Study period 2018-2021

Question 5/2
Utilizing telecommunications/ ICTs for disaster risk reduction and management

Annual deliverable 2019-2020

Guidelines for conducting national-level emergency telecommunication drills and exercises

Executive summary

These guidelines for national-level drills and exercises developed by Question 5/2 build upon discussions and best practices identified during the study period, including during the October 2019 workshop on conducting national-level emergency telecommunication drills and exercises, with guidelines for small island developing States and least developed countries.[1] The guidelines contained in this document provide a framework for how a country or organization might conduct telecommunication/ICT drills and exercises. They outline the steps that should be taken before, during and after an exercise, in addition to best practices and other considerations to help guide the user in planning and implementing a disaster drill or exercise that is scalable for developing countries or organizations. Although each country may experience different types of disasters and have different governing or organizational structures, the general principles and lessons contained in this report can serve as a useful guide.

[1] https://www.itu.int/en/ITU-D/Study-Groups/2018-2021/Pages/meetings/session-Q5-2-oct19.aspx

Contents

1. Section I – Setting the stage

1.1. Introduction

While ITU Members are aware that telecommunications and ICTs play a critical role in all phases of a disaster and that national emergency telecommunication plans (NETPs) are important, the concept of conducting drills and exercises to test and update plans and policies may be daunting. Nonetheless, without a means of testing national communication readiness, NETPs remain theoretical and might not work in a disaster.

These guidelines for conducting national-level emergency telecommunication drills and exercises were created to satisfy a need for guidance that is adaptable and scalable for use by governments and organizations in developing countries, as well as in small island developing States and least developed countries.

1.2. Definition of drills and exercises as related to disaster management

Drill: A type of operations-based exercise that is a coordinated and supervised. Drills are usually employed to test a specific operation or function of a single agency. They are commonly used to test new equipment, develop or test new policies or procedures and practise and maintain existing skills.

Exercise: An instrument to train for, assess, practise and improve performance in all phases of disaster management and response (prevention, protection, response and recovery) in a risk-free environment. Exercises can be used to: test and validate policies, plans, procedures, training, equipment and interagency agreements; educate and train personnel on their roles and responsibilities; improve inter-agency and stakeholder coordination and communications; identify gaps in resources; improve individual performance; and identify opportunities for improvement.

Note: Exercises are also an excellent way to demonstrate resolve to prepare for disastrous events.[2]

What is the difference? In general, exercises are more open-ended and are designed to test and evaluate procedures and interactions between organizations, with the aim of validating the sufficiency of plans. Drills, on the other hand, are much more task-focused and are designed to train skills. Section 1.4 provides additional information on different types of drills and exercises, along with telecommunications/ICT-related implementation examples.

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1.3. Benefits of conducting emergency telecommunication drills and exercises regularly

- Test preparedness to maintain and restore communications in an emergency.
- Assess the adequacy of communication procedures, policies and systems related to emergencies.
- Make improvements to NETPs based on the outcomes of the exercise debrief.

[2] See the website of the United States Federal Emergency Management Agency for definitions of “disastrous” and “event”: https://training.fema.gov/programs/emischool/el361toolkit/glossary.htm

- Increase stakeholders' awareness of potential strengths and gaps in telecommunication coverage and continuity planning.
- Enable practical learning in a safe environment.
- Assess the allocation of human and financial resources among stakeholders, noting potential gaps and overlaps.
- Develop teams and help build strong working relationships.
- Develop and test cross-sectoral cooperation.
- Engage and motivate stakeholders to coordinate more closely on preparedness actions.
- Evaluate the communication competencies of emergency response professionals.
- Evaluate communications between various stakeholders and increase interoperability.
- Build a continuous culture of improvement.
- Increase the resiliency of communications.

1.4. Types of drills and exercises, and examples related to telecommunications/ICTs

Table-top exercise (TTX): A TTX is the most common type of exercise and can be the first step in building a programme of exercises and drills. A basic TTX is a facilitated discussion of a hypothetical simulated emergency, generally conducted in a low-stress environment with participants gathered in the same place. TTXs commonly facilitate discussion about how to resolve issues or challenges that may arise during emergencies, with team members assessing ways to identify and overcome potential challenges. A TTX can also be used to validate a plan or procedure to determine if it is complete and likely to be effective in a disaster. A TTX can be made more complex by incorporating unexpected developments to which participants must react throughout the exercise (known as "injects").

