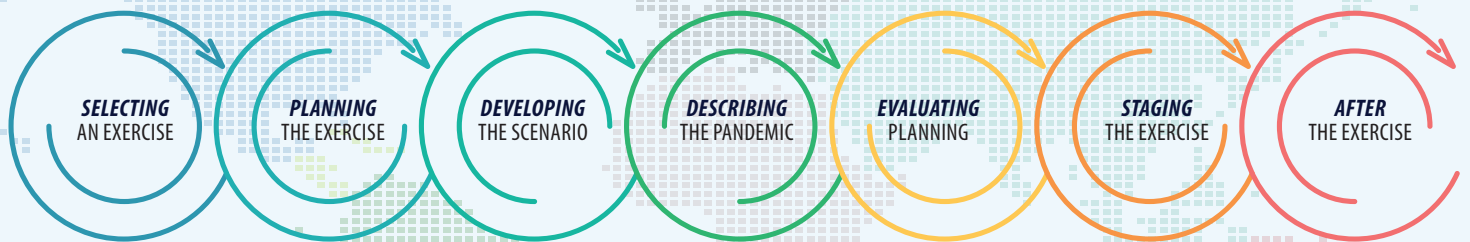


# GLOBAL INFLUENZA PROGRAMME



A practical guide for developing and conducting **simulation exercises** to test and validate pandemic influenza preparedness plans



World Health  
Organization

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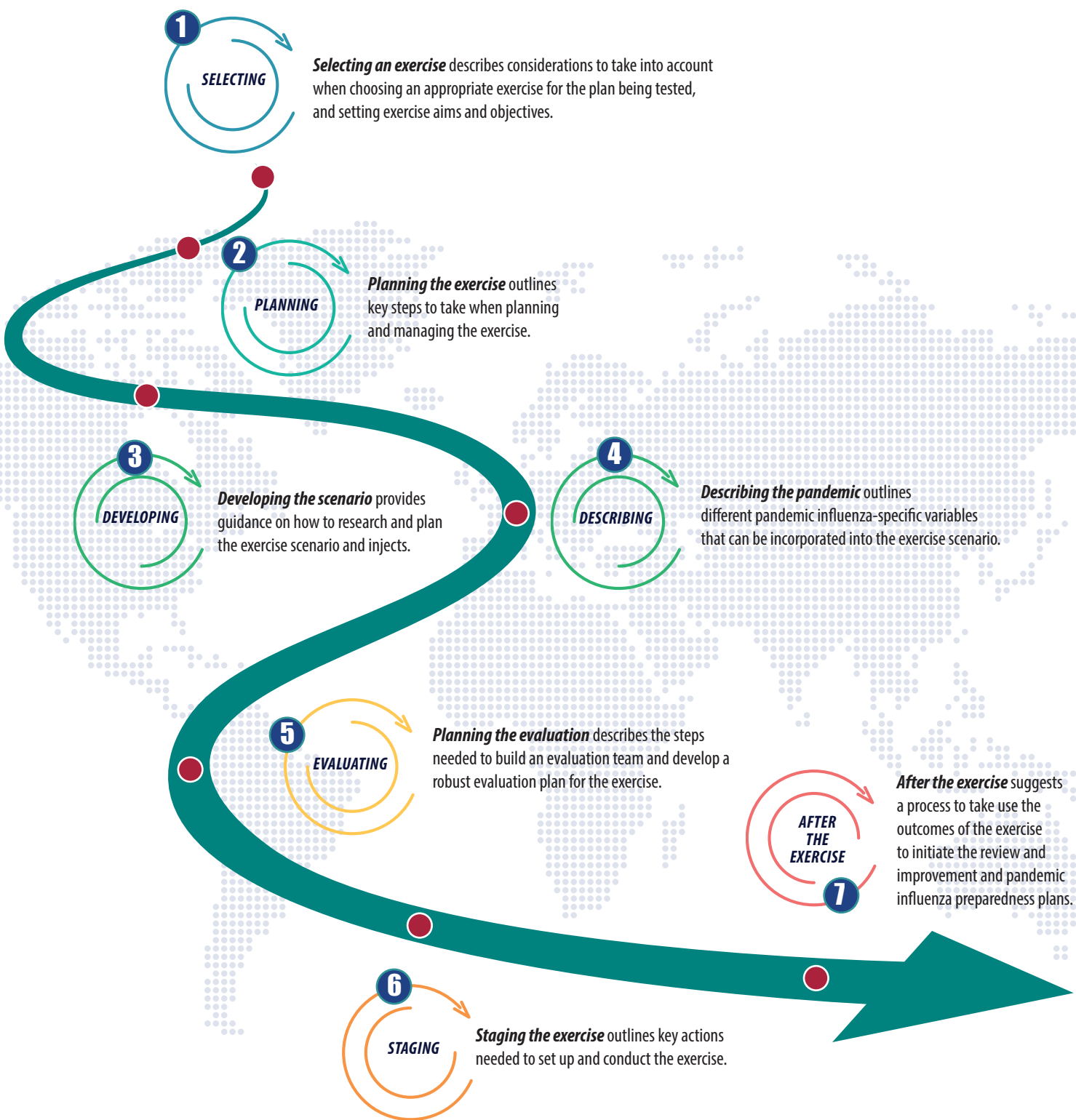
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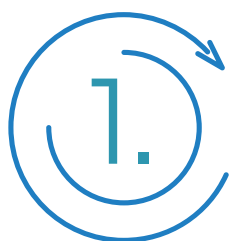


# Developing and conducting simulation exercises to test and validate pandemic influenza preparedness plans

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# Introduction

## 1.1 Overview

Influenza pandemics are recognized as unpredictable but recurring events that can have serious consequences on human health and economic well-being worldwide. Advance planning and preparedness is critical for countries to mitigate the risk and impact of a pandemic, ensuring that they have sustainable and resilient capacities for an efficient pandemic **response**.

Considerable efforts and resources have been invested by countries around the world in developing national pandemic influenza preparedness plans and the capacities needed to respond to an influenza pandemic. However, to be effective, plans need to be tested, validated and updated periodically through simulation exercises.

In 2017 and early 2018, WHO published several key documents to support global pandemic preparedness efforts. The pandemic influenza risk management (PIRM) document (1) and its supporting checklist (2) update the previous WHO pandemic preparedness guidance and checklist with lessons learned from the 2009 influenza pandemic, introduce the strategies and approaches in pandemic influenza risk and impact management, and emphasize the importance of national risk and severity assessments in guiding the national response actions. The *WHO simulation exercise manual* (3) provides guidance on the concepts and principles for conducting and managing simulation exercises. This current guide is derived from those guiding documents. It focuses on developing and conducting simulation exercises to test and validate national pandemic preparedness plans – an essential step in the pandemic influenza preparedness planning process (4).

## 1.2 How to use this guide

### 1.2.1 Purpose

The purpose of this guide is to support countries in their testing and updating of their national pandemic influenza preparedness plans. It is intended to provide guidance on how to select, plan, conduct and evaluate simulation exercises specific to pandemic influenza, and how to set up a process for using the outcomes of these exercises to review and improve pandemic plans.

This guide should be read in conjunction with the PIRM document (1), which provides specific technical guidance on pandemic planning, and the *WHO simulation exercise manual* (3), which provides such guidance on simulation exercises.

***Additional resources for pandemic influenza planning and simulation exercises can be found in Annex 1, and a glossary in Annex 2.***

### 1.2.2 Audience

This guide is intended to be used by national agencies responsible for pandemic influenza preparedness planning. It can also be used by other organizations involved in building pandemic preparedness capacity, or as a reference document for individuals or agencies involved in public health emergency planning.

# 2. Selecting an exercise

## 2.1 Scoping the exercise

Scoping the exercise involves meeting with the host organization and key stakeholders to agree on the exercise aim, objectives, scope and type. Other important issues that should be discussed include the target audience for and **participants** in the exercise, expected outcomes, timeline, budget and exercise management.

The final agreements made during this process should be circulated to stakeholders for future reference (e.g. in a **concept note**).

## 2.2 Setting the aims and objectives

Setting the aim and objectives for an exercise is an obvious first step, but is one that often does not receive enough consideration. It is essential that the aim and objectives are clear and well-defined – they are the foundation of the exercise and they describe the specific outcomes to be achieved. If the aim and objectives are ambiguous or too general, it will be difficult to understand the purpose of the exercise and to evaluate its result.

The aim defines the scope and overall planning framework of the exercise. A successful and productive exercise is directed at a specific aim; for example, to test a component or components of an existing pandemic influenza preparedness plan and identify areas for improvement.

The objectives specify how the aim will be achieved, and will determine how the exercise is designed. They influence the type of exercise chosen, who should be invited to participate, how the **scenario** is developed and how the exercise will be facilitated and evaluated. The objectives should be clear, measurable and attainable. This will allow you to develop assessment criteria to evaluate the outcomes of the exercise and identify improvements or revisions to the plan being tested.

Setting a clear aim and objectives will also help in communicating the purpose of the exercise to participants and stakeholders. If participants have a clear understanding of the aim and objectives, they will be able to perform better and will also be able to provide specific feedback on the outcomes of the exercise. Similarly, if stakeholders and senior management have such an understanding, they will be able to support and advocate for the exercise. Box 2.1 shows the aim and objectives of a sample exercise.

### Box 2.1. Sample exercise aim and objectives

#### The aim of a sample exercise could be:

- to test [selected components] of the pandemic influenza preparedness plan in order to identify areas for revision or improvement.

#### The objectives of a sample exercise could include testing:

- the functionality and speed of decision-making procedures in the plan in order to identify areas for revision or improvement;
- formal or planned coordination, communication and information-sharing mechanisms between relevant departments and agencies involved in the pandemic response; and
- existing capabilities (resource, logistics and support) for an operational response to an influenza pandemic according to the plan, and identifying capacity-strengthening needs.





When deciding on the objectives of the exercise, it is important to be realistic about what can be achieved with the resources available. Increasing the number of objectives will also increase the scope, complexity and cost of the exercise. A small number of well-defined objectives is often better than a large number of objectives.

Generally, it is not possible to test all of the components of a pandemic influenza preparedness plan in a single exercise, owing to time or resource constraints. Rather than running a single large-scale exercise to test the entire plan, it may be better to hold a series of smaller exercises targeted at testing and validating specific components of the plan. Such exercises will be more manageable, and will also help to develop a culture of exercise, practice and revision within participating organizations.

## 2.3 Types of exercise

There are four basic types of simulation exercise, and these can be categorized as either discussion-based or operations-based exercises:

- **Discussion-based** exercises develop, refine or familiarize participants with current plans, policies, agreements and procedures. *Tabletop* exercises are the most common form of discussion-based exercises.
- **Operations-based** exercises are used to validate the functionality of plans, policies, agreements, procedures and systems; clarify roles and responsibilities; and identify resource gaps in operational environments. They include *drills*, *functional* exercises, and *full-scale* or *field* exercises.

Where necessary, hybrid exercises that integrate elements of different exercise types can also be developed. For example, a full-scale or field exercise can be developed that also incorporates elements from a functional exercise, or includes a series of drills. Details of the four types of simulation exercise are given in Table 2.1.

**Table 2.1. Types of simulation exercise**

EXERCISE TYPE	DESCRIPTION	USES
<b>Tabletop</b> <i>Discussion-based</i>	A tabletop exercise is a facilitated discussion of an emergency situation, generally in an informal, low-stress environment. It is designed to elicit constructive discussion between participants in order to identify and resolve problems and refine existing plans.	<ul style="list-style-type: none"> <li>• Develop or review preparedness plans.</li> <li>• Familiarize participants with their roles and responsibilities.</li> <li>• Identify and solve problems through facilitated and open discussion.</li> </ul>
<b>Drill</b> <i>Operations-based</i>	A drill is an exercise that is normally focused on testing or practising a specific function or process in a preparedness plan. Drills should be as realistic as possible, making use of actual facilities and equipment necessary for the function being tested.	<ul style="list-style-type: none"> <li>• Train staff in new procedures, or in the use of tools or equipment.</li> <li>• Exercise or maintain current skills.</li> <li>• Test a specific operation (e.g. an emergency communication tree).</li> <li>• Develop new policies or procedures.</li> </ul>

**Table 2.1. Types of simulation exercise** [continued]

EXERCISE TYPE	DESCRIPTION	USES
<b>Functional</b> <i>Operations-based</i>	<p>A functional exercise is a fully interactive exercise that tests the capability of an organization to respond to a simulated event in a time-pressured environment. Functional exercises focus on the coordination, integration and interaction of an organization’s policies, procedures, roles and responsibilities before, during, or after the simulated event.</p>	<ul style="list-style-type: none"> <li>• Test the operational systems, procedures and plans that are currently in place.</li> <li>• Identify strengths, gaps and opportunities for improvement.</li> <li>• Enhance the capacity of the operational system to respond to an emergency.</li> </ul>
<b>Full-scale or field</b> <i>Operations-based</i>	<p>A full-scale exercise is designed to test the operational capability of emergency management systems in the most realistic manner possible. The exercise simulates actual response conditions in a highly stressful environment, and includes the mobilization and movement of emergency personnel, equipment and resources. Full-scale exercises typically involve multiple agencies and participants physically deployed in a field location. Ideally, the full-scale exercise should test and evaluate most functions of the emergency management plan or operational plan.</p> <p>A field exercise is a form of full-scale exercise that focuses on a specific capacity or function. It is less complex than a full-scale exercise, but is developed and implemented in a similar fashion.</p>	<ul style="list-style-type: none"> <li>• Test the operational emergency response capacity of teams and organizations.</li> <li>• Test the functions of the emergency management plan or operational plan.</li> <li>• Practise coordination, communication and collaboration between multiple entities and stakeholders.</li> <li>• Identify strengths, gaps and opportunities for improvement.</li> <li>• Enhance the capacity of the emergency management system to respond to an emergency.</li> </ul>

Contents adapted from the WHO simulation exercise manual (3).

## 2.4 Choosing the type of exercise

The type of exercise that is appropriate in a particular situation will depend on what is being tested and what resources are available.<sup>1</sup>

### 2.4.1 What is being tested?

Selecting the right type of exercise will help to achieve the objectives of the simulation. For example, if the objectives include training or orienting new staff to pandemic preparedness plans, a tabletop exercise or drill may be appropriate. However, if the objectives include practising and refining the established procedures of an **emergency response plan**, a functional or full-scale exercise may be more useful.

