CAPSTONE EXERCISE

FOI

ROBERT KOCH INSTITUT

Evaluation of the

Capstone Exercise 2020|2022

EXECUTIVE REPORT

Content

Acknowledgements

The Capstone Exercise 2020|2022 is part of a project of the Robert Koch Institute that is funded by the German Federal Foreign Office and aims to strengthen the United Nations Secretary-General's Mechanism for the Investigation of Alleged Use of Chemical, Biological or Toxin Weapons (UNSGM).

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Executive Summary

The Capstone Exercise 2020|2022 was a two-part simulation exercise including a table top exercise (TTX) and a field exercise conducted by the Robert Koch Institute (RKI) to strengthen the United Nations Secretary-General's Mechanism for the Investigation of Alleged Use of Chemical, Biological or Toxin Weapons (UNSGM).

This report summarizes the organization and outcomes of the Capstone Exercise based on the evaluation which was conducted with the RKI as exercise managers and with the support of the Swedish Defence Research Agency (FOI) for scenario development and exercise evaluation. The report was developed collectively by the RKI, the FOI and a number of evaluating observers.

The Capstone Exercise was designed as a simulation of an entire investigation mission where a selected group of qualified experts could apply the knowledge and skills they had trained in preceding years. The exercise aimed at simulating an investigation as close to reality as possible. This comprised the activation of the mechanism by the United Nations (UN) Secretary-General (after receiving report(s) of allegations by a UN Member State and consulting, as needed, with expert consultants), the preparation and deployment of the mission to the affected country, taking environmental and biomedical samples, conducting interviews, examining records and undertaking other investigative activities, preparing collected samples for transport, and finally preparing and transmitting a report containing the results of the investigation.

The Capstone Exercise included all relevant stakeholders that would be needed for the activation and deployment of a UNSGM mission: 19 qualified experts from 16 UN Member States with various professional backgrounds participated in the field exercise. In addition, representatives of different UNSGM stakeholders supported the exercise, including the UN Office for Disarmament Affairs (UNODA) and the UN Internal Task Force (UNITF), designated laboratories as well as expert consultants. Finally, an evaluation team, other observers, technical support, role players, and the organizers were present in their respective functions for the exercise.

The aim of the evaluation of the Capstone Exercise was to observe both the mission team in conducting a fictitious UNSGM investigation and their interaction with different UNSGM stakeholders. The evaluators found that the Capstone Exercise proved to be extremely valuable in demonstrating that the UNSGM is functional and fully operational for "the timely and efficient investigation of reports of the possible use of…biological…weapons" (Guidelines and Procedures, title).

The participant feedback for the Capstone Exercise emphasises the importance of simulation exercises as a cornerstone of UNSGM training for qualified experts and points to the potential in expanding the UNSGM training programme in various areas in order to strengthen the capabilities of the mechanism.

The results of the evaluation and the participant feedback demonstrate that there are some aspects that are crucial for the preparedness of the UNSGM, both in the discussion of the TTX as well as the field exercise. First, specific guidance is missing on some aspects covered by the Guidelines & Procedures available to qualified experts for the preparation and execution of an investigation mission.

Second, up-to-date lists of equipment that should be available also need to be developed. Close cooperation between the mission team and the UN as well as the designated laboratories is crucial for the preparation of a mission and can be strengthened. Awareness can be raised about the specific UN procedures that apply to a UNSGM mission, regarding, for example, security, logistics, and general UN support. Training is encouraged to strengthen the investigative mindset of qualified experts and the additional considerations that highly political missions likely involve. The list of recommendations expressed by the evaluation team, other observers and the qualified experts include:

- Team building
- SSAFE or HEAT courses
- UN structure and mechanisms
- Just-in-time training on all practical procedures during preparation of a mission
- Regular training with the specific equipment that will be available to the mission team
- Sampling in specific terms of the Guidelines and Procedures
- Sample processing in specific terms of the Guidelines and Procedures, including the 'secure work area' options
- Working under time pressure in a biological hazardous environment (e.g. prioritization)
- Preparing for extensive sampling situations
- Use of personal protective equipment
- Biosafety procedures
- Decontamination procedures
- Chain of custody aspects with regard to its impact on samples and their quality as serving as evidence
- Forensics
- International Air Transport Association (IATA) regulations
- Bioagents that pose a severe threat to public health and safety
- Interaction possibilities with analytical laboratories before sample transfer, including mandate and terms of reference
- Laboratory report evaluation
- Guidance on mission team and analytical laboratory interaction, including mandate, terms of reference and laboratory report evaluation
- Interviewing
- External communication, in particular handling social media