Examples include*:*

- A walk-through of post-disaster logistics, including facility accessibility, fuel distribution and debris clearance.
- A discussion of continuity in communication sub-sectors in response to various types of equipment failure or loss of necessary supporting infrastructure, including the recovery of a central office.
- A government and industry walk-through of how to disseminate disaster-related lifesaving information to a range of populations over the course of an event.

For more information on facilitating TTXs, see the emergency telecommunications table-top simulation guide produced by the Emergency Telecommunications Cluster and ITU.[3]

Emergency telecommunication drill: As specified in Section 1.2, a drill is a facilitated and supervised activity, in which a single, specific operation, function or system is tested repeatedly under a hypothetical scenario. Unlike a TTX, a drill calls for the mobilization and use of resources (people and equipment, as needed). One example of such a scenario is the failure of a network or major piece of equipment. The drill involves the personnel and tools necessary to overcome the problem, such as the failure of a major piece of equipment, and is used to assess how the regulator might receive situational awareness data and facilitate repairs. Evaluators then review participants' performance and make recommendations on how to improve the performance of the tasks involved in restoring the equipment to service.

[3] https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Documents/Publications/2020/TTX_Guide.pdf

Various areas may be tested, such as:

- Connectivity solutions by response phase, including which equipment to be used in which phase(s).
- Network outage reporting by carriers.
- Transport of key equipment (e.g. switch, microwave gear) to a disaster zone.
- Access and credentialing capabilities for government, industry and non-governmental organization (NGO) responders.
- Accessing sites safely and securely.
- Customs clearance policies.
- Overcoming logistics and procurement challenges.
- Daily/weekly/monthly checks of radio functionality, satellite phone readiness, response to failure of a telecommunication network and activation of the regulator's emergency response centre.

Functional exercise: A functional exercise aims to test multiple functions of an emergency plan and response capabilities through a fully simulated interactive exercise. A functional exercise enables participants to experience more realistic pressure and time constraints. For example, if the exercise involves a network failure in certain areas, the regulator might choose to test the effectiveness of outage reporting, coordinate with carriers, provide the necessary authorization to allow the carrier to repair the equipment or perform other actions necessary to restore network services, and allow assistance from communication response entities.

Examples of such exercises include many of the examples listed for TTX, in addition to:

- More operational activities, possibly even including the launch of emergency operation centres or the prioritization of network restoration sites;
- Cross-sector emergency communication coordination between the regulator, the national disaster management organization, industry and various levels of government;
- Sending actual (exercise-related) communications and deploying/staging response equipment, such as "cells on wheels" or "cells on light trucks".

Full scale exercise: These exercises are used to evaluate the operational capability of emergency management systems and plans in a highly stressful environment, simulating actual response conditions. This type of exercise requires significant resources and coordination. It may involve multiple government ministries or agencies and other non-government stakeholders, with participants/stakeholders physically deployed in an exercise field location to test equipment.

Such scenarios may be used to test:

- restoration of a major network after an area outage;
- almost all functions of a NETP;
- response to nationwide power outages lasting several days;
- response to significant natural disasters, requiring public messaging and mass evacuations and involving widespread damage to critical infrastructure;
- response to severe space weather events;[4]
- response to municipal communications outages.

[4] According to Report ITU-R RS.2456-0 Space weather sensor systems using radio spectrum, space weather events can have an impact on various services and infrastructure located on the Earth's surface, in the air or in Earth orbit.

2. Section II – Planning exercises

2.1. Determining the exercise objectives

To ensure high-level organizational support for drills and exercises, the objectives for the drill or exercise should make very clear what is being tested. The organization should create specific, measurable, achievable, relevant and time-bound goals that it aims to accomplish during an individual exercise. Exercise objectives should also tie directly to strategic priorities. Exercise objectives may often include assessment of a new or existing plan with a view to determining its sufficiency and effectiveness.

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2.2. Determining the scope

The scope of an exercise, especially a full-scale exercise, should be determined and stated early in the planning stage. The scope must also specify the human resources and equipment required and the geographical area covered.