<sup>1</sup> Also see “Appendix A: Job Aid 3, Self-assessment – resources and costs” in the WHO document on development of emergency exercises (5).

The type of exercise chosen will also be influenced by the components of the pandemic preparedness plan to be tested:

- **strategic** components are often suited to discussion-based exercises, such as a tabletop exercise;
- **operational** components can be suited to discussion-based or operation-based exercises, such as tabletop, functional or full-scale exercises; and
- **guidelines** or **standard operating procedures (SOPs)** are often suited to operation-based exercises that focus on a specific **function**, such as drills or field exercises.

**Table 2.2. Example exercises to test pandemic influenza preparedness plans**

PLAN COMPONENT	SAMPLE AIM	SAMPLE OBJECTIVES	SUGGESTED EXERCISE TYPE
Strategic	To test decision-making and coordination mechanisms between response partners in the national strategic pandemic influenza plan.	To test the decision-making mechanisms within the pandemic influenza incident management system.	Tabletop
		To test the effectiveness of formal or planned coordination and communication mechanisms between relevant departments and agencies.	
Operational	To test operational plans for health-care facilities during a pandemic influenza response.	To test the mechanisms for establishing planned pandemic influenza health services and suspending nonessential health services.	Tabletop
		To test the functionality of facility-level plans for triage and patient flow.	Functional
		To test systems for coordination in near real-scale operations.	Full-scale
Guideline or SOP	To test guidelines on rapid response to suspected cases of novel influenza in humans.	To test the feasibility and adequacy of existing guidelines or SOPs for outbreak investigation and event verification.	Drill
		To test the efficiency of rapid response team deployment (e.g. HR, administration and logistics).	Field

HR, human resources; SOP, standard operating procedure.

#### 2.4.2 What resources are available?

The amount of resources required will vary widely, depending on the type of exercise, and its scope, complexity and scale. Well-run simulation exercises can be extremely resource intensive; hence, it is important to be realistic about the amount of resources (particularly time and staff) that will be needed. A further consideration when choosing an appropriate exercise type is the capacity and experience of the organization managing the exercise. Organizations should build experience with basic exercises before progressing to more complex ones. Table 2.3 summarizes the cost, time and human resources required for the different exercise types.

**Table 2.3. Exercise types and estimated resource requirements**

EXERCISE TYPE	COST	TIME	HUMAN RESOURCES
Tabletop	\$	<p><b>Exercise conduct:</b></p> <ul style="list-style-type: none"> <li>• 3–8 hours</li> </ul> <p><b>Planning and follow-up:</b></p> <ul style="list-style-type: none"> <li>• ~1 month</li> </ul>	<ul style="list-style-type: none"> <li>• Exercise director</li> <li>• At least 1 facilitator</li> <li>• At least 1 evaluator</li> <li>• Technical experts</li> <li>• Administration and logistics staff</li> </ul>
Drill	\$–\$\$	<p><b>Exercise conduct:</b></p> <ul style="list-style-type: none"> <li>• 0.5–2 hours</li> </ul> <p><b>Planning and follow-up:</b></p> <ul style="list-style-type: none"> <li>• ~1 month</li> </ul>	<ul style="list-style-type: none"> <li>• Exercise director</li> <li>• Facilitators</li> <li>• Evaluators</li> <li>• Technical experts</li> <li>• Local advisers</li> <li>• Administration, logistics staff</li> </ul>
Functional	\$\$\$	<p><b>Exercise conduct:</b></p> <ul style="list-style-type: none"> <li>• 4–8 hours; or</li> <li>• multiple days</li> </ul> <p><b>Planning and follow-up:</b></p> <ul style="list-style-type: none"> <li>• ~ 2 months</li> </ul>	<ul style="list-style-type: none"> <li>• Exercise director</li> <li>• Facilitators</li> <li>• Evaluators</li> <li>• Technical experts</li> <li>• Local advisers</li> <li>• Administration, logistics and ICT staff</li> </ul>
Full-scale or field	\$\$\$–\$\$\$\$\$	<p><b>Exercise conduct:</b></p> <ul style="list-style-type: none"> <li>• 2–4 hours; or 1–5 days.</li> </ul> <p><b>Planning and follow-up:</b></p> <ul style="list-style-type: none"> <li>• Full-scale: ~ 6 months</li> <li>• Field: ~ 8-12 weeks</li> </ul>	<ul style="list-style-type: none"> <li>• Exercise director</li> <li>• Controller</li> <li>• Facilitators</li> <li>• Evaluators</li> <li>• Role players or actors</li> <li>• Technical experts</li> <li>• Local advisers</li> <li>• Administration, logistics and ICT staff</li> </ul>

ICT, information and communications technology.

Adapted from the *WHO simulation exercise manual (3)*.



## KEY POINTS – Section 2

- Agree on a document that sets expectations for the exercise (e.g. a concept note) and circulate this to stakeholders.
- Set a small number of clear, well-defined objectives – less is often better.
- Clearly communicate the aims and objectives of the exercise to everyone involved.
- When choosing an exercise, consider the:
  - aim and objectives of the exercise;
  - type of plan being exercised; and
  - level of human and financial resources you can commit.
- Exercises can be extremely resource-intensive – do not underestimate the time, staff and funds you will need.
- Build organizational experience with basic exercises (e.g. a series of small exercises to test specific components of the plan) before moving to more complex ones.

# 3. Planning the exercise

## 3.1 Exercise management team

The **exercise management team** is the group of people responsible for planning, conducting, evaluating and following-up the exercise. The exact composition of the team will depend on the type, scope and complexity of the exercise and will typically include some, or all of the following roles:

- **Exercise director:** The exercise director oversees the planning, conduct and **evaluation** of the exercise, and is responsible for appointing and managing other members of the exercise management team.
- **Exercise controller:** In operation-based exercises, the exercise controller (also known as the lead facilitator) supervises the conduct of the exercise. The controller is responsible for introducing **injects** to the exercise, through messages, facilitators or role players; these are small pieces of information that are used to manage the speed and direction of exercise play.
- **Facilitators:** Facilitators are the first point of contact for questions or requests from participants during an exercise. They are responsible for helping participants to understand the objectives and come to a consensus. During operation-based exercises, facilitators deliver injects and help to monitor the progress of the exercise by providing feedback to the controller. During tabletop exercises, facilitators present the scenario, keep discussions on track and ensure that topics are covered as thoroughly as possible in the available time.
- **Role players:** In large operational exercises, role players are used to act out or simulate specific pre-scripted roles for participants to respond to. Role players keep to their roles and the scripted scenario, but are also prepared to improvise if participants respond unexpectedly during the exercise.
- **Evaluators:** Evaluators observe and gather data from the exercise to assess whether the aim and objectives of the exercise were met. They typically evaluate overall performance; operational effectiveness, quality, capabilities, strengths and weaknesses; and areas for improvement. All types of exercise require evaluation, but large or complex exercises require an evaluation team led by a lead evaluator.

## 3.2 Exercise plan

Once the exercise management team has been formed, the exercise director should establish a plan for developing and conducting the exercise, in line with the details previously agreed to with stakeholders (e.g. budget, time frame, people, facilities and equipment – see Section 2.1). This exercise plan should define and delegate tasks to appropriate members of the exercise management team. Typical tasks include:

- administration and logistics (e.g. invitations, participants, materials, venues, facilities, technology and connectivity);
- site visits to proposed exercises venues;
- development of scenarios, injects and exercise material;
- evaluation planning;
- briefing and training (e.g. of evaluators, facilitators, role players and participants);
- preparation of debriefing and exercise report;
- communications and media (for full-scale or field exercises); and
- safety and security.

Good communication within the exercise management team is crucial for developing and managing the exercise. Regular team meetings should be held to keep the project on track, and methods should be established for collaborating on exercise materials (e.g. use of a shared electronic drive).

### 3.3 Target audience

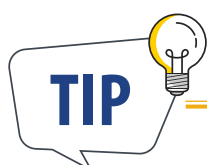
In addition to participants and stakeholders, the target audience for the exercise includes organizations and groups with a strategic or operational interest in pandemic preparedness. Examples of such organizations and groups are local government, medical associations, business or commercial groups, sector representatives or community organizations.

Identifying target audiences can create opportunities for multisector engagement in pandemic preparedness, and wider visibility of the exercise outcomes. For example, you may wish to ask local medical associations for volunteer role players to join the exercise, or to share the exercise report with local governments to help strengthen local pandemic preparedness capacities. A dissemination plan for key documents or information materials (e.g. the exercise report) should be developed with this in mind.

### 3.4 Participants

Exercise participants should be identified based on their professional function or role in the pandemic preparedness plan being tested. They will generally be staff members of the organizations involved in pandemic preparedness and response. Participation should be prioritized for staff who need experience in practising their response duties, including staff who have been nominated to back up key roles during a pandemic. Participation of personnel from civil or cultural organizations can also be considered if the scope of the exercise and resources allow.

Participants should be invited well in advance of the exercise, to secure their attendance. It can be tempting to involve a large number of participants; however, for the success of the exercise it is best to limit numbers to a manageable level. Large groups will make performance, management and evaluation more difficult, and thus will decrease the quality of the exercise. Participants without a direct role in the pandemic plan or plans being tested are also less likely to be fully engaged, and can distract others from focusing on the **exercise objectives**. Box 3.1 provides tips for identifying suitable participants.



#### Box 3.1. Tips for identifying participants

Involving the right participants is critical for the success of the exercise. To help identify participants, it is helpful to:

- map out the response system and the agencies, functions and people who would be involved in a pandemic response at the level being targeted; and
- review pandemic response plans, procedures and the internal structures of the organizations involved.

Participation should be limited to people who are directly involved in the response plans being tested. Too many participants and observers will reduce the quality of the exercise and can prevent the objectives from being met.

### 3.5 Facilitation

Facilitators are the first point of contact for participants during the exercise. Facilitators can be called on to perform many different roles during the exercise; hence, they should be fully briefed and prepared to carry out their duties. Depending on the type of exercise, these duties can include facilitating group discussions, moderating disagreements, explaining exercise materials, role playing, note taking and providing feedback to the lead facilitator or controller and evaluation team.

Facilitators must be chosen carefully, to ensure that they are able to carry out their duties. They can be identified from within the host organization, or externally if appropriate. Facilitators should be knowledgeable on the subject matter they are presenting, and experienced in facilitating large group discussions, ideally at senior level. If facilitators are required to play a role during the exercise, they should also have some real-life experience in the roles they are likely to play – for example, media experience if playing the role of a journalist.

*Also see “Section 3: Facilitator guidelines” in the Harvard School of Public health toolkit (6)*

### 3.6 Exercise guide and briefings

Exercises can be complicated operations, and it can be difficult for people not engaged in the planning process to understand how they work. To help with this situation, an exercise guide and face-to-face briefings are used to inform everyone involved on the rules of the exercise, how it will be conducted, and their individual roles and responsibilities.<sup>1</sup>

For simple exercises such as tabletops or drills, the exercise guide can be a short document that outlines the agenda, how the exercise will work and the different roles that individuals will have on the day. For complex exercises, the exercise guide usually takes the form of an exercise handbook and is distributed before the exercise. The exercise handbook includes more in-depth information, such as an overview of the exercise; a description of participants; a summary of the scenario; and details of roles and responsibilities, rules and guidance, administrative arrangements and contact information.

Briefings are held before all exercises to review the information in the exercise guide or handbook, and to prepare different teams for their roles. Separate briefings should be held for the following:

- **Exercise management team:** The briefing for the exercise management team should cover team roles and responsibilities, exercise logistics, agenda, scenario and facilitation, participants and **observers** and communications. The briefing is typically led by the exercise director, and is held while the exercise venue is being set up. For further information on this team, see Section 6.1.
- **Evaluation team:** For exercises with more than one evaluator, the evaluation team should be briefed before the exercise on the evaluation plan (including expected outcomes and assessment criteria), data-collection methodologies and tools, conduct during the exercise, debriefing activities and follow-up. An evaluation pack should be prepared and distributed; the pack should include a list of key reference documents, the evaluation plan, evaluation tools, copies of feedback surveys and debriefing materials. The briefing is led by the lead evaluator. For further information on this team, see Section 6.1.
- **Participants and observers:** A briefing is held for participants and observers to review the exercise rules and set-up. Participants are instructed on how to play their roles in the exercise, and how to engage with other participants, facilitators and role players. Observers should be reminded to observe only, and not to engage in the exercise; they may also be asked to share their notes and observations with the evaluation team. The briefing is typically led by the exercise director or controller, and is held in the days before, or on the day of the exercise. For further information on participants and observers, see Section 6.2.

<sup>1</sup> Surprise drills are an exception, where participants are not notified of the exercise in advance.

## 3.7 Additional elements

### 3.7.1 Communications and media

A communications and media strategy can leverage the opportunity created by the exercise to promote pandemic preparedness activities, and promote the work of the host organization and stakeholders.

A communications and media strategy is particularly useful in large-scale, operational exercises where actual facilities are used and interactions with the public may occur. A well-planned strategy can keep the public informed of disruptions to normal services (e.g. temporary closures of roads or public facilities), reduce concern due to simulated events and enhance public safety.

It can be helpful to nominate a communications officer or media focal point for developing external communication material and managing communications with the media and the public. This is particularly important for functional and full-scale exercises.

### 3.7.2 Safety and security

A safety and security risk assessment may be needed to ensure a safe exercise environment. Such an assessment may be needed when working in specific contexts, or with particular types of venue or participants. An appropriate local security adviser or agency should be consulted for guidance on any relevant safety and security arrangements.

Access and identification arrangements – for example badges and identity (ID) cards – may be needed for operational exercises that use restricted facilities or equipment. Access should be planned in conjunction with the responsible agency, well in advance of the exercise.

### 3.7.3 Stopping the exercise in an emergency

A contingency plan can be developed in case a real-life emergency occurs that requires the exercise to be stopped. Exercise participants will typically be from emergency response agencies; hence, it may be necessary for them to respond if an actual event occurs during the exercise. The contingency plan may also cover stopping the exercise in case of an accident or security incident.



## KEY POINTS – Section 3

- Good communication within the exercise management team is crucial; therefore, set up regular team meetings and collaboration mechanisms early on.
- Define target audiences for different exercise products and communications – exercises are also opportunities to increase multisector engagement in pandemic preparedness.
- Limit participation to staff directly involved in the plans being tested – having too many participants tends to reduce the quality of the exercise.
- Preparation is key to a successful exercise – make sure that participants, evaluators and team members are fully briefed on how the exercise will work and what their role is.



