | Actions if negative control results |
|---|---|---|---|---|---|---|
| | | Who | What | When | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Add rows as necessary... | | | | | | |

6. **Reference documents:** This section provides references to manuals, standards etc. that are closely linked to the procedure.

7. **Training:** This section formulates the training requirements which each affected person is expected to fulfil in order to properly implement this procedure.

8. **Records:** This section lists documents that are derived from implementing this procedure. They may include forms, materials and lists.

9. **Annex/annexes:** This is an optional section where attachments of supporting documents can be pasted or embedded.

# Annex 11

# Steps to develop a data management plan

The following steps are suggested for developing a data management plan (DMP).

**1. Define objectives and scope.**

- Clearly state the purpose of the post-validation/post-verification surveillance (PVS) approach.
- Determine the types of data required to meet the surveillance objectives.
- Establish the scope of the data to be managed (e.g. geographical, demographic, temporal).

**2. Identify data needs and sources.**

- Determine what data are needed to monitor for recrudescence of the target neglected tropical disease (NTD).
- Use the information collected from the Gather phase to identify data sources, including routine reporting, laboratory results, field surveys and other surveillance mechanisms.
- Specify the methods for, and frequency of, data collection.

**3. Develop standard operating procedures (SOPs).**

- Create SOPs for data collection, entry, validation, processing and analysis, ensuring these are in line with existing surveillance system practices to maintain consistency and quality.
- Clearly define roles and responsibilities for data management, emphasizing how these integrate with and complement the existing surveillance system structures.

**4. Establish data standards.**

- Define data formats, naming conventions and metadata standards that align with those already in use within the existing surveillance systems.
- Ensure compatibility with international NTD data standards to facilitate data-sharing and comparison, while also considering how this integration affects data ownership and usage within the integrated system.
- Provide specific guidance on how the PVS data will be collected, managed and shared through the integrated system, focusing on the nuances of data ownership, sharing protocols and usage rights within this broader framework.

**5. Data-sharing protocols.**

- Evaluate and update the current data sharing protocols to incorporate the data requirements of the integrated PVS system, ensuring seamless integration and consistency.
- Outline specific modifications needed to accommodate PVS data, such as changes in access permissions, data transfer mechanisms and data processing steps, while maintaining alignment with the existing framework.

- Address legal and ethical considerations, particularly around patient privacy and data security, in the context of the expanded data scope due to the integration. Ensure that these modifications comply with existing policies and any new regulations that apply to PVS data.
- Establish guidelines for reconciling and harmonizing data sharing between different entities within the integrated system, focusing on interoperability, data format standardization and synchronization of data transfer timelines.

**6. Data storage and security.**

- Assess current data storage solutions (such as Cloud storage or local servers) and determine necessary upgrades or integrations to accommodate the new system's data.
- Enhance data security measures to protect sensitive information, ensuring compliance with both existing and new data protection regulations.

**7. Data quality assurance.**

- Update existing data quality assurance processes to include the new system's data, with regular audits and validation checks.
- Revise protocols for data correction and handling missing or anomalous data, ensuring they cover the expanded data set.

**8. Data integration and interoperability.**

- Enhance the capability of different data types and systems to interact seamlessly, focusing on the integration of the new system's data.
- Plan for the efficient integration of data across different levels of the health system and with other health information systems, ensuring consistency and compatibility.

**9. Data analysis and reporting.**

- Define and integrate analytical methods suitable for interpreting both existing and new system data.
- Develop or update templates and schedules for routine reporting that now includes data from the new system, ensuring relevant information reaches stakeholders and decision-makers.

**10. Training and capacity-building.**

- Conduct specialized training for relevant staff on updated data management practices and SOPs, including the usage of integrated data management systems.
- Provide ongoing support to ensure competent and effective use of the integrated DMP.

**11. Data use and dissemination.**

- Outline how the combined data will be used for decision-making and guiding interventions, taking into account the integrated nature of the data.
- Plan for the effective dissemination of combined data findings to stakeholders and the public, ensuring clarity and relevance.