2.3. Scenario planning

Testing "end-to-end" scenarios or specific elements: The exercise scenario could test a single communication process or function, or it could involve a more complicated, lengthier scenario featuring a seven-day power cut, for example. When defining the elements to be tested during the scenario, the organization may focus on a number of questions or considerations, depending on the scenario or scope of the exercise that is being conducted, such as: (a) Will the event scenario impact the general populace, cash systems, street lights and traffic control, data access and systems recovery, communication networks, supply routes or availability? (b) Will the exercise test the response times of emergency services, the coordination of emergency services in a major event and the roles played by participants? (c) Will the exercise test early warning systems as a component of community evacuation plans?

- To plan an exercise scenario, first **identify existing/known hazards that will have domino or cascading impacts** on other social and commercial areas. For example, a fire at a power generation station, a flood in large, low-lying occupied sections, a hurricane that makes landfall in highly populated areas, including hospitals, or a non-natural event, such as a downtown terror attack. Organizers should then consider a complete hazard scenario that will generate additional problems and successfully test defined organizational objectives.
- Next, **make a list of the anticipated impacts of the larger hazard that will need to be addressed**. This will help narrow down the options for major event scenarios that create smaller events during the exercise. For example, the major event could be a hurricane, and the smaller events stemming from the hurricane could be evacuations, telecommunication outages, flooding, and widespread, extended power outages. Defining such a list will help shape the focus and scope of the teams involved and of the exercise itself.

Establishing the planning team: A planning team should be established to thoroughly plan the exercise scenario, timelines, participants, necessary resources, etc. The size and composition of the planning team will depend on the scope of the exercise. If the exercise or drill covers a broad scope and encompasses many functions, the planning team will require representation from stakeholders who perform or oversee those functions. The

planning team may also include specialists who will take part in the exercises, such as officials from the police, fire, health, safety, access and clean-up sectors and from community and neighbourhood-level management and response teams, in order to ensure that the exercise is realistic. Large-scale exercises might require multiple meetings of the planning team over several months, given the variety of stakeholder groups and participants.

Key roles and personnel to be included in the planning team:

Controllers set up and operate the exercise site, plan and manage the exercise and sustain the pace of the exercise. In a relatively simple exercise, the controller can also serve as the evaluator and can facilitate the debrief after the exercise to help capture strengths and weaknesses. In general, the controllers know the injects for the exercise; while one of the purposes of the exercise is to determine and evaluate responders' reactions to the injects, if the responders know that certain injects are going to take place then the evaluation results may be inaccurate.

A **scribe** or logger observes the exercise in full and prepares detailed notes of events throughout the exercise. An **evaluator** interprets the responses, actions and decisions recorded by the scribe, then summarizes and presents the outcomes, including identified strengths, gaps or deviations from the emergency plan or its procedures, during a post-event debriefing or as part of an after-action review. Following a post-event debriefing or a facilitated after-action review discussion, the evaluator may also present recommendations to help management teams improve their future preparations. A functional exercise or full-scale exercise can involve an entire team of scribes and evaluators.

2.4. Considering the participants

Successful preparedness activities should incorporate all actors to ensure a comprehensive response to emergency situations.

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Potential telecommunication/ICT drill participants:

- Government telecommunication/disaster response officials (e.g. ministries of telecommunications/ICT/innovation and national disaster management agencies, which are usually assumed to be responsible for overall coordination or civil protection).
- Telecommunication service providers (including private sector mobile network operators and Internet, public safety radio, broadcasting, undersea cable and satellite service providers).
- Amateur radio clubs/associations.
- Customs authorities.
- Meteorological and geophysics departments.
- Providers of power utilities and other critical infrastructure, such as water utilities, hospitals and transportation.
- Humanitarian organizations/NGOs (local and international), which could act as co-leads on coordination, depending on the scale of the response.
- Other government members, including at central, provincial and local levels:
  - Officials responsible for communicating with the public during emergencies.

- Officials in the areas of public works and debris removal.

– Community representatives, including representatives of difficult-to-reach communities, such as non-native speakers, deaf/hard-of-hearing and visually impaired/blind communities.
– Civil society representatives/entities.
– Law enforcement (police, defence, firefighters).
– Military assets (national and international).
– Airport and shipping port authorities.
– Private sector response organizations.
– International organizations, including the International Federation of Red Cross and Red Crescent Societies and United Nations organizations.

Other potential participants:

If the scope of the exercise focuses on emergency response communications: Participants should include local, regional and national emergency management agencies, first responders (local, regional and national), search and rescue groups, security agencies, emergency medical care and hospital personnel, and specialists from a number of disciplines, possibly including hazardous material containment and removal and impact zone access and control, as well as other groups involved in the immediate response to disasters.