# 4. Developing the scenario

## 4.1 Overview

A realistic and challenging scenario is the foundation of any effective exercise. The scenario is a preplanned storyline describing the development of a fictitious influenza pandemic, in which the participants will be asked to practise their response actions. The scenario is communicated in small sections – injects – that are delivered progressively throughout the exercise. Each inject develops the storyline of the scenario by adding new events or information for participants to respond to.

The scenario should create an environment in which the objectives of the exercise can be met. Ensure that adequate opportunities are provided for participants to use the pandemic preparedness plans being tested and to demonstrate the actions expected of them. The scenario should be as realistic as possible, with careful attention paid to timing and logistics. A good scenario will:

- support the aims and objectives of the exercise
- generate discussion or action (or both) from players
- be as realistic as possible.

Injects are typically used to develop the scenario in larger operational exercises (e.g. drills, or functional, full-scale or field exercises). Tabletop exercises and small-scale drills can be run with a starting scenario and do not usually require additional injects.

## 4.2 Context research

The first step in developing the exercise scenario is to research and understand the operating environment for pandemic preparedness, the organizations involved and the local context for the exercise. Contextual knowledge will also be useful to facilitators and role players in their interactions with participants during the exercise.

The exercise management team should collect and study key documents including:

- pandemic influenza preparedness plans;
- public health emergency preparedness plans;
- documentation on the public health emergency response system (e.g. stakeholders, authority levels, coordination, communication, resources, procedures and policies);
- documentation from previous emergency responses (e.g. situation reports, lessons learned and after-action reviews); and
- reports from previous pandemic influenza or public health emergency exercises.

Interviews with stakeholders, staff and local experts can also help to build an understanding of the preparedness and response systems in place, particularly those that will be the focus of the exercise.

## 4.3 Planning the scenario

Developing the scenario can be a daunting process, particularly for large exercises. The first step is to review the exercise concept note, aim and objectives, to make sure that the main elements of the exercise are clear. The next step is to identify the corresponding functions of the pandemic influenza preparedness plan that will be targeted. This can be done by brainstorming realistic pandemic situations that would trigger these functions, and identifying the actions that participants would be expected to take in response.

### 4.3.1 Injects

Each inject is designed to elicit a specific response from participants, such as triggering an action or response decision that is in line with the pandemic influenza preparedness plan. Participants can also be tested on their ability to prioritize tasks during a pandemic and to identify noncritical events that can be set aside.

As each inject is developed, exercise planners and evaluators will define the response action they expect participants to take during the exercise; these actions are referred to as expected actions. How participants actually respond during the exercise compared with these expected actions will be a key piece of analysis for evaluating the exercise.

Table 4.1 contains some generic examples that can be used as a starting point for developing injects for your pandemic influenza exercise.

**Table 4.1. Examples of generic pandemic influenza scenario injects**

CATEGORY	INJECT
Preparing for an emergency	<ul style="list-style-type: none"> <li>The president or prime minister calls for an emergency meeting to address the pandemic situation</li> <li>Inaccurate reports are being broadcast by local media.</li> </ul>
Surveillance, investigation and assessment	<ul style="list-style-type: none"> <li>An unusual spike in influenza-like illness is reported from one of your districts.</li> <li>A case of human influenza caused by a novel influenza virus is confirmed in your country.</li> <li>There are delays in receiving testing results because laboratories are overwhelmed.</li> </ul>
Health services and clinical management	<ul style="list-style-type: none"> <li>There are shortages of ICU beds in public hospitals.</li> <li>Waiting rooms in hospitals and clinics are overflowing.</li> <li>Large numbers of health care workers are getting sick.</li> </ul>
Preventing illness in the community	<ul style="list-style-type: none"> <li>Schools and universities consider closing down.</li> <li>Communities ask for help in caring for people at home.</li> <li>A pandemic vaccine may soon be available on the international market.</li> </ul>
Maintaining essential services and recovery	<ul style="list-style-type: none"> <li>Fuel prices are rising and there are fuel shortages.</li> <li>Banks report cash shortages.</li> <li>The number of pandemic influenza cases is declining.</li> </ul>
Research and development	<ul style="list-style-type: none"> <li>The regional influenza reference laboratory requests clinical specimens from confirmed pandemic influenza cases.</li> <li>The new pandemic influenza vaccine will be used to vaccinate health care workers in your country.</li> </ul>

ICU, intensive care unit.

### 4.3.2 Delivering injects

Injects are released at timed intervals by the exercise controller. They are assigned to a facilitator or role player, who delivers the injects to participants.

The way that injects are delivered to participants has a significant impact on the realism of the exercise – organizers can be as creative as imagination and resources allow. Injects can be delivered in any form and by any method of communication. For example, an inject could be a situation report from the field, a television or radio broadcast, a phone call or an email; or it could be something delivered in person by a role player or facilitator acting out a role. Designing realistic delivery methods can help to create a more interesting and engaging exercise for both the participants and the exercise management team.

### 4.3.3 Scenario planning documents

Two key documents are used by the exercise management team to organize and plan the scenario:

- **Master scenario:** The master scenario is a planning document that includes the entire scenario, all injects, and the actions expected from participants in response. The master scenario document is seen and only used by the exercise management team. Participants will only receive the starting scenario and injects during the exercise.
- **Inject matrix:** The inject matrix is a planning document used to organize the timing and delivery of injects during the exercise. In the inject matrix, injects are listed in chronological order and are assigned details such as timing, delivery method, facilitator and target participants. The matrix can also be used by facilitators and evaluators to capture evaluation data, by recording participant responses to each inject.

*See WHO simulation exercise toolbox (7) for sample templates.*

### 4.3.4 How many injects should there be?

In general, as the scale and complexity of the exercise increases, so will the complexity of the scenario and the number of injects. Simple tabletop exercises or drills can be conducted with an initial scenario; such exercises may not require injects at all. Tabletop exercises generally employ a starting scenario followed by discussion questions posed by a facilitator, rather than using injects. A simple tabletop exercise or drill can be divided into several sessions, in which part of the scenario is presented followed by discussion questions, with each session corresponding to a specific exercise objective.

For exercises with more complex scenarios, the number of injects used will depend on the desired pace and pressure of the exercise. There should be sufficient injects to keep participants occupied and challenged, but not so many that they feel overwhelmed and cannot meet the objectives of the exercise. Injects could include a mix of:

- *complex injects*, requiring lengthy discussion and multiple response actions; and
- *simple injects*, requiring short discussion and either no action or single-response actions.

In operational exercises that include an exercise controller, injects are used by the controller to set the pace of the exercise. If participants are completing tasks quickly or if a more stressful environment is desired, the exercise controller can speed up the exercise by introducing new injects more quickly. Conversely, if participants are beginning to be overwhelmed by the pace of the exercise, the exercise controller can slow the exercise by reducing the rate at which injects are added.

Exercises are dynamic events, so the controller must be prepared to adapt injects or create new injects, depending on how the exercise is progressing. It can be a good idea to prepare extra injects as backup – they do not all have to be used if they are not needed.

## 4.4 Describing the pandemic: scenario variables

Describing the development, spread and impact of the fictitious influenza pandemic will add depth and realism to the exercise, as well as events for participants to respond to. Doing this accurately can be difficult, because past pandemics have behaved variably and unpredictably – from the 1918 “Spanish flu” with its catastrophic global impact, to the 2009 pandemic A(H1N1)2009 virus, the impact of which was less severe in terms of morbidity and mortality.

An influenza pandemic will be caused by a totally new virus; thus, its key features, dynamics and impact will not be known until the pandemic actually occurs. Despite this unpredictability, we can use data from seasonal and avian influenza to inform assumptions about how a future pandemic may behave. We can also use experience and lessons learned from recent pandemics to identify impacts that a future pandemic is likely to cause.

This section provides possible pandemic influenza variables that can be included in the scenario and injects. The variables should be adapted to suit the country in which the exercise is being held and the local pandemic preparedness context (e.g. response structure, policies, resources). Where available, assumptions based on current influenza knowledge have been included. These should only be used as suggestions in developing a realistic pandemic influenza exercise scenario, and should not be interpreted as predictive features of the next pandemic.

*For further details on the scientific basis of these assumptions, implications for pandemic planning and references to key literature, see “Annex 2: Planning assumptions” in the WHO PIRM document (1).*

### 4.4.1 Pandemic phases

There are two major phases to a pandemic – the national pandemic phase and the global pandemic phases:

- **National pandemic phase:** Changes in the severity of the national pandemic phase can be used in a scenario to communicate the level of pandemic “threat” and to prompt the corresponding response actions set out in the country’s pandemic influenza preparedness plan.

The pandemic phase in a particular country will be determined by national authorities, based on local assessments of pandemic risk and severity.<sup>1</sup> In national pandemic preparedness plans, the national pandemic phase is typically represented by a grading system to indicate the level of alert or seriousness.

- **Global pandemic phases:** Changes in the severity of the global pandemic phases can be used in a scenario to stimulate discussion, trigger potential preparedness actions and add international context.

The WHO global pandemic phases describe the spread of the pandemic influenza virus around the world, and will be used by WHO to communicate the global pandemic situation. The global pandemic phase will be based on WHO risk assessments performed on virological, epidemiological and clinical data collected internationally. Currently, there are four WHO global pandemic phases (1):

- *interpandemic* – the period between influenza pandemics;
- *alert* – influenza caused by a new subtype has been identified in humans; therefore, increased vigilance and careful risk assessment will be initiated at local, national and global levels;
- *pandemic* – global spread of human influenza caused by a new subtype, determined through global surveillance; and
- *transition* – reduction of assessed global risk, de-escalation of global actions and reduction in response activities or movement towards recovery.

<sup>1</sup> Before 2009, national pandemic response actions were guided by global risk assessment and pandemic phases. This changed after the experience of pandemic A(H1N1)2009. Countries are now advised to base response actions on their own assessment of national pandemic risk and severity, and the corresponding national pandemic phase.

These four phases of a pandemic are illustrated in Fig. 4.1.

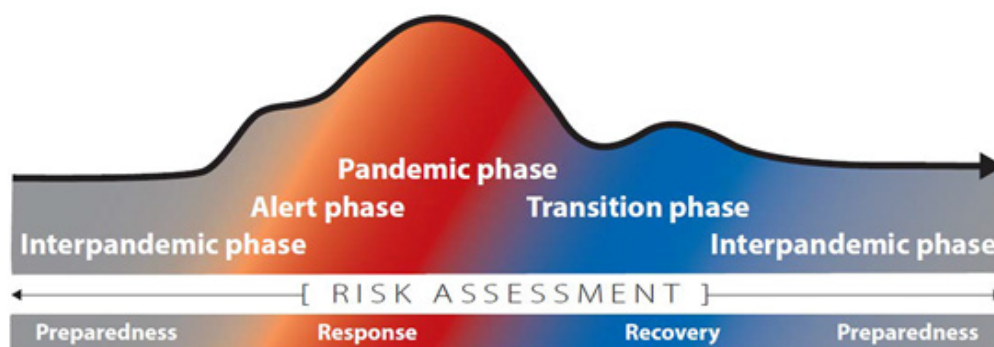


Figure 4.1. Global pandemic phase continuum

#### 4.4.2 Where does the pandemic start?

An influenza pandemic will emerge when a newly identified influenza virus is detected in humans and begins to be transmitted easily from person to person. Deciding where in the world this initial event occurs – in your country, in a neighbouring country or in another part of the world – is a good starting point from which to develop the scenario. Geographical proximity of your country with the source of the pandemic (or close transport links) will have implications for any immediate preparedness or response actions needed, and how much time you have to get ready.

Consider the following starting scenarios:

- an outbreak of sustained human-to-human transmission of a novel influenza virus in the community is confirmed in **your country**;
- an outbreak of sustained human-to-human transmission of a novel influenza virus in the community is confirmed in a **neighbouring country**; or
- an outbreak of sustained human-to-human transmission of a novel influenza virus in the community is confirmed **anywhere else in the world**.

How would your pandemic influenza preparedness plan be put into action in each of these situations? Which component or components of your plan will be tested? Which scenario will best support the objectives of your exercise?

#### 4.4.3 Characteristics of the virus

Describing characteristics of the virus can add realism to the scenario and give participants additional information and context for determining appropriate responses and preparedness actions. Consider the objectives of your exercise carefully when deciding how to describe the virus. What triggers for action are included in your pandemic influenza preparedness plan?

**Table 4.2. Pandemic influenza virus characteristics**

FEATURE	ASSUMPTIONS	HOW TO USE ASSUMPTIONS IN YOUR SCENARIO
<b>Mode of transmission</b>	<ul style="list-style-type: none"> <li>• Transmission primarily through close contact (via droplet or contact); some airborne transmission (via airborne particles).</li> <li>• Hand hygiene, isolation of ill people and use of PPE when caring for people sick with influenza.</li> <li>• Health care workers performing aerosol-generating procedures should wear eye protection, gown, clean non-sterile gloves and particulate respirators.</li> </ul>	<p>The way that the virus spreads will affect messages to the public and infection prevention and control measures in health care settings and at home.</p> <p><i>Questions for your scenario:</i></p> <ul style="list-style-type: none"> <li>• Are specific groups getting sick (e.g. health-care workers or laboratory workers)?</li> </ul>
<b>Infectivity</b>	<ul style="list-style-type: none"> <li>• Latent period: 0.5–2 days.</li> <li>• Incubation period: 1–3 days.</li> <li>• Duration of infectiousness: ~5 days in adults, possibly longer in children.</li> <li>• Basic reproduction number (R0): 1.1–2.0.</li> </ul>	<p>Infectivity variables can be used to determine the feasibility of public health measures such as screening, isolation, contact tracing and quarantine.</p> <p><b>Note:</b> <i>When a real pandemic begins, countries should undertake surveillance and special studies to assess the true value of these parameters.</i></p>
<b>Attack rate and symptoms</b>	<ul style="list-style-type: none"> <li>• Averaged overall clinical attack rate: 25–45%.</li> <li>• About two-thirds of infected people will develop clinical symptoms.</li> <li>• Uncomplicated symptoms: respiratory symptoms; fever and abrupt onset of muscle ache and headache or backache.</li> <li>• Complications: potentially pneumonia, respiratory failure and cardiac failure.</li> </ul>	<p>Descriptions of the proportions of people getting infected and sick, and the type of symptoms and illness that they experience can be used to trigger health service preparedness actions and public health messages.</p>

PPE, personal protective equipment.