**12. Review and adaptation.**

- Implement a schedule for regular review and updating of the DMP to ensure it remains fit for purpose.
- Adapt the DMP to changes in the surveillance context, data requirements and technological advancements.

**13. Compliance and ethical considerations.**

- Ensure that the DMP respects ethical considerations, especially regarding patient confidentiality.
- Verify that the DMP complies with national and international regulations and guidelines on data management.

**14. Funding and sustainability.**

- Ensure that there is adequate funding to support data management activities.
- Plan for the long-term sustainability of the data management system.

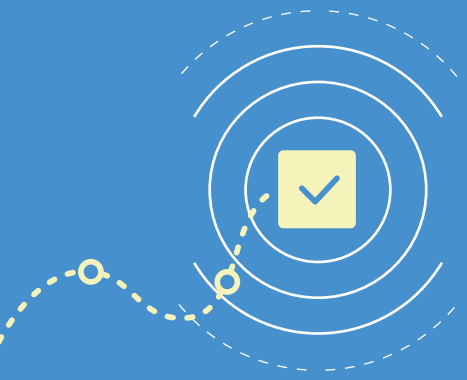
Each step is critical for creating a comprehensive framework that ensures data reliability and usability, which are essential for the ongoing success of a PVS system. It is important that the DMP is dynamic and adaptable to the changing landscape of NTD surveillance and control. Below is a data management plan exercise to further guide this process.

## *Data management plan exercise*

| **Data description** | | |
|---|---|---|
| **Summary** | Nature, scope and scale of the data | |
| **Data collection tools/processes** | How data will be captured, manually or digitally; tools/systems (spreadsheets, databases, online systems, etc.); individuals involved in data collection/entry, data collection frequency, consent processes (if applicable) – reference ethics and privacy section | |
| **Secondary data** | Any data that will be used from secondary sources, collected outside the scope of this project; how will the data be obtained; relationship between secondary data and data collected in the project | |
| **Reporting** | Kinds of reports anticipated – narratives, presentations, data visualizations, videos, etc.); tools to be used for preparing these; where knowledge products and underlying data will be stored | |
| **Metadata** | All output datasets are to be documented through a data dictionary; do any standards apply (e.g. ICD-10, ISO)?; where will metadata be stored?; who is responsible for metadata creation? | |

| **Quality assurance** | | |
|---|---|---|
| **Data quality procedures** | Procedures to be put in place to ensure data quality; how data quality will be measured; data quality documentation/reporting | |
| **Potential data quality issues** | List potential issues that threaten data quality; how will they be addressed | |

| Data access | | |
|---|---|---|
| **General** | How will the accessibility of data be managed?<br>What is the process for gaining access?<br>Who can gain access?<br>Who will have permission to access the data? | |
| **Ownership/intellectual property rights** | Who holds/will hold the "property rights" to the data?<br>How does this affect data access?<br>Will these rights be transferred to another organization for data distribution and archiving?<br>What types of knowledge products is the project expected to produce?<br>How will you obtain and document rights to use the data if another institution owns the data? | |
| **Ethics and privacy** | Are the data confidential? If so, how will confidentiality be preserved?<br>Are there ethical and privacy issues related to making data available externally? If so, how will these be resolved?<br>Are there any local implementing partners that may resist sharing of data? How do you intend to resolve such issues?<br>Will data collection activities be considered Human Subjects Research?<br>Will any of the data collection activities be subject to review by an Institutional Review Board (IRB) and, if so, which IRB? What has been done or will be done to comply with your obligations in your IRB protocol?<br>If applicable, how will you handle informed consent with respect to communicating to respondents that the information they provide will remain confidential when data are shared or made available for secondary analysis? | |



For further information, contact:

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https://www.who.int/teams/global-malaria-programme
https://www.who.int/teams/control-of-neglected-tropical-diseases/overview