If the scope of the exercise includes the provision of telecommunications for short-term disaster recovery: Participants could include functional specialists covering impact area security and re-entry, provision of temporary shelter, infrastructure restoration, critical facility operation, debris management, emergency demolition, public health recovery and disaster assistance.

Note: As some of these topics may require long-term recovery, they can be difficult to incorporate into an exercise of limited duration.

Community emergency response teams (CERTs): These teams are more localized and may include landowners, residents and neighbourhoods organized as groups to perform emergency management tasks in their own neighbourhoods. All stakeholders depend on telecommunications, which must be considered in national ICT planning. While CERTs may also be known as “neighbourhood emergency response teams” or by other similar names, they all organize and train neighbourhood volunteers to perform basic emergency response tasks, such as search and rescue and first aid. Although CERTs are separate from the responders involved in functional and full-scale exercises, it is often helpful for these groups to engage in exercises at the same time as large-scale exercises are conducted.

2.5. Recommended planning steps/milestones

Start with a concept note: This should outline the goal, including what is being tested, as well as the expected outcomes of the exercise, the required resources and the timeline. The concept note will introduce stakeholders to the exercise.

Ensure top management support for the drill: To this end, the concept note should be shared with top management, so that they are aware of the resources required and the expected benefits.

Assemble the planning/facilitation team(s): This team thoroughly plans the exercise scenario, timelines, participants, necessary resources, etc.

Write the scenario: The development of a scenario is a requirement for each type of drill and exercise, ranging from a TTX to a full-scale exercise. The scenario is the script that

sets the stage for the exercise. Ensure that the scenario is realistic, sufficiently complex, matches the hazards common to the area and links to the exercise goals.

Create an evaluation plan: The creation of an evaluation plan is another of the main elements that makes the exercise a valuable learning experience. Later sections of these guidelines provide more detail regarding the evaluation and after-action process; however, it is important to have an evaluation plan in place from the beginning.

Conduct the exercise: Once the organizers have confirmed that all equipment and other resources are in place, the facilitation team can brief the participants and run the scenario-based exercise.

Record the exercise in detail: The planning team may include "scribes" who document in complete detail what happens during the exercise, without commenting on the outcomes or effectiveness. The team could also include an "evaluator" who conducts an overall evaluation of the exercise, including how participants respond to key events, whether the objectives and outcomes are met and whether there are any potential gaps or opportunities for improvement. Both roles document the exercise proceedings in full, which can then be analysed and used to draw up recommendations for improvement.

Debrief the participants: After the exercise, and ideally within two weeks, a facilitated debrief should be held. This can help identify gaps in preparedness, as well as reinforce what went well and identify lessons learned, strengths and weaknesses.

Hold the after-action review: The after-action review is where the groups can consider the root cause of issues and ensure open and transparent discussions among participants to build a fuller consensus on results among the entire team. The review helps ensure that processes and plans move forward in a structured way. It is important to allocate sufficient time, set an agenda and assign an evaluator to facilitate the review.

Identify and assign objectives for corrective actions: The exercise observations and the after-action reviews will facilitate the identification and assignment of future objectives.

Update: Depending on the results and recommendations following an exercise, it may be necessary to update response plans, policies, procedures and equipment, as needed.

Monitor ongoing progress: Summarize and track regular progress on stated objectives in a clear and concise manner so that the management and leadership of the organization can quickly see the progress made, understand the next steps to be taken and remain committed to supporting a programme of continuous improvement through regular drills or exercises.

2.6. Best practices in exercise planning

Ensure a long planning lead time: Allow sufficient lead time in the exercise planning process to give notice to participants (if participants are being pre-notified). For example, if an exercise or drill includes participants from the telecommunication industry, these teams need sufficient notice to allow them to position the necessary ICT resources.

First fully plan the scope and draft the scenario, and then build a timeline of the time and resources required by internal and external teams to meet the expected outcomes of the exercise.

Hold exercises or drills at regular intervals – annually, if possible – to reinforce results.

Draft an exercise timeline with two timescales: When developing the exercise, establish two timescales: 1) real chronological time, and 2) the time and duration of occurrences during the exercise event. For instance, even if exercise is being held during regular working hours, the scenario could occur at 0300 on a Sunday morning. Facilitators can then move the exercise along in blocks of time, such as "start time/landfall/impact + 2 hours".