#### 4.4.4 Dynamics and impact

Describing the way that the pandemic is spreading and its impact on health-care services, workplaces, society and the economy can stimulate response actions from participants, and increase the sense of urgency and pressure of the exercise.

Although participants may not have the time or expertise to address all of the issues in the scenario, describing social or economic impacts can highlight the wider consequences of a pandemic and the importance of an all-of-society approach to preparedness.

**Table 4.3. Pandemic dynamics and impact**

FEATURE	ASSUMPTIONS	HOW TO USE ASSUMPTIONS IN YOUR SCENARIO
<b>Pandemic dynamics</b>	<ul style="list-style-type: none"> <li>• An influenza pandemic can begin at any time of the year, in any place in the world. It will spread globally within several weeks or months.</li> <li>• A pandemic wave will last from several weeks to a few months, with variation from country to country. Within a single country, there may be variations among communities.</li> <li>• Most communities may experience more than one pandemic wave, with the waves having different magnitudes.</li> </ul>	<p>Describing the dynamics of the pandemic and how it is spreading in the world and in communities will trigger preparedness and response actions, as well as changes in national and global pandemic phases.</p> <p><b>Questions for your scenario:</b></p> <ul style="list-style-type: none"> <li>• Did the virus start in your country? Is containment an option the control of spread still feasible?</li> <li>• Where in the world has the virus spread to?</li> <li>• Do you share borders or transport links with affected countries?</li> <li>• How quickly is the virus spreading across the world?</li> <li>• How quickly/ and where is the virus spreading in your country?</li> <li>• Are specific communities/ or vulnerable groups more affected?</li> </ul>
<b>Vaccine availability</b>	<ul style="list-style-type: none"> <li>• The process of producing a vaccine for a new strain of pandemic influenza take about 5–6 months.</li> <li>• Availability of the vaccine will be limited, especially in the early stage of a pandemic as global production begins.</li> </ul>	<p><b>Questions for your scenario</b></p> <ul style="list-style-type: none"> <li>• Is your country a producer or importer of influenza vaccine?</li> <li>• Does your plan include mechanisms for expediting pandemic influenza vaccine market authorization and licensing?</li> <li>• Does your plan include a pandemic influenza vaccination policy, deployment and vaccination plans?</li> </ul>
<b>Health-care services</b>	<ul style="list-style-type: none"> <li>• Increases in hospitalizations, excess mortality and secondary complications are expected to vary widely among countries and communities.</li> <li>• Vulnerable populations will be affected more severely.</li> </ul>	<p>Describing the impact of the simulated pandemic on health care services during the exercise can increase the sense of emergency for participants, and can also be used to trigger actions to triage and reallocate resources.</p> <p>To simulate extra health-care demand, you can compare health-care use rates during the simulated pandemic to rates for normal, seasonal influenza. Prepare baseline data from your routine influenza surveillance system and create simulated pandemic rates for indicators such as the percentage of:</p> <ul style="list-style-type: none"> <li>• outpatient visits for influenza-like illness</li> <li>• pandemic influenza-associated hospitalizations</li> <li>• increase in ICU admissions for influenza-like illness</li> <li>• increase in deaths attributed to pneumonia or influenza.</li> </ul>

**Table 4.3. Pandemic dynamics and impact** [continued]

FEATURE	ASSUMPTIONS	HOW TO USE ASSUMPTIONS IN YOUR SCENARIO
<b>Occupational exposure risk<sup>a</sup></b>	<ul style="list-style-type: none"> <li>• The risk of occupational exposure to the pandemic influenza virus will be increased if workers are required to be in close proximity to people or specimens potentially infected with the virus, or if they are required to have repeated or extended contact with known or suspected sources of the virus.</li> <li>• <i>Very high risk:</i> Occupations with high potential exposure to known or suspected pandemic influenza virus during specific medical or laboratory procedures (e.g. IC staff and laboratory workers).</li> <li>• <i>High risk:</i> Occupations with high potential exposure to known or suspected sources of pandemic influenza virus (e.g. health-care or ambulance workers).</li> <li>• <i>Medium risk:</i> Occupations with close, frequent contact with groups such as students, outpatients or the general public (e.g. teachers and high-volume retail workers).</li> <li>• <i>Lower risk:</i> Occupations with no or infrequent contact with the public or co-workers (e.g. office employees).</li> </ul>	<p>Certain critical occupations (e.g. ICU staff and laboratory staff working with specimens from known or suspected pandemic influenza cases) may be associated with higher rates of infection with the pandemic influenza virus, affecting both the number of people well enough to work, and the number of people willing to work in those jobs. This can be used in your scenario to stimulate actions or discussion around issues such as infection prevention and control, worker incentives and compensation, and HR planning.</p>
<b>Workplace absenteeism</b>	<ul style="list-style-type: none"> <li>• Workplace absenteeism is expected to be higher than the estimated clinical attack rate (25–45%).</li> <li>• Workplace absenteeism has been estimated at up to 40% during the peak of a severe pandemic in some national pandemic plans (8, 9). Studies have estimated a wide variety of absenteeism rates in different contexts, including:               <ul style="list-style-type: none"> <li>- 8–58% in health care workers in Hong Kong SAR during influenza epidemics from 2004–2009 (10)</li> <li>- 13% in Canadian workers during pandemic A(H1N1)2009 (11)</li> <li>- 5.8% (35% attack rate), 4.2% (25% attack rate) and 2.5% (15% attack rate) in a US university model (12).</li> </ul> </li> </ul>	<p>Workplace absenteeism during a pandemic will affect the provision of health care and other essential services, as well as general business continuity. Workers may be absent due to personal illness, caring for others or from fear of attending work. Absenteeism rates can be used in your scenario to stimulate discussion or actions on workplace planning and HR policies.</p>

<sup>a</sup> Adapted from guidance on preparing workplaces for an influenza pandemic from the US Department of Labor Occupational Safety and Health Administration (13).



**Table 4.3. Pandemic dynamics and impact** [continued]

FEATURE	ASSUMPTIONS	HOW TO USE ASSUMPTIONS IN YOUR SCENARIO
<b>Social impact</b>	<ul style="list-style-type: none"> <li>• Disruption to normal social movement, public spaces, and commercial services will have a wide range of impacts on people's daily lives and may affect public reaction to how the pandemic is being managed.</li> <li>• Mainstream and social media coverage may or may not be supportive or accurate, affecting public sentiment and cooperation with the response.</li> </ul>	<p><i>Consider including events such as the following to your scenario:</i></p> <ul style="list-style-type: none"> <li>• School closures</li> <li>• Market/store closures</li> <li>• Cancellation of public events</li> <li>• Rumours and misinformation</li> <li>• Negative media coverage of government response</li> <li>• Shortages of basic commodities (medicine, food, fuel)</li> <li>• Disruption of essential services (e.g. transport, energy, water)</li> <li>• Civil unrest</li> </ul>
<b>Economic impact</b>	<ul style="list-style-type: none"> <li>• Disruption to markets and businesses may affect both current and future economic activity.</li> <li>• Some sectors may be more badly affected than others, and may require support to recover.</li> </ul>	<p><i>Consider including events such as the following to your scenario:</i></p> <ul style="list-style-type: none"> <li>• flight cancellations and airport closures</li> <li>• disruption of essential services (e.g. transport, energy and water)</li> <li>• business and livelihood losses</li> <li>• financial market disruption</li> <li>• lack of funding for pandemic recovery plans.</li> </ul>

HR, human resource; ICU, intensive care unit; SAR, Special Administrative Region.

## 4.5 Tips

### 4.5.1 Stay organised

To avoid inconsistencies in scenario events and timings, it is important to finalize the master scenario **before** developing injects. Identifying key scenario events and plotting them against a timeline will help to keep the storyline organized during development, and during the exercise.

### 4.5.2 Do not fight the scenario

Before the exercise, advise participants not to “fight the scenario”. There may be cases where an unusual event or piece of information is presented in the scenario that participants disagree with. Instead of trying to argue with or “correct” the information, participants should accept it as part of the exercise and make the best possible response decision. Being able to respond to unexpected challenges is a valuable skill to have during a real pandemic.

### 4.5.3 How much detail is needed?

The amount of detail needed is probably less than you think – there needs to be enough detail to keep the scenario engaging and realistic, but not so much that participants are distracted from the objectives of the exercise. Overloading the scenario with technical details can sometimes get in the way of the bigger picture of the exercise. Participants should be given enough detail to make decisions and take action, but not so much that they are overwhelmed or sidetracked. The organizer should make sure that the level of detail presented in the scenario is enough to support the achievement of the objectives, but not so much that it distracts participants.

During a real pandemic there will be little information available about the characteristics of the new influenza virus, particularly in the early stages. Parameters such as case-fatality rates, attack rates and virulence usually evolve as the pandemic progresses. Although a lack of detail may be frustrating for some participants during an exercise, they should practise being able to operate and make decisions with incomplete information.



## KEY POINTS – Section 4

- A good scenario will:
  - support the aims and objectives of the exercise.
  - generate discussion and/or action from players.
  - be as realistic as possible.
- Be creative when delivering injects – realistic delivery methods can make the exercise more engaging and interesting for everyone involved.
- Use enough injects to keep participants challenged, but not so many that they feel overwhelmed and cannot meet the objectives of the exercise.
- Exercises are dynamic events – be prepared to adapt and create new injects depending on how the exercise is progressing.



# Planning the evaluation

## 5.1 Overview

A good evaluation is key to ensuring that the exercise is a valuable learning and improvement experience. Evaluation is a core component of the exercise and should be included from the start of the exercise planning process.

The teams in charge of planning the exercise and evaluation should work together to clearly develop the aim and objectives of the exercise, and to ensure that the issues being tested can be observed, analysed and evaluated. Questions to ask are:

- Are the aim and objectives clear and understood?
- Are the issues being tested observable?
- Does the chosen exercise format provide good conditions for these issues to be demonstrated?

A high-quality evaluation is demanding and labour-intensive. Therefore, it is important to carefully consider the resources available, to avoid designing an exercise that may be too big to evaluate properly.

If the results of the evaluation are to be useful, they will need to be communicated and disseminated to the relevant groups. The exercise management team and evaluator or evaluators should discuss and agree on the expected outputs of the evaluation (e.g. recommendations, reports or presentations), the intended audience for each output and a dissemination plan.

## 5.2 Identify the evaluators

Evaluators should have a good working knowledge of the technical area they are being asked to evaluate, as well as organizational, analytical and communication skills. Their responsibilities will include:

- developing the evaluation plan (including evaluation questions and assessment criteria);
- observing the exercise;
- analysing data and materials from the exercise;
- developing the evaluation findings and recommendations; and
- supporting dissemination of the evaluation report.

As the scope and complexity of an exercise increases, so will the need for additional evaluators. Small, straightforward exercises may require only one evaluator. Large and complex exercises may require multiple evaluators, or an evaluation team made up of members with complementary expertise.

Operational exercises often generate numerous actions and materials (e.g. phone calls, emails, side meetings and action logs) that will need to be monitored and assessed – usually by an evaluation team. Exercises spread over multiple locations will also need separate onsite evaluators or teams to observe activities.

Too many evaluators can distract participants and interrupt the flow of the exercise. Hence, it is important to find a balance between the numbers of participants and evaluators so that the dynamics of the exercise are not disrupted, and the evaluator or evaluators have the right support and working conditions to perform their role.

### 5.3 External or internal evaluators

For the evaluation to be truly useful, evaluators must be as objective as possible. They should highlight things that went well, but must also be honest in pointing out things that did not work or areas that need to be improved. Evaluators need to be knowledgeable about the processes, technical areas and organizations they are being asked to evaluate. They must also be able to commit to participating in the preparation, conduct and follow-up of the exercise.

It may seem appealing to appoint internal evaluators, because of their contextual knowledge and because of resource constraints; however, an external evaluator can provide objectivity. To balance these factors, it is a good idea to choose an external evaluator to lead the evaluation, but with the support of an internal evaluator; another option is to appoint a mixed team of internal and external evaluators.

External evaluators are generally better placed to give unbiased and honest assessments, because they will have fewer professional and personal ties to the organization and the plans being tested. Having an external lead evaluator can also make it easier to deliver any confronting or challenging recommendations.

Internal evaluators bring contextual knowledge to the evaluation, with personal experience and insight into the culture of the participating organizations and the issues being tested. They can support external members of the evaluation team and help to implement evaluation recommendations by providing continuity and follow-up after the exercise.

### 5.4 Evaluation plan

The lead evaluator should work with exercise planners from the start in developing an evaluation plan. The evaluation will typically focus on two components of the exercise:

- Exercise performance and outcomes: *To what extent were the aim and objectives achieved?*
- Exercise format and logistics: *How was the exercise conducted?*

An evaluation plan should specify the evaluation questions, assessment criteria and data collection methodologies. It should also include a timeline for completing and submitting the evaluation findings, recommendations for improvement and any other agreed outputs.

*See WHO simulation exercise toolbox (7) for further evaluation planning guidance for tabletop, drill, functional, and full-scale or field exercises.*

#### 5.4.1 Evaluation questions

Evaluation questions are closely related to the aim and objectives of the exercise. They articulate the main issues being tested in the exercise, and provide focus and structure to the evaluation. Evaluation questions also influence how data can be gathered and therefore affect the exercise. This emphasizes the importance of planning the exercise and the evaluation simultaneously.

Naturally, one of the main priorities of exercises to test pandemic influenza preparedness plans will be to identify areas where the plan should be updated or improved. To ensure that this is addressed, the evaluation should include specific questions to investigate whether plans and procedures exist, are known and are used – and, if they are used, how well they function.

Table 5.1 shows an example of an exercise objective (to test information flows), together with potential issues and evaluation questions.

**Table 5.1. Sample evaluation questions**

SAMPLE OBJECTIVE	SAMPLE ISSUES	SAMPLE EVALUATION QUESTIONS
To test information flow between the emergency operations centre and response agencies in the field.	How is information collected?	<ul style="list-style-type: none"> <li>• Were information sources known?</li> <li>• Were requests for information made?</li> <li>• Was missing/incomplete information followed up?</li> </ul>
	How is new information verified and approved?	<ul style="list-style-type: none"> <li>• Were roles and responsibilities clear?</li> <li>• Was unusual information checked?</li> <li>• How did participants prioritize excess information?</li> </ul>
	How quickly is information communicated?	<ul style="list-style-type: none"> <li>• How did participants deal with deadlines?</li> <li>• Were there any bottlenecks in information flow?</li> <li>• Were duties delegated when necessary?</li> <li>• What types of communication methods were used?</li> </ul>
	Does the right information reach the right people?	<ul style="list-style-type: none"> <li>• Was appropriate information sent to the relevant response agencies?</li> <li>• Was the information received?</li> <li>• Was there feedback to confirm when the message was received?</li> </ul>
	Were formal procedures/plans known and followed?	<ul style="list-style-type: none"> <li>• Were existing procedures and plans known to participants?</li> <li>• Did they function well?</li> <li>• Were any ad hoc procedures used?</li> </ul>

- Suggested exercise format: operation-based (e.g. functional, full-scale).
- Suggested data gathering methods: observation of discussions and phone calls, emails, “formal” materials produced during exercise (e.g. statements and memos) and action logs.

From the above example, it can be seen how a single exercise objective can easily produce a wide range of issues and evaluation questions. This emphasizes the benefit of having a limited number of well-defined exercise objectives, as well as the need to prioritize evaluation issues and questions in order to maintain the quality of the exercise.

#### 5.4.2 Assessment criteria

After developing the evaluation questions, clear criteria against which data and observations from the exercise can be assessed should be set. Initial assessment criteria can be developed from goals or standards in the pandemic influenza preparedness plan, or from information sourced from exercise background documents.

Is it important to stress that the assessment criteria should focus on the pandemic influenza preparedness plan, response system or operations being tested, *not* the participants.

The initial assessment criteria should be discussed with key stakeholders before the exercise to agree on how actions will be evaluated during the exercise. This is important because many of the issues involved in pandemic influenza preparedness have no clear performance standards. Having assessment criteria pre-agreed by stakeholders will support the validity of the evaluation findings. This is particularly useful when testing strategic plans, where what is ‘right’ or ‘wrong’ can be open to individual interpretation.

In assessing the exercise outcomes, evaluators should be mindful of the constraints of the exercise. Although exercise conditions attempt to be as realistic as possible, there will be shortcomings in how “real” the simulated environment is. The ability of participants to respond effectively will be affected by factors such as the information available in the scenario, ability to call on resources, and their own ability to adjust to working in exercise conditions. These should be taken into account so that a fair and reasonable assessment is made.

### 5.4.3 Data collection and tools

In collecting evaluation data, evaluators can draw on a range of sources and materials:

- **Observation:** Personal observations of participants’ actions and responses during the exercise.
- **Exercise materials:** Primary exercise materials created by participants during the exercise (e.g. notes, emails, action logs, simulated memos, reports, interviews) and secondary exercise materials generated to support the exercise (e.g. scenario documents, exercise guide, orientation documents, evaluations from past exercises).
- **Debriefings:** A “hot wash” debriefing with all participants is held immediately after the exercise. This session gives the participants an opportunity to discuss their experiences and lessons learned during the exercise while memories are fresh, and before any analysis has been done. For larger exercises, a separate exercise debriefing session is held the next day for in-depth discussion with all participants. It is also recommended that an additional debriefing be held with the exercise management team to discuss the conduct and performance of the exercise.

*Also see Section 7.2 and Section 8.2.*

- **Interviews:** Participants, observers and members of the exercise management team can be interviewed to provide specific feedback on the exercise. For participants, this can be a useful way to learn about their personal experiences, feelings and intentions during the exercise, which they may otherwise not reflect on. Observers are often representatives of stakeholder agencies or technical experts, and can have interesting insights to add to the evaluation.
- **Feedback forms:** Participants, observers and members of the exercise management team may be asked to complete a feedback form at the end of the exercise. This can be a good opportunity to collect a large amount of standardized data.

Evaluators can also use exercise planning documents to make notes and collect data during the exercise. Most exercises will use a planning document such as an **inject matrix** or exercise outline template to track the scenario, injects and expected outcomes or participant actions. These documents can be used to develop evaluation checklists or observation templates to record how the participants responded, whether plans, systems and resources were used appropriately, and whether actual outcomes matched expected outcomes.

*See WHO simulation exercise toolbox (7) for sample exercise outline templates (tabletop) and evaluation observation templates (drills, or functional, full-scale or field exercises).*

## 5.5 Evaluator orientation

In exercises with an evaluation team, the lead evaluator should ensure that team members are fully oriented to the evaluation plan and exercise materials. The team should understand the issues and assessment criteria, where they should be positioned during the exercise, and how data will be collected and analysed. Take the time to do this well – an evaluation team that is fully briefed will be better prepared to deliver a useful, insightful and fair evaluation.

Evaluators must know what response actions are expected during the exercise. This means that in addition to subject matter knowledge, they will need a solid orientation on the pandemic influenza preparedness plan being tested; the exercise aim and objectives, scenario and injects; and the response actions expected from participants. They will also need to prepare contextual knowledge of the organizations and systems being tested.

Examples of relevant background material they should read include:

- pandemic influenza preparedness plan
- exercise guide or handbook
- exercise scenario, injects and expected actions
- other exercise background material
- relevant legislation and policy documents
- organigrams
- terms of reference or job descriptions of roles being tested
- documents on organizational processes
- reports from previous exercises
- previous exercise reports.



## KEY POINTS – Section 5

- Plan the evaluation from the start, in parallel with the exercise.
- Align evaluation questions to the exercise aim and objectives. Prioritize the issues and questions to be addressed, and keep them to a manageable level.
- Assessment criteria should focus on the plan, response system or operations being tested, not the participants.
- Where possible choose an external lead evaluator, with the support of an internal evaluator, or a mixed team of internal and external evaluators.
- Ensure that evaluators are thoroughly trained and briefed on the exercise and evaluation process – an evaluation team that is fully prepared will deliver a more useful, insightful and fair evaluation.

# 6 Staging the exercise

## 6.1 Setting up the exercise

Setting up the exercise involves preparing the venue, facilities and materials; checking the exercise content and equipment; and briefing the exercise management and evaluation teams. Depending on the type and complexity of your exercise, some or all of the following steps are taken.

Table 6.1. Exercise set-up

STEP	TABLETOP	DRILL	FUNCTIONAL	FULL-SCALE/FIELD
Exercise venue	✓	✓	✓	✓
Control room		✓	✓	✓
Equipment check	✓	✓	✓	✓
Exercise management team briefing	✓	✓	✓	✓

### 6.1.1 Exercise venue

The type and scope of the exercise will determine the choice of venue and set-up needed.

- **Tabletop** exercises can be conducted in a comfortable meeting or conference room. Any required equipment (e.g. projectors, screens, computers, printers) should be set up and checked the day before the exercise.
- **Drills** can be conducted in actual response locations (e.g. hospital or emergency operations centre) or in an appropriate meeting room, depending on the objectives and desired level of realism.

If the drill takes place in a public area, public safety and concern must be managed by informing people of the event in advance and as it is happening (e.g. with the use of clear signage and barriers). If the drill takes place in an actual response location, arrangements should be made in advance to inform staff of the exercise and to minimize disruption to normal operations. Special access or identification arrangements (e.g. badges and ID cards) for exercise participants may also be required.

- **Functional** exercises are generally held in the emergency operations centre,<sup>1</sup> as they mainly focus on testing emergency response coordination arrangements. If the centre is not available, an appropriate meeting room can be used as a substitute venue.
- **Field/full-scale** exercises are conducted in the actual facilities and locations used during a real emergency. Multiple venues are often in use at the same time, with these exercises also employing actual response materials and equipment.

<sup>1</sup> For more information on emergency operation centres, see the WHO framework for such centres (14).



Staff working in facilities where the exercise will take place should be given advance warning of the exercise so that disruption to normal operations can be minimized, and alternative work arrangements can be made if necessary. Some facilities (e.g. hospitals and roads) may be closed to the general public while the exercise is being held – if this is the case, advance notice should be provided. Special access or identification arrangements (e.g. badges and ID cards) for exercise participants may also be required.

### 6.1.2 Control room

The **control room** is the coordination centre for operational exercises and can be an office, tent or other suitable space. It is managed by the exercise controller, and provides a dedicated space (separated from the exercise participants) from which the exercise management team can manage and run the exercise from. The room should contain all the equipment and materials needed in order to monitor and run the exercise.

### 6.1.3 Equipment check

Check and test all equipment and materials at least the day before the exercise, including:

- *equipment* – such as projectors, laptops and printers;
- *materials* – such as print-outs, paper and pens;
- *communications* – such as Internet access, WIFI (including passwords), videoconferencing, telephones, email addresses and radios; and
- *consumables* – such as refreshments and meals.

Take extra care to test the delivery methods for injects, as well as communication channels within the exercise management team – in particular between the exercise controller, facilitators and evaluators.

### 6.1.4 Exercise management team briefing

An exercise management team briefing is essential for ensuring that team members understand their roles and responsibilities and how the exercise will be run. The briefing is generally led by the exercise director on the day of the exercise and will cover the exercise materials, agenda, logistics, communications and any relevant safety and security issues. If a large exercise is run over multiple days, this briefing should be held at least once a day. The briefing should cover:

- exercise aim and objectives;
- agenda;
- review of participants and functions to be tested;
- review of exercise management team members, their respective roles and responsibilities;
- review of the scenario;
- communications with participants and within the exercise management team during the exercise; and
- logistics and safety arrangements.

During the exercise it can also be useful for exercise management team members to wear visible identification (e.g. badge, lanyard, T-shirt or vest).

Depending on the size of the exercise, subgroups within the exercise management team may hold additional team briefings, for example:

- **Facilitation team:** The exercise controller (lead facilitator), facilitators and role players should perform a run-through of the scenario to ensure that its delivery is coordinated. Communication channels between the team and the exercise controller should be checked to ensure that instructions and feedback can be communicated.

Facilitators and role players should also be clear on their designated locations during the exercise, any relevant safety aspects and when they should intervene in the exercise to get participants back on track.

- **Evaluation team:** For exercises with multiple evaluators, the team should meet to review the evaluation plan (including expected outcomes and assessment criteria), data collection, evaluation forms or checklists, location and conduct during the exercise, how to address unexpected actions, and debriefing activities. An evaluation package should be prepared including:
  - evaluation instructions (e.g. conduct during exercise and debriefing);
  - exercise materials (e.g. scenario, agenda and debriefing activities);
  - evaluation team logistics (e.g. evaluator locations, map of exercise venue or sites, and contact list); and
  - tools (e.g. checklists, evaluation templates and feedback forms).

## 6.2 Conducting the exercise

By the day of the exercise, all planning activities will have been completed and preparations will have been checked. The exercise will now be opened to participants, and focus will shift towards the conduct and management of the exercise play. Depending on the type and complexity of your exercise, some or all of the following steps are taken to conduct the exercise.

**Table 6.2. Exercise conduct**

STEP	TABLETOP	DRILL	FUNCTIONAL	FULL-SCALE OR FIELD
Participant and observer briefing	R	R	R	R
Welcome and opening	O	N/A	O	O
Starting the exercise	R	R	R	R
Running the exercise	R	R	R	R
Observing the exercise	R	R	R	R
Ending the exercise	R	R	R	R
Hot wash debrief	R	R	R	R
Main exercise debrief	N/A	N/A	R	R
Closing	O	O	O	O

O, optional; R, required; n/a, not applicable.

### 6.2.1 Participant and observer briefing

Before the start of the exercise (usually the morning of the exercise, or the day before) participants and observers are briefed, to ensure that everyone has a clear understanding of the exercise aim, objectives, agenda, guidelines and rules of play. For operational exercises, it can be useful to demonstrate sample injects and to communicate rules.

The briefing should emphasize the learning aspects of the exercise including how the exercise will be debriefed and evaluated, and how recommendations for improving pandemic preparedness plans and capacities will be made.

The briefing should include time for questions. The exercise guide or handbook can be provided at the briefing or in advance.

### 6.2.2 Welcome and opening

For most exercises, the participants will be welcomed by the exercise director or lead facilitator who will present the exercise agenda and introduce the exercise management team. The exercise director or a senior official from the host organization may also give a brief overview of the background to the exercise and the wider pandemic influenza preparedness strategy. If appropriate, a formal ceremony can be held to welcome participants and officially open the exercise.

### 6.2.3 Starting the exercise

The exercise usually begins with the presentation of the first inject to all participants, setting the scene and providing background information for the scenario.

- For **tabletop exercises**, the first inject is followed up by problems statements or discussion questions posed by the facilitator.
- For **drills**, the first inject should include an event or instruction that triggers participants to initiate the specific operation or function being tested, in accordance with the pandemic preparedness plan.
- For **functional and field or full-scale exercises**, the first inject should include an event that triggers a chain of actions from participants according to their pandemic preparedness plans. Further responses from participants are triggered by the delivery of more injects throughout the exercise.

### 6.2.4 Running the exercise

The main responsibilities and mechanisms to run an exercise differ with the type of exercise being held. A brief overview is presented below, and the [WHO simulation exercise manual](#) (3) has further information about running specific types of exercise.

- **Tabletop:** The responsibility of running a tabletop exercise lies primarily with the facilitator, who will lead participants through a planned, constructive discussion. The facilitator will manage the direction of the discussion, moderate disagreements, ensure that everyone plays an active role, and clarify questions and points made by participants. The facilitator should also summarize the session outcomes at the end of the exercise. For some exercises, technical experts can be invited to support the discussions.
- **Drill:** The exercise controller is responsible for managing the conduct of a drill and for overseeing the exercise management team on the day. The controller will receive updates on the progress of the drill from facilitators, and will resolve any major issues in discussion with the exercise director as necessary.

In a **drill**, injects are generally used to prompt participants to perform specific actions or procedures. The exercise controller will delegate injects to facilitators, who will then deliver them to participants. The controller can also introduce ad hoc injects to refocus participants if the drill is not progressing as planned.

- **Functional, and full-scale or field:** The exercise controller is responsible for managing the running of the exercise and guiding the exercise management team on the day. The controller will receive updates on the progress of the exercise from facilitators, and will resolve any major issues in discussion with the exercise director as necessary.