Where possible, extend the exercise scenario timeline to cover actions that should have taken place days before the simulated event. For example, a hurricane/cyclone scenario should cover preparedness, mitigation and recovery/response actions from "T - 5 days" before the event through to "T + 3 days" after the event. Actions could include pre-positioning ICT assets, including emergency telecommunication equipment, devices such as satellite phones and fuel; placing emergency teams on standby; assessing staff availability; and implementing flood control measures, such as sandbagging. "Injects" should be added into the exercise timeline; these are additional events or circumstances that require a response or action from the participants. Injects may be provided to specific participants or as a component of the entire exercise.[5]

Consider scenario timing: For example, if a simulation is designed to ensure readiness for an important upcoming event, the scenario could be designed to test the resources available for that scenario. Scenarios might also address events during peak tourist seasons or holiday periods, or at less busy times. This helps test resource availability for events at any time of the day or night or at particular times of the year.

Include a detailed timeline: The exercise/scenario should include a detailed timeline, which should set out the time and resources required of the internal and external teams for their participation in the exercise.

Involve industry: When designing the scenario, telecommunication/ICT industry operators should be consulted, as they can provide input on whether the scenario is realistic and whether they will see benefits from the exercise. Inputs could include the need to test cross-sector coordination, build stronger links to the regulator and other relevant government agencies and enable operators to test and restore their own telecommunication networks.

Base the exercise on testing existing plans (if available): Participants should be familiar with or receive training on applicable NETPs and policies well before the drill (it is inadvisable to design a test that bypasses all current regulation processes). Participants should set recovery time objectives (RTOs) and recovery targets (if any), then they should design an evaluation/test to assess the ability to hit those targets and objectives and to pull in resources along the way. If key response/business processes with associated RTOs have not been identified in existing plans, then this offers an initial finding on which the exercise can shine a spotlight.

Align language and vocabulary: Ensure that all players are familiar with the terms being used. If necessary, terms should be issued as a glossary beforehand.

Keep the scenario realistic: Design a scenario that has benefits for all players and real-life applicability. This will improve the stakeholders' ability to role-play. Some example questions when designing the scenario might be: Should the scenario address a requirement for moving people over long distances, testing early warning alerts, performing evacuations, setting up emergency medical facilities, etc.?

Make the scenarios and injects dynamic: Dynamic scenarios make participants consider how they would deal with complex, cascading events. Natural disasters do not follow a pre-determined or limited plan, so being prepared for a multitude of scenarios is crucial.[6]

Get key management commitment and support: Often the level of commitment and involvement from an organization's management can be anywhere from a few hours to a few days. This could include involvement in just the exercise itself, or in the planning phase and after-action activities. During the planning stages, the rationale and anticipated

[5] https://www.emergency-response-planning.com/blog/topic/tabletop-exercise
[6] https://www.gsma.com/mobilefordevelopment/resources/exercising-business-continuity-plans-natural-disasters-quick-guide-mnos/

benefits of the exercise should be explained fully to management personnel so they will support the provision of resources and can see how the exercise will drive plan and policy improvements to benefit the whole organization.

Get key stakeholder commitment and support: Draft a list of key participants to understand who must participate and identify which participants are optional or prioritized. When involving stakeholders from outside the organization, ensure that permission has been obtained to include those staff members, since their participation may take a significant period of time. Ensure that the management and leadership of external organizations are aware that their staff members will be participating in the exercise possibly for a number of days.

Be aware of resource impact: Be cognizant of the resource impact of the exercise if asking for deliverables that require significant work (such as data gathering).

Know when to terminate: Be prepared to terminate the exercise if circumstances render the exercise impractical or if the outcomes are not likely to be useful or realistic. This experience will serve to inform and improve the next exercise.

Add "stress": Consider removing common tools or technology platforms from the exercise and force participants to fall back on manual processes with limited communications. This will "stress" the processes and test the ability of teams to pre-plan, their knowledge of the plans in place and their ability to act without direction.

Use real world processes and systems: Avoid creating "exercise only" groups, e-mail addresses or communication paths that will not actually verify whether the systems used during a real event would be effective

3. Section III – Conducting drills and exercises

3.1. Facilitating a scenario-based exercise

Before conducting the exercise, the facilitator should distribute the organization's emergency plan, if one exists, to invitees as advanced reading. The facilitator may also contact local and state emergency managers and community responders for input on the exercise, such as on current issues in local emergency management that may impact the organization's planning.