Functional and full-scale or field exercises are driven by the release of injects to participants. The exercise controller will release each inject to a designated facilitator or role player who then delivers it to the target participant or group. Injects are released at predetermined times listed in the inject matrix – however, the controller can also change the pace (and pressure) of the

exercise by increasing or decreasing the speed at which injects are released. If the exercise is not progressing as planned, the controller can release ad hoc injects to refocus participants on the objectives.

For large-scale exercises that use multiple communication channels, a dedicated communications team can help to monitor and deliver messages between the exercise management team, facilitators and participants.

For exercises that include multiple sites, a separate communication mechanism for the exercise management team can also be established (e.g. text or online messaging) to help exercise controllers at each site to keep activities synchronized.

### 6.2.5 Observing the exercise

During the exercise, the evaluator or evaluators will observe and document the actions, outcomes, decisions, key comments and challenges faced by participants. Evaluators should be strategically positioned in the venue in order to observe the exercise. They can use tools such as evaluation checklists or templates to record their observations, which may also be supplemented by notes from facilitators or observers.

- In **discussion-based** exercises, evaluators observe and record data from listening to participants' discussions, usually with the aid of a checklist or observation template.
- In **operations-based** exercises, evaluators observe and record data from watching participants' actions. Evaluators should be instructed to:
  - be ready at their designated post when participants arrive, and stay at their post during key times;
  - position themselves to see participants' actions clearly, but not to obstruct exercise play;
  - focus on observing activities and tasks relevant to the exercise objectives;
  - take clear, detailed notes, including times and sequences of events; and
  - avoid prompting participants or answering questions from participants.

### 6.2.6 Ending the exercise

The end of the exercise is announced by the exercise controller or lead facilitator when at least one of the following occurs:

- the exercise objectives have been met
- the time allowed for the exercise has been exceeded
- an unexpected interruption has occurred.

In operational exercises, the end of the exercise is often announced through a final inject. It is important to ensure that this is received by all participants and members of the exercise management team.

### 6.2.7 Hot wash exercise debriefing

A hot wash debriefing is held immediately after the exercise, to give participants an opportunity to discuss their experiences of the exercise while memories and impressions are still fresh. Feedback forms can also be distributed during the hot wash to collect participants' views on specific aspects of the exercise. The hot wash debriefing is usually conducted by the lead evaluator or facilitator, who should ensure that the discussion stays focused, brief and constructive.

- For smaller exercises (i.e. tabletop exercise or drill), the hot wash is used for participants to self-assess their performance by discussing their achievements, challenges and potential recommendations. It is also an opportunity for evaluators to clarify observations and collect missing data from participants before they leave the venue. The hot wash should be documented, and a summary made available to participants shortly afterwards.
- For larger exercises (i.e. functional, full-scale or field), the hot wash is an opportunity for participants to "decompress" from the stress of the exercise and provide initial feedback. In exercises held over multiple venues, separate hot washes can take place at each location. More in-depth discussion is reserved for the main exercise debriefing held the following day.

## 6.2.8 Main exercise debriefing

For large and complex exercises (i.e. functional, full-scale or field) an additional debriefing with participants and members of the exercise management team should be held the day after the exercise. The exercise debriefing is an important time for reflecting on the lessons learned from the exercise, and for sharing feedback on achievements, challenges and critical gaps in plans, procedures, systems and training. It is also an opportunity for evaluators to share their initial observations from the exercise and to gather further data. The debriefing should be documented and made available to all participants as a summary or report, shortly after the session.

Debriefing is a critical part of large exercises and should be allocated sufficient time – half a day at minimum. Some organizations advocate a “50:50” rule, where 50% of the exercise time should be used to conduct the exercise and 50% for feedback. While this may not always be feasible (particularly for exercises held over multiple days), it highlights the importance of debriefing and the need to allocate this step sufficient time and attention.

*See the WHO simulation exercise manual (3) and the WHO toolbox (7) for templates and further guidance for conducting debriefing sessions.*

## 6.2.9 Closing

The exercise will be closed at the end of the debrief. This can be done informally by the exercise director, or more formally as agreed with the partners.



### KEY POINTS – Section 6

- Check and test all equipment and materials at least the day before the exercise – particularly for the delivery of injects and communication within the exercise management team.
- Hold a pre-exercise briefing for the exercise management team and separate briefings for the facilitation and evaluation teams. If an exercise is run over multiple days, team briefings should be held at least once a day.
- Hold a pre-exercise briefing for participants and observers to go over the purpose of the exercise, the guidelines and the rules of play.
- Debriefing is a critical part of exercises and should be allocated sufficient time. For large exercises, a formal exercise debriefing should take half a day at minimum.

<sup>1</sup> For example, Myndigheten för samhällsskydd och beredskap (MSB), the Swedish Civil Contingencies Agency.



# 7. After the exercise

## 7.1 Overview

Conducting the exercise is where the data has been generated. The next steps – and the most important – are the follow-up actions that will turn the exercise into a valuable learning and development experience.

## 7.2 Exercise management debriefings

### 7.2.1 Exercise management team debriefing

All exercises should include a debriefing session for the exercise management team to identify lessons and opportunities for future exercises. The debriefing will reflect on the exercise planning and implementation, and confirm responsibilities and timelines to complete the report and follow-up recommendations. The debriefing is often led by the exercise director or lead evaluator.

### 7.2.2 Leadership debriefing

A debriefing meeting with leadership and senior management should be held shortly after the exercise, to share initial findings including challenges, achievements and recommendations. The meeting can also be an opportunity to gain support for proposed exercise recommendations.

*See the [WHO simulation exercise manual \(3\)](#) and [toolbox \(7\)](#) for templates and further guidance for conducting debriefing sessions.*

## 7.3 Reporting

### 7.3.1 Exercise report and evaluation recommendations

The exercise report is the formal record of the exercise, documenting the conduct of the exercise as well as evaluation findings and recommendations. Data and analysis from the exercise should be presented to support the evaluation findings, which should clearly identify areas in the plan that require updating or revision. The recommendations should suggest practical actions for improving the pandemic influenza preparedness plan or plans tested.

The exercise report is typically completed by the lead evaluator and exercise controller or lead facilitator. It will draw on the work of the evaluation team, and on notes and observations from facilitators, observers and exercise management. The report should be completed as soon as possible, to capture the momentum of the exercise.

While the body of the report is being completed, it can be a good idea to prepare and disseminate a summary of the evaluation findings and recommendations to participants and stakeholders for initial feedback. This can be a useful process for refining the recommendations and building support for their implementation.

The target audience and dissemination plan for the exercise report should be established at the start of the exercise planning process. Where possible use language, formats and dissemination channels that will appeal to the target audience. Most importantly, ensure that the recommendations are useful, practical and relevant. Box 7.1 gives the outline of a sample exercise report.

### Box 7.1 – Sample exercise report outline

- Executive summary and recommendations
- Overview (e.g. exercise date, location, background, organization and participants)
- Exercise design (aim, objectives, themes, format, scenario)
- Analysis (evaluation issues and questions, assessment criteria and data collection and analysis)
- Conclusions and recommendations
- Next steps
- Appendices (e.g. participants list, summary of exercise events and scenario, and summary of participant feedback)



### 7.3.2 Internal mission report

If the exercise was supported by external partners, the exercise management team should also prepare a short internal report for the supporting organization or organizations. This report should cover the lessons learned from implementing the exercise and potential future opportunities for exercise activities.

*See the WHO simulation exercise manual (3) and WHO toolbox (7) for templates and further guidance for post-exercise reporting.*

## 7.4 Implementing improvements

The evaluation findings and recommendations are the starting point for stakeholders to develop an **action plan** for reviewing, updating and improving the pandemic influenza preparedness plan – the final, and most important step of the exercise.

The action plan determines how the exercise recommendations will be put into practice, and it should be developed and agreed to by the stakeholder organizations. The plan will include specific improvement actions for the pandemic influenza preparedness plan, as well as a timeline for completion, progress indicators and nominated focal points to take responsibility for action.

The process for implementing improvement actions will depend on the components of the plan that was tested in the exercise, the extent of the recommendations and the internal processes of the involved organizations. The following steps outline one suggested process that can be adapted as appropriate to the particular organization and its needs.

### 7.4.1 Circulate draft exercise report to stakeholders

Send the draft exercise report to stakeholders for comment. This will give them the opportunity to validate or correct the observations and recommendations of the evaluation team.

### 7.4.2 Hold a post-exercise workshop to develop and endorse an action plan

Invite stakeholders to participate in a post-exercise workshop. The workshop will address the strengths and weaknesses that the exercise has identified in the pandemic influenza preparedness plan, and the recommendations for improving the plan. The workshop can be facilitated by the exercise lead evaluator or lead facilitator.

A key outcome of the workshop will be the development and endorsement of an action plan for reviewing and updating the pandemic influenza preparedness plan, including:

- specific, concrete improvement actions
- assignment of each improvement action to a responsible person or agency
- indicators of progress towards full implementation
- completion date for each improvement action.

The action plan must be realistic and should prioritize improvement actions. Some improvement actions will require resource commitments, such as actions related to training, equipment or personnel. If resources are not immediately available, short-term and long-term improvement options should be considered. For complex issues, the improvement action may be the first step in a longer process – for example, creating a working group that will develop options for formal pandemic response policies.

### 7.4.3 Monitor implementation of improvement actions

From the start of exercise planning, members of the exercise management team should be assigned to support the follow-up of the exercise recommendations and the action plan. These are typically team members who are also staff of stakeholder organizations. They should be tasked with monitoring the action plan and progress indicators, and supporting the individual or agency responsible for implementing each improvement action.

### 7.4.4 Hold an action plan follow-up meeting

A follow-up meeting can be held 3–6 months after the exercise, to bring key exercise participants and stakeholders back together to review the progress of the action plan. At this follow-up meeting, updates to the pandemic influenza preparedness plan that have been implemented can be discussed and presented for endorsement, if necessary. Improvement actions that are incomplete or delayed should be followed up or re-prioritized.



## KEY POINTS – Section 7

- ❑ Complete and circulate the exercise report as soon as possible to capture the momentum of the exercise – ideally within 1 month or less.
- ❑ Ensure that evaluation recommendations are useful, practical and relevant.
- ❑ Develop an action plan with key stakeholders for reviewing and improving the pandemic influenza preparedness plan, including:
  - specific improvement actions
  - progress indicators
  - responsible person or agency
  - completion date for each improvement action.



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- 13 US Department of Labor Occupational Safety and Health Administration (OSHA). Guidance on preparing workplaces for an influenza pandemic. Washington DC: OSHA; 2009 (<https://www.osha.gov/Publications/OSHA3327pandemic.pdf>, accessed 15 April 2018).
- 14 Framework for a public health emergency operations centre. Geneva: World Health Organization; 2015 ([http://apps.who.int/iris/bitstream/handle/10665/196135/9789241565134\\_eng.pdf?sequence=1](http://apps.who.int/iris/bitstream/handle/10665/196135/9789241565134_eng.pdf?sequence=1), accessed 25 April 2018).

# Annexes

## Annex 1. Resources

### A1.1 Guidance resources

CATEGORY	ORGANIZATION	RESOURCES
WHO guidance	WHO	<i>Pandemic influenza risk management</i> (2017) <a href="http://apps.who.int/iris/handle/10665/259893">http://apps.who.int/iris/handle/10665/259893</a>
	WHO	A checklist for pandemic influenza risk and impact management: building capacity for pandemic response (2018) <a href="http://apps.who.int/iris/bitstream/handle/10665/259884/9789241513623-eng.pdf?sequence=1">http://apps.who.int/iris/bitstream/handle/10665/259884/9789241513623-eng.pdf?sequence=1</a>
	WHO	Essential steps for developing or updating a national pandemic influenza preparedness plan (WHO/WHE/IHM/GIP/2018.1) (2018) <a href="http://apps.who.int/iris/handle/10665/272253">http://apps.who.int/iris/handle/10665/272253</a>
	WHO	WHO simulation exercise manual (WHO-WHE-CPI-2017.10) (2017) <a href="http://apps.who.int/iris/bitstream/handle/10665/254741/WHO-WHE-CPI-2017.10-eng.pdf?sequence=1">http://apps.who.int/iris/bitstream/handle/10665/254741/WHO-WHE-CPI-2017.10-eng.pdf?sequence=1</a>
	WHO	Framework for a public health emergency operations centre (2015) <a href="http://apps.who.int/iris/bitstream/handle/10665/196135/9789241565134_eng.pdf?sequence=1">http://apps.who.int/iris/bitstream/handle/10665/196135/9789241565134_eng.pdf?sequence=1</a>
	WHO Regional Office for South-East Asia	A guide for conducting table-top exercises for national influenza pandemic preparedness (SEA-CD-156) (2006) <a href="http://apps.who.int/iris/handle/10665/204728">http://apps.who.int/iris/handle/10665/204728</a>
	WHO Regional Office for the Western Pacific	Exercise development guide for validating influenza pandemic preparedness plans (2006) <a href="http://apps.who.int/iris/bitstream/handle/10665/272253/WHO-WHE-IHM-GIP-2018.1-eng.pdf?ua=1">http://apps.who.int/iris/bitstream/handle/10665/272253/WHO-WHE-IHM-GIP-2018.1-eng.pdf?ua=1</a>
	WHO Regional Office for the Western Pacific	Emergency exercise development (SEA-CD-156) (2009) <a href="http://apps.who.int/iris/handle/10665/207595">http://apps.who.int/iris/handle/10665/207595</a>
Exercise planning	Colombia University, School of Nursing, Center for Health Policy	Public health emergency exercise toolkit: planning, designing, conducting, and evaluating local public health emergency exercises (2007) <a href="http://www.cidrap.umn.edu/sites/default/files/public/php/339/339_toolkit.pdf">http://www.cidrap.umn.edu/sites/default/files/public/php/339/339_toolkit.pdf</a>
	European Centre for Disease Prevention and Control (ECDC)	Handbook on simulation exercises in EU public health settings (2014) <a href="https://ecdc.europa.eu/en/publications-data/handbook-simulation-exercises-eu-public-health-settings">https://ecdc.europa.eu/en/publications-data/handbook-simulation-exercises-eu-public-health-settings</a>
	Inter-Agency Standing Committee: Sub Working Group for Preparedness (IASC)	Government emergency simulation facilitator's guide: strengthening emergency preparedness & response capacity (2012) <a href="https://www.preventionweb.net/files/33487_33487gessimulationguideenglish.pdf">https://www.preventionweb.net/files/33487_33487gessimulationguideenglish.pdf</a>

# Annex 1. Resources

## A1.1 Guidance resources

CATEGORY	ORGANIZATION	RESOURCES
Exercise planning	United Nations Office for Disaster Risk Reduction (UNISDR)	Concise guide on design and conduct of simulation exercises: a companion for implementing risk-informed preparedness for effective response (2017) <a href="http://www.unisdr.org/files/53348_simulation.pdf">http://www.unisdr.org/files/53348_simulation.pdf</a>
	U.S. Department of Homeland Security	Homeland Security Exercise and Evaluation Program (HSEEP) (2013) <a href="https://www.fema.gov/media-library/assets/documents/32326">https://www.fema.gov/media-library/assets/documents/32326</a>
Exercise evaluation	Colombia University, School of Nursing, Center for Health Policy	Appendix F: Data collection/evaluation forms with examples of their use. In: Public health emergency exercise toolkit: planning, designing, conducting, and evaluating local public health emergency exercises (2006) <a href="http://www.cidrap.umn.edu/sites/default/files/public/php/339/339_toolkit.pdf">http://www.cidrap.umn.edu/sites/default/files/public/php/339/339_toolkit.pdf</a>
	Harvard School of Public Health	Public health emergency preparedness exercise evaluation toolkit (2013) <a href="https://www.massgeneral.org/disaster-medicine/assets/PDFs/Public-Health-Emergency-Preparedness-Exercise-Evaluation-Toolkit.pdf">https://www.massgeneral.org/disaster-medicine/assets/PDFs/Public-Health-Emergency-Preparedness-Exercise-Evaluation-Toolkit.pdf</a>
	Myndigheten för samhällsskydd och beredskap (MSB)	Handbook: evaluation of exercises (2011) <a href="https://www.msb.se/en/Products/Publications/Publications-from-the-MSB/Evaluation-of-Exercises/">https://www.msb.se/en/Products/Publications/Publications-from-the-MSB/Evaluation-of-Exercises/</a>

# Annex 1. Resources

## A1.2 Sample exercise documents and templates

CATEGORY	ORGANIZATION	RESOURCES
Multihazard exercise packages	WHO	WHO simulation exercise toolbox (2018) <a href="http://www.who.int/ihr/publications/exercise-toolbox/en/">http://www.who.int/ihr/publications/exercise-toolbox/en/</a>
	U.S. Department of Homeland Security	Homeland Security Exercise and Evaluation Program (HSEEP) templates (2013) <a href="https://preptoolkit.fema.gov/web/hseep-resources">https://preptoolkit.fema.gov/web/hseep-resources</a>
Pandemic influenza exercises (general)	United Nations System Influenza Coordination (UNSCIC)	Simulation exercises on influenza pandemic responses in the Asia–Pacific region (2008) <a href="http://www.adpc.net/v2007/IKM/ONLINE_DOCUMENTS/downloads/2008/Oct/unsic_pandemic_complete.pdf">http://www.adpc.net/v2007/IKM/ONLINE_DOCUMENTS/downloads/2008/Oct/unsic_pandemic_complete.pdf</a>
Pandemic influenza exercises (tabletop)	National Association of Country and City Health Officials (NACCHO)	NACCHO’s pandemic influenza tabletop exercise template (2007) <a href="http://archived.naccho.org/topics/emergency/pandemic-tabletop.cfm">http://archived.naccho.org/topics/emergency/pandemic-tabletop.cfm</a>
	RAND Corporation	Tabletop exercise for pandemic influenza preparedness in local public health agencies (2006) <a href="https://www.rand.org/pubs/technical_reports/TR319.html">https://www.rand.org/pubs/technical_reports/TR319.html</a>
	University of Michigan, School of Public Health	A collaborative international border exercise: pandemic influenza – exercise plan (2005) <a href="https://sph.umich.edu/practice/pdf/2005_Situation_Manual_Flu.pdf">https://sph.umich.edu/practice/pdf/2005_Situation_Manual_Flu.pdf</a>
Pandemic influenza exercise reports	Asia-Pacific Economic Cooperation (APEC),	APEC pandemic response exercise 2006: outcomes report (2006) <a href="http://aimp.apec.org/Documents/2006/TFEP/TFEP2/06_tfep2_002a.doc">http://aimp.apec.org/Documents/2006/TFEP/TFEP2/06_tfep2_002a.doc</a>
	Australian Department of Health	National pandemic influenza exercise: Exercise Cumpston 06 (2007) <a href="http://apo.org.au/node/972">http://apo.org.au/node/972</a>
	New Zealand Ministry of Health	Report on Exercise Cruickshank (2007) <a href="https://www.health.govt.nz/publication/report-exercise-cruickshank">https://www.health.govt.nz/publication/report-exercise-cruickshank</a>
	San Francisco Department of Public Health	2006 pandemic influenza infection control tabletop exercise: after action report (2006) <a href="https://www.sfgdcp.org/wp-content/uploads/2018/01/SF-DPH.panflu_IC_after_action_report.09-14-2006-id149.pdf">https://www.sfgdcp.org/wp-content/uploads/2018/01/SF-DPH.panflu_IC_after_action_report.09-14-2006-id149.pdf</a>

## Annex 2. Glossary

TERM	DESCRIPTION
<b>Action plan</b>	Plan identifying corrective actions or activities to be undertaken following the recommendations of an exercise report. The plan should include timelines for implementation, the identities of the officers responsible and, often, the associated costs. This will ultimately contribute to continual improvement in response capabilities, and hence to preparedness.
<b>Concept note</b>	Project document outlining the purpose, scope and objectives of the exercise; the exercise methodology; the composition of the exercise management team; and the evaluation strategy and format.
<b>Control room</b>	Dedicated space from which the exercise management team manages and stages the exercise. The control room (in an office, room, tent or other suitable venue) is separate from the exercise participants' space.
<b>Emergency response plan</b>	<p>Document describing how an agency or organization will manage its responses to emergencies of various types, by providing a description of:</p> <ul style="list-style-type: none"> <li>• the objectives, policy and concept of operations for the response to an emergency; and</li> <li>• the structure, authorities and responsibilities for a systematic, coordinated and effective response.</li> </ul> <p>In this context, emergency response plans are agency- or jurisdiction-specific, and they detail the resources, capacities and capabilities that the agency or organization will employ in its response. This is also referred to as an emergency or operations plan.</p>
<b>Evaluation</b>	Systematic process of observing and recording all exercise activities, comparing performance and outcomes against exercise objectives, and identifying strengths and weaknesses.
<b>Exercise management team</b>	Team responsible for planning, conducting and evaluating the exercise.
<b>Exercise objectives</b>	Specific objectives for the exercise, and the outcomes it is expected to achieve.
<b>Exercise report</b>	Report that records, describes and analyses the exercise, drawing on the evaluation, including debriefs and observations. The report should include all relevant information, including exercise description, type, scenario, outcomes, participating organizations and recommendations to assist in the design of future exercises. Exercise reports are sometimes also referred to as "after-action reports".
<b>Expected action</b>	Actions expected of participants in response to each inject or scenario event. The evaluation team compares actual actions with expected actions to assess performance during the exercise.
<b>Functions</b>	Actions or operations required in emergency response or recovery. It is important not to confuse "functional exercises" with emergency "functions". All exercises, no matter what type, test and evaluate emergency functions, which are often contained in the emergency operations plan.

## Annex 2. Glossary

TERM	DESCRIPTION
<b>Hot wash</b>	Immediate feedback or debriefing event involving the participants and the exercise management team. Individuals share perspectives on strengths, weaknesses and areas for improvement. These contributions are subsequently incorporated into the exercise report.
<b>Inject</b>	Scripted piece of information inserted into an exercise, aimed at one or more participants (players), and designed to elicit a specific response and facilitate the flow of the exercise. Injects can be written, oral, televised or transmitted via other means (e.g. presentation, telephone, email, voice, radio or sign) and are inserted by one of the controllers or facilitators.
<b>Inject matrix</b>	Document detailing the sequence of events to be followed during an exercise, including an indication of the time needed for each event. It also identifies who is responsible for tasks and the means of delivery, and provides the exercise controller and facilitators with a script to follow. This document can also be referred to as a “master sequence of events list”.
<b>Observer</b>	Person who observes the exercise. Observers may submit their observations as part of the evaluation process, although they have no official role in the conduct of the exercise.
<b>Outputs</b>	Actual findings, recommendations and results stemming from the exercise. These should correspond with the exercise objectives, and should be presented in the exercise report.
<b>Participant</b>	Person involved in the exercise who is performing their function and tasks as they would during a real emergency response. Participants in an exercise are sometimes also referred to as “players”.
<b>Response</b>	Provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.
<b>Scenario</b>	Preplanned storyline that drives an exercise, as well as the stimuli used to achieve exercise objectives. The scenario is designed to stimulate exercise participants to respond to events.
<b>Time-jump</b>	Jumps in time that are used to compress the timescale of the simulated emergency.

## Annex 3. Sample exercise plan

### Introduction

Provide background information to the planned exercise, including the status or context of pandemic preparedness in your country, an overview of the plan being tested, and the name of the host organization (e.g. ministry of health or department of public health) and any major supporting partners or stakeholders.

Briefly describe the exercise type and the date and location where it will be held. A summary of the required budget, resources and planning timeline can also be included, if appropriate.

### Aim, objectives and scope

State the aim, objectives and scope of the exercise. It can also be helpful to acknowledge any significant limitations of the exercise. For example:

#### **Aim:**

*To test [selected components of] the pandemic influenza preparedness plan in order to identify areas for revision or improvement.*

#### **Objectives:**

- 1. To test the functionality and speed of decision-making procedures in the plan in order to identify areas for revision or improvement.*
- 2. To test formal or planned coordination, communication and information-sharing mechanisms between relevant departments and agencies involved in the pandemic response.*
- 3. ...*

#### **Scope:**

*This tabletop exercise will simulate the detection of a novel influenza virus in multiple regions of the country. Through the discussion-based exercise, participants will test the decision-making, coordination, communication and information-sharing components of the national pandemic influenza preparedness plan involved in responding to these events. The exercise will focus on the roles of and coordination among the ministry of health, multisectoral government agencies and national health institutions.*

#### **Limitations:**

*Due to the limitations of the tabletop format chosen, the exercise will not involve the deployment of actual resources or equipment.*

### Scenario overview

Provide a broad overview of the scenario, including timeline, location, extent of impact and response capacity; for example, *"The exercise will use a scenario of a novel influenza virus being detected in the country and spreading to multiple regions over a simulated period of 2 months. The scenario will include elements designed to test surveillance, rapid response, risk assessment, intersectoral coordination, and public and risk communications elements of the national pandemic influenza preparedness plan."*

### Participants

Provide an overview of the expected or invited exercise participants, including organization, role or function in the exercise, and numbers.

If observers are being invited, outline which organization they are from, the organization's relevance to the exercise, and the number of people involved.

## Exercise management team

Describe the roles and responsibilities of the exercise management team, and provide names and contact details where appropriate. The exact composition of the team will depend on the type, scope and complexity of the exercise, and will typically include some, or all, of the following roles:

- exercise director
- exercise controller
- evaluator (larger exercises may require a lead evaluator and an evaluation team)
- facilitators (larger exercises may require a facilitation team, led by the exercise controller)
- role players
- administration and logistics; for example:
  - administration officers
  - support staff
  - communication and media officer
  - safety and security

## Administration and logistics

Provide an overview of the main administration and logistical arrangements, such as:

- budget
- venue
- communications and media strategy (if applicable)
- safety and security arrangements (if applicable)
- timeline

Attach support documents as annexes where appropriate (e.g. budget, communications and media strategy and timeline).

## Evaluation and reporting

Describe the process that will be used to evaluate the exercise and the expected outputs (e.g. recommendations for improvement and exercise report). Include an overview of the assessment criteria if available.

## Follow-up

Outline the planned follow-up activities and the process for using the evaluation findings to improve the plan or plans being tested.

## Annexes

Attach copies of support documents such as:

- budget
- communications and media strategy
- timeline

See [WHO simulation exercise toolbox](#) for sample budget and project Gantt chart templates).



# Annex 4. Sample evaluation plan and checklist

## A4.1 Sample evaluation plan

### Purpose

Describe the purpose of the evaluation and evaluation plan; for example, “*This evaluation plan outlines the procedures and responsibilities for evaluating the [name of exercise] exercise. The purpose of this exercise is to test the decision-making and coordination mechanisms of the national influenza pandemic preparedness plan in a tabletop exercise format, and to identify areas for improvement. The aim and specific objectives of the exercise are ...*”

### Exercise overview

Provide an overview of the exercise, including:

- exercise type and activities
- scope and limitations
- description of the scenario
- overview of the participants

### Exercise objectives, issues and assessment criteria

Specify how each exercise objective will be evaluated by describing the evaluation issues, questions, and assessment criteria. Table A4.1 provides an example for illustrative purposes.