The role of the facilitator is to create a framework to encourage dialogue and steer discussions to meet the objectives of the exercise, provide information about the organization's emergency plans, foster teamwork and educate participants.

The role of the facilitator is to:

- **give participants an overview** of the exercise, including the scope, scenario, timeline goals, participant roles and next steps;
- **have participants introduce themselves** to familiarize them with one another and with their roles;
- **have participants work together as a team** (or divided into multiple teams);
- **introduce participants to the scenario** as if it were a real incident;
- **guide the team through interactive modules** to accomplish the exercise objectives based on the stages of disaster management (mitigation, preparedness, response and recovery) and, at each stage, discuss the specific actions to be taken;
- **encourage a full discussion of mitigation, preparedness and response actions** appropriate to the scenario with the aim of improving communications during future disasters;
- **introduce injects** at critical times throughout the exercise, in a cascading manner;

– **facilitate a debrief** that forms part of a comprehensive after-action process to engage participants in summing up the observations and findings, informing and amending NETPs and coordinating any changes or updates to NETPs and coordination processes.

3.2. Best practices in conducting drills/exercises

Recording events: Assign a scribe to capture the timeline and key decisions.

Interpreting events: If needed, assign an evaluator to note the outcomes and make recommendations.

Provide a timeline: Start by drawing up a timeline to demonstrate how the exercise will play out through to the end. The timeline should include the participant call frequency and the timing of calls and activities.

Setting the tone for success: How the drill is run impacts the outcome. The exercise should be treated seriously and as a priority for the organization, as if it were an actual emergency.

Focus on outcomes in the programme and agenda: Regardless of whether it is face-to-face or on a conference call, try to keep administrative overheads to a minimum. All exercise materials and messaging should focus on the desired outcome and should not spur discussions that take the exercise off track. Facilitators should ensure that the agenda and timeline continue to drive the exercise forward.

Injects: Injects should be designed to stimulate the actions, activities and conversations of teams, agencies and individuals, whether directly or indirectly involved in the exercise. Injects should also target existing plans:

– For example, if a scenario is developed to examine contingency responses to a hurricane, the first inject could be a media weather report of a tropical depression that is developing into a hurricane. The next inject would be a follow-on report that the hurricane is approaching the area.

Injects should link the simulated event to the actions that the organizers want participants to take: Injects provide complexity to the exercise and are provided by controllers to drive the scenario. Injects usually happen regardless of participants' actions:

– For example, a simulated road emergency could obstruct evacuation via a key road. This is an inject because the exercise controller would inform the players at a pre-set time that this simulated event has taken place.

Other examples of injects include a mobile network failure owing to an electricity shortage, a generator failure, a fuel shortage (for example, no fuel for the next 3 hours), a chemical leak requiring a clean-up by hazardous materials teams, or a civil disturbance near a hospital. When drafting an inject, link the simulated impact of the inject to the desired actions by participants.

Note: Facilitators can also use injects to remove key players from the exercise if there seems to be an over-reliance on a particular person or team's knowledge.

Develop injects that challenge the structure of the response, test the flexibility of the response plans and force priority discussions:

– For example, telecommunications could be impacted, with cell towers in key areas destroyed or damaged, mobile and fixed phone lines down, Internet access disrupted, submarine cables damaged and perhaps no access to cloud recovery.

– Injects could include broader infrastructure issues that affect telecommunication response and recovery, such as closed airports, no power, loss of central communications switches and damaged ports and roads.

- An inject can help address the point at which calls are placed for mutual aid or for outside assistance from an NGO or the United Nations. Such injects can help test NGO programmes that exist on the ground before the emergency event or the capacity of United Nations coordination and clusters. As United Nations clusters can trigger support from NGO members, who operate in close coordination with national authorities, any delays in requesting such support can be costly; the request must therefore be heard clearly.
- Well-tailored injects can help address resource issues throughout the exercise: Are there enough participants? Has the restoration of critical resources been prioritized, such as telecommunication nodes or power stations? Is there sufficient equipment? Is more training needed? Where are backups coming from?

Set expectations regarding deliverables: Make clear when deliverables are due and what level of detail is required (full versus partial).

Set ground rules for communicating during the exercise: For example, insert "This is an exercise only" at the beginning and end of all exercise-related communications.