**Table A4.1. Sample evaluation issues, questions, and assessment criteria**

OBJECTIVE	ISSUES	EVALUATION QUESTIONS	ASSESSMENT CRITERIA
To test and validate <b>decision-making and reporting</b> arrangements contained in the pandemic influenza preparedness plan	<i>How is information collected?</i>	<ul style="list-style-type: none"> <li>• <i>Are information sources known?</i></li> <li>• <i>Are requests for information made?</i></li> <li>• <i>Is missing or incomplete information followed up?</i></li> </ul>	Situation reports are collated and synthesized regionally, and submitted to national level.  <i>Target: within time frame specified during the exercise.</i>
	<i>How is new information verified and approved?</i>	<ul style="list-style-type: none"> <li>• <i>Is unusual information checked?</i></li> <li>• <i>How do participants prioritize excess information?</i></li> </ul>	National situation reports are developed, and presented or disseminated as requested during the exercise.  <i>Target: within time frame specified during the exercise.</i>
	<i>How effectively is information communicated?</i>	<ul style="list-style-type: none"> <li>• <i>How do participants deal with deadlines?</i></li> <li>• <i>Are there any bottlenecks in information flow?</i></li> <li>• <i>Are duties delegated when necessary?</i></li> <li>• <i>What types of communication methods are used?</i></li> </ul>	National situation reports and media or public information releases are disseminated to national agencies and local emergency operations centres.  <i>Target: twice per exercise day.</i>
			National decisions and policies are disseminated to all relevant local districts.  <i>Target: within time frame specified during the exercise.</i>

**Table A4.1. Sample evaluation issues, questions, and assessment criteria**

OBJECTIVE	ISSUES	EVALUATION QUESTIONS	ASSESSMENT CRITERIA
To test and validate <b>decision-making and reporting</b> arrangements contained in the pandemic influenza preparedness plan [CONTINUED]	<i>Are roles and responsibilities formalised?</i>	<ul style="list-style-type: none"> <li>• <i>Do participants understand their roles and responsibilities?</i></li> <li>• <i>Can participants refer to formal documents (e.g. job descriptions)?</i></li> </ul>	Participants have clear and documented roles and responsibilities related to their reporting activities.
To test and validate procedures for the <b>identification and treatment of suspected cases</b> of pandemic influenza.	<i>Does the right information reach the right people?</i>	<ul style="list-style-type: none"> <li>• <i>Is appropriate information sent to the relevant agencies?</i></li> <li>• <i>Is the information received?</i></li> <li>• <i>Is there feedback to confirm when the message was received?</i></li> </ul>	Appropriate regional and national pandemic influenza focal points are notified of a suspect case.  <i>Target: within 1 hour of identification.</i>
	<i>How is information recorded and shared?</i>	<ul style="list-style-type: none"> <li>• <i>Is information recorded systematically?</i></li> <li>• <i>Is information shared with the relevant agencies?</i></li> </ul>	Data from suspected cases is entered into case report forms and submitted to national level/entered into national database.  <i>Target: within 1 hour of notification.</i>
	<i>How are cases managed?</i>	<ul style="list-style-type: none"> <li>• <i>Are staff aware of and trained in procedures to manage suspect cases?</i></li> <li>• <i>Are resources available for proper treatment?</i></li> </ul>	Suspect cases are managed according to the standard operating procedures being tested (isolation, medical assessment, treatment, information gathering for contacts).  <i>Target: within 1 hour of identification.</i>

### Data sources

Describe how data and information will be collected for the evaluation. These can include:

- observation notes on exercise play from evaluators;
- review of exercise materials (primary and secondary);
- participant feedback forms;
- hot wash debriefs with participants, facilitators and exercise management team; and
- main exercise debriefs with participants, facilitators and exercise management team, and interviews with participants, facilitators and exercise management team.

## Evaluation tools

Describe the tools that will be used to collect data during the exercise, and attach a copy of each as an annex. Tools may include:

- master scenario
- inject matrix
- evaluation checklists

## Evaluation management

For exercises with an evaluation team, describe the organizational structure and processes of the team, including the following:

- **Selection:** Describe the rationale behind the selection of the lead evaluator and any evaluation team members (e.g. based on specific technical knowledge, internal or external selection, and representation from stakeholder organizations).
- **Names and contacts:** For evaluations involving an evaluation team, include a list of the team members, including name, position, organization, contact details and specialization (if appropriate). Also, include the names of any evaluation support staff (e.g. assistant or administration contact).
- **Training:** Describe activities for training the evaluators on the exercise and on use of the evaluation plan, data collection tools and analysis. These activities can include face-to-face training sessions, online meetings, orientation briefings, and preparation and dissemination of an evaluation materials pack. Training may also cover technical topics that will be tested in the exercise, such as incident command systems, emergency operations centres or media communications.
- **Responsibilities:** Describe the responsibilities of the lead evaluator and evaluation team members. In addition to observing and recording data on the exercise, responsibilities can include reporting issues to exercise management, contributing to the design of exercise documents, supporting exercise documentation, facilitating debriefing activities and drafting sections of the exercise report.
- **Logistics:** Describe how the evaluation team will be managed throughout the exercise, including team briefings, communications, and positioning in the venue or venues – attach a map if needed.

## Outputs

Describe the expected outputs from the evaluation team and the timeline for completion, such as

- evaluation team briefing;
- preparation of hot wash debriefing session;
- preparation of main exercise debriefing session;
- exercise documentation (e.g. completed evaluation checklists and summaries from debriefings);
- draft recommendations; and
- submission for exercise report (evaluation analysis components).

## A4.2 Sample evaluation checklist

The sample checklist below is adapted from an inject matrix – the planning document that tracks and organizes the exercise injects. Each inject is sent to a target participant or group of participants, and is expected to trigger one or more response actions in line with the plan being tested. Evaluators can use this checklist to record whether the expected action was taken, and to note observations. Additional columns can be added as appropriate for your exercise; for example:

- time taken to complete action
- performance rating
- what worked well
- what could be improved
- suggested recommendation for improvement.

**Table A4.2 Sample evaluation checklist**

INJECT	TARGET	EXPECTED ACTION	DONE (Y/N)	EVALUATOR NOTES
<b>1. First case of human influenza caused by a novel influenza virus is confirmed in Region X.</b>	Region X department of health	1.1 Case management procedures initiated		
		1.2 Contact tracing procedures initiated		
		1.3 Notification to ministry of health		
	Ministry of health (if 1.3 done)	1.4 National pandemic influenza committee activated, as per national pandemic influenza preparedness plan		
		1.5 Notification to WHO via the National International Health Regulations Focal Point		
<b>2. ....</b>				
<b>3. ....</b>				
<b>4. ....</b>				

## Annex 5. Sample participant feedback form

Please rate your agreement with the following statements related to the exercise on a scale of 1 to 5, with 1 indicating **strong disagreement** with the statement and 5 indicating **strong agreement**.

EXERCISE CONTENT	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONG AGREE
1. I am now more familiar with my organization's pandemic influenza preparedness and response plan.	1	2	3	4	5
2. I had adequate training and knowledge to perform my role in the exercise.	1	2	3	4	5
3. The exercise improved my understanding of my role in pandemic management.	1	2	3	4	5
4. My team coped well with the problems we were presented with.	1	2	3	4	5
5. After the exercise, I understand the role of other agencies in pandemic management better.	1	2	3	4	5
6. ....	1	2	3	4	5
7. ....	1	2	3	4	5
8. ....	1	2	3	4	5
EXERCISE ORGANIZATION	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONG AGREE
9. The exercise was well structured and well organized.	1	2	3	4	5
10. The scenario was relevant and realistic.	1	2	3	4	5
11. The facilitators were knowledgeable about the material and kept the exercise focused.	1	2	3	4	5
12. The documents and guidance provided to prepare me for the exercise were useful.	1	2	3	4	5
13. I clearly understood my role and the rules of the exercise.	1	2	3	4	5
14. The right people (e.g. in terms of seniority and expertise) were invited to participate.	1	2	3	4	5
15. The length of the exercise was:	1 TOO SHORT	2	3 GOOD	4	5 TOO LONG
16. The speed of the exercise was:	1 TOO FAST	2	3 GOOD	4	5 TOO SLOW

## Recommendations

1. Based on your experience of the exercise, please list the top three **strengths** you observed.

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2. Based on your experience of the exercise, please list the top three **areas for improvement** you observed.

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3. What **actions** can you suggest to address these areas for improvement? Please indicate whether these should be a high, medium or low priority.

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4. Was there anything significant in the exercise that the evaluator(s) may not have been able to observe?

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5. Do you have any suggestions about how future exercises could be improved?

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6. Do you have any further comments you would like to share?

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## Annex 6. Sample exercise scenario

### SAMPLE EXERCISE OVERVIEW

#### Aim

To test and validate response actions in the national pandemic preparedness plan in the event of an evolving pandemic and identify areas for improvement.

#### Objectives

1. To validate disease surveillance and rapid response procedures.
2. To test and validate standard operating procedures for the identification, quarantine and treatment of initial case(s) of infection with a novel influenza virus and their contacts.
3. To test measures to maintain health services and prioritize vaccination and antiviral use.
4. To validate nonpharmaceutical interventions.
5. To test the plan to maintain essential services during a pandemic.

### Background

In January 201X, a novel strain of highly pathogenic avian influenza A(HxNy) was detected in a chicken flock in (*insert name of country*). The flock was culled and enhanced surveillance implemented.

For the past 5 months, outbreaks of the novel influenza A(HxNy) virus have been affecting poultry populations in countries across continents. The virus has also been detected in dead migratory birds, fuelling concerns that the virus is spreading globally.

#### Inject 1:

**Human infections with the novel virus are detected and human-to-human transmission is suspected in your country.**

On 1 June, a local health officer reported a cluster of seven cases of severe acute respiratory infection to the Department of Health. The cluster occurred in a village where backyard chickens had recently died. The cases were mostly children and young adults. The cases were all hospitalized in the provincial hospital, where two later died. Respiratory specimens collected from the hospitalized cases were sent to the National Influenza Centre (NIC) for testing. Real-time polymerase chain reaction (PCR) results identified the virus as an influenza A virus, but were not able to identify the subtype.

On 3 June, a rapid response team was deployed to conduct an epidemiological investigation, but it could neither confirm nor rule out human-to-human transmission. During the investigation, 10 additional cases were identified, with acute onset of fever and respiratory symptoms. The additional cases were all family members and friends of the initial cases. Three health-care workers who provided care to the hospitalized patients are also reported to have fever and respiratory symptoms. Respiratory specimens from these newly identified cases have been collected and sent to the NIC for testing. The results are pending.

#### *Suggested issues for discussion or action:*

- *What are the main priorities for investigation and surveillance at this stage?*
- *What are the most important actions for controlling the outbreak and preventing/limiting the spread of the infection at this stage?*
- *What procedures are in place at your NIC or national influenza laboratory when an influenza virus cannot be subtyped? Do you have arrangements in place to rapidly share influenza specimens with a WHO collaborating centre (CC) in the Global Influenza Surveillance and Response System (GISRS) network?*

- *What procedures are in place to identify additional human cases occurring in other locations? Are systems in place to share information on potential cases in other hospitals, residential care facilities, medical offices, clinics, etc.?*
- *What procedures are in place to deal with suspected cases and contacts of confirmed cases?*
- *Are stockpiles of antiviral medication available in hospitals, pharmaceutical distribution centres or nationally? What policies are in place for their use? How could they most effectively be used at this stage?*
- *What are the risk communications priorities at this stage? What are the key messages for the general population, health-care workers and other target groups? Who is the primary spokesperson?*
- *What types of briefings or technical advice will senior government officials require, and how will these be developed and communicated or disseminated?*
- *What actions should the International Health Regulations (2005) National Focal Point take at this stage?*

## **Inject 2:**

### **The novel virus is spreading in your country and sustained human-to-human transmission in communities is confirmed.**

Specimens from the initial cases were sent to a WHO CC for further testing and subtyping. The tests identified infection with the novel influenza A(HxNy) virus.

Further epidemiological investigation has confirmed human-to-human transmission in the village where the first outbreak was detected. Despite control measures being implemented by the rapid response team, outbreaks of severe acute respiratory infection have since occurred in several neighbouring provinces. There is widespread media coverage of the outbreaks and increasing public anxiety. Phones at health clinics, hospitals and local health departments ring constantly, with people asking for advice on how to protect themselves and where to seek treatment. Rates of absenteeism in schools and businesses begin to rise in some cities.

#### **Suggested issues for discussion or action:**

- *What are the main response priorities at this stage? Which other agencies should be involved?*
- *What procedures are in place for managing suspect or confirmed cases, and people who have had contact with confirmed cases?*
- *How will surveillance systems monitor admissions and deaths from suspected or confirmed pandemic influenza?*
- *How will hospitals and other health-care providers manage the increase in current and future cases? How will infection prevention and control measures be reviewed, managed and monitored? Are mechanisms in place to coordinate health-care provision between facilities?*
- *Do laboratories have an appropriate testing protocol? What is it at this stage?*
- *How will antivirals be used during a pandemic? Which groups are prioritized to receive them? What plans are in place to store, secure, distribute and administer antivirals? How will antiviral adverse events or antiviral resistance be monitored?*
- *What community interventions could be considered at this stage (e.g. suspending public events or gatherings, and closing schools or businesses)? Who has the authority to order these measures? How will they be implemented?*
- *What actions will be taken to address public concerns and to communicate risk? What plans or mechanisms are in place to engage the media?*
- *What possible legal or ethical conflicts may occur in the pandemic response? What systems or procedures are in place for managing these types of conflict?*



### **Inject 3:**

#### **There are widespread outbreaks of the novel influenza virus in your country and around the world; WHO declares an influenza pandemic.**

The novel influenza A(HxNy) virus is now widespread in your country and in many other countries around the world. WHO has declared the situation a public health emergency of international concern (PHEIC) and an influenza pandemic.

Your country is overwhelmed by the number of cases. Rough estimates put the attack rate at between 10 and 20% of the population. Hospitals and outpatient clinics are short of staff, with 20–30% of health-care workers (physicians, nurses and administrative staff) absent due to illness or the need to care for family members. Intensive care units (ICUs) are overwhelmed, and there is a shortage of ventilators, other medical equipment and supplies for treating patients with severe respiratory symptoms.

Essential services, including police, fire, water and electricity supplies, are also experiencing personnel shortages ranging from 20–30%, resulting in cutbacks to routine services. Schools and colleges are experiencing high absenteeism because the virus affects children and young adults more than any other age group. Mortuaries and funeral homes are becoming overwhelmed by the numbers of dead. Supplies of antivirals are extremely limited domestically as well as internationally. Urgent efforts are underway to develop a vaccine, but it will not be ready for at least another 5–6 months.

#### ***Suggested issues for discussion or action:***

- *How will additional resources be mobilized to respond to the pandemic (e.g. financial, human, transport, security, hospital or ICU beds and basic medical supplies)?*
- *How will staff shortages be addressed in essential services, such as police, fire, ambulance, health care, and utilities such as electricity and water?*
- *How will hospitals and other health-care providers manage additional cases? What is the patient triage protocol at this stage for determining admission or treatments? What plans are in place to access additional equipment and supplies (e.g. ventilators, personal protective equipment)?*
- *What plans are in place to license, store, secure, distribute and administer a pandemic vaccine? What groups are prioritized for pandemic influenza vaccination? How will adverse events following vaccination be monitored?*
- *How will increased numbers of dead bodies be managed? Are alternative mortuary and cemetery sites identified? Can culturally appropriate policies be developed to minimize social contact at funeral ceremonies?*
- *What is the risk communications strategy for maintaining public confidence and minimizing social disruption at this stage?*
- *What community interventions will be put in place at this stage (e.g. social distancing measures or restrictions on mass gatherings)? How will such interventions be implemented and enforced?*