Reporting during the event: Agree on what type and frequency of reporting are required during the event. What monitoring is going on and by whom, and what information can they obtain (or share)? What updates or status reports are being delivered? What are the operators required to report and how will they do this?

Reporting lines: Reporting lines should be designed in advance. What status reports are provided, and to whom and how frequently are they issued? Are these lines of communication well understood?

4. Section IV – After-action processes and amending national plans, policies and procedures

4.1. The debrief/after-action report

During the debrief, the facilitator guides exercise participants as they share their experiences and challenges and provide actionable feedback. This is the most important part of an exercise.

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Examples of guided questions to be posed to participants in the debrief/after-action report (moderated by an on-site facilitator):

- What unanticipated issues arose during the exercise?
- What gaps were identified?
- What went well?
- What are high-priority issues that should be addressed? E.g. list and prioritize five short-term and five long-term actions for follow-up.
- What new ideas and recommendations for improvement do you have?
- What was learned during the exercise?
- What next steps should be taken in planning and preparing for events?

4.2. Best practices in debrief/after-action and follow-up processes

Maintaining the interest and trust of stakeholders is key; issues raised by stakeholders must not be dropped or ignored, even if they are deemed irrelevant, unimportant or unsalvageable.

Documenting the exercise: Empower the scribe to call for pauses so that issues can be captured and recorded properly. Both before and during the exercise, explain the role of the scribe to participants to ensure that they understand the benefits. Set the expectation that teams involved in the exercise should also capture their own lessons learned and communicate them to the scribe after the exercise. Consider providing a template or form for the submission of such observations.

Include it all, both good and bad: It is important to record both what went well and what did not go so well and to provide opportunities for improvement. Views on processes, activities, techniques or equipment and how they performed can be shared among participating teams as learning opportunities.

Consider holding a dedicated meeting to capture lessons learned: Such meetings, which should be facilitated, can be used to help shape the formal after-action report and provide important details for the action items and contact persons for follow-ups.

Create a central log: Proposed changes, actions and improvements identified in the after-action review (sometimes called a "corrective action plan") should be reported in a central log. Assign an owner to maintain and track each action. The log should include the following points of data:

- The type of exercise and date
- Who raised the issue so they can be contacted to clarify the details
- A description of the issue identified
- The agreed resolution plan
- Who is responsible for completing the action or resolving the issue
- The agreed resolution date

4.3. Translating exercise and drill outcomes into action

Results from the debrief should be used to draw up an action plan for areas that require improvement or adjustment, as well as identifying the areas of strength. Demonstrating the impact of exercises by identifying necessary improvements and implementing actions to enhance preparedness is critical to securing management buy-in for a continuing programme of drills and exercises.

Results from the debrief should be used to draw up an action plan for areas that require improvement or adjustment, as well as identifying the areas of strength.

Agreed timelines for addressing actions: Establish an agreed time-frame for resolving each action. Although such timelines may change, it is recommended to create a baseline as a starting point.

Own it and measure it: It is important to identify who is responsible for each action.

Publish the report and invite key stakeholders to review it: The after-action report should lay out (in a table) the specific objectives that were measured: Were they met? If not, why not? Any challenges encountered should be noted, as well as what resources may be required to meet the objectives.

Build a table of exercise objectives and a matrix of how they were met: The table and the matrix could include opportunities for improvement. The table should be specific and should include all issues faced, such as resource, staffing and skill deficiencies.

Keep it brief: The table should summarize the improvement objectives and successes in a brief (around one page) and easy-to-follow "scorecard" in order to maintain the ongoing support of management.

Organize lessons learned into categories of activities: This could be by ICT infrastructure, participant (operator, regulator, civil protection, NGO, etc.), logistics, roles, or processes and procedures.

Encourage a culture of continuous improvement: To develop a continuous improvement culture, reinforce momentum following events and the publication of the after-action report by driving forward the points identified for improvement into best practices. Organizations can translate improvements into future NETPs and exercises by cementing the principles of recording, tracking and closing actions that have a positive effect on preparedness planning, by assigning who is responsible for each improvement and by holding regular improvement meetings. This process should continue between and throughout every drill or exercise, thereby helping build momentum behind a methodology for continuously improving NETPs.

Practise, practise, practise: Hold drills and exercises at regularly scheduled intervals, and increase the scope and complexity of drills and exercises over time, with each exercise building on the learnings of its predecessors.

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