In addition to the training recommendations listed above, training opportunities are also central for the development of a network of qualified experts that know each other and who can work together in an international and interdisciplinary team. If the UNSGM is activated, a mission team has to be built on short notice and needs to be able to function efficiently and under pressure. The UNSGM roster of qualified experts should provide for the broad range of expertise needed for a UNSGM mission, and Member States are encouraged to strengthen the diversity of expertise represented on the roster.

1. The United Nations General-Secretary's Mechanism

Pursuant to General Assembly resolution A/RES/42/37C (1987)[1], reaffirmed in Security Council resolution 620 (1988)[2], the United Nations Secretary-General (SG) is authorized to carry out prompt investigations in response to allegations concerning the possible use of chemical, biological or toxin weapons. This is commonly referred to as the United Nations Secretary-General's Mechanism for the Investigation of Alleged Use of Chemical, Biological or Toxin Weapons (UNSGM).

The resolution authorizes the SG, on request from any United Nations (UN) Member State, to launch an investigation concerning the possible use of chemical, biological or toxin (CBT) weapons. This includes dispatching a fact-finding team to the site(s) of the alleged incident(s) to ascertain in an objective and scientific manner facts of alleged violations of the 1925 Geneva Protocol[3] or of other relevant rules of customary international law, and to report to all Member States[4].

Since the UNSGM is not a standing investigative body, Member States nominate expert consultants, qualified experts and analytical laboratories which are then listed in a roster and may be called upon to support a UNSGM investigation. The Guidelines and Procedures for the timely and efficient investigation of reports of possible use of chemical and bacteriological (biological) or toxin weapons ("Guidelines and Procedures")[5], endorsed by the General Assembly in resolution A/45/57C (1990)[6,7], provide detailed guidance on preparation and conduct of the investigation. They state that, "any interested Member State may designate to the Secretary-General relevant specialized training or courses available to qualified experts in support of their possible role on his behalf in carrying out investigations of possible use of chemical, biological and toxin agents, in order to facilitate achievement on a common basis of understanding and operation." (paragraph 40). The first-ever training course for qualified experts was offered by the Government of Sweden and was conducted in cooperation with UNODA in Umeå, Sweden, in 2009. Since then, more than a dozen training courses have been held in various Member States.

In accordance with the Guidelines and Procedures, experts and laboratories nominated by Member States would be requested to provide assistance and service at a short notice when the UNSGM is activated. According paragraphs 64-75 of the Guidelines and Procedures, qualified experts would actively participate in any mission team to conduct investigations into the alleged use of CBT weapons as requested by the Secretary-General. Pursuant to paragraphs 57-63 of the Guidelines and Procedures, expert consultants may be requested to advise and assist in the overall conduct and operation of the UNSGM, from planning and deployment to operation and reporting. Finally, the role of analytical laboratories would be to test for the presence of CBT agents, according to paragraphs 76-80 in the Guidelines and Procedures.

[1] https://undocs.org/a/res/42/37
[2] https://undocs.org/s/res/620(1988)
[3] https://www.un.org/disarmament/wmd/bio/1925-geneva-protocol/
[4] https://www.un.org/disarmament/wmd/secretary-general-mechanism/
[5] A/44/561, Annex I
[6] https://undocs.org/A/RES/45/57
[7] Member States encouraged the SG in September 2006 to update the roster of experts and laboratories, as well as the technical Guidelines and Procedures, available to him for the timely and efficient investigation of alleged use. In consequence, a reviewed version of the Annexes to the Guidelines and Procedures was prepared by a group of experts in 2007 (see https://www.un.org/disarmament/wmd/secretary-general-mechanism-old/appendices/).

The mechanism can be divided into a number of successive steps as outlined in the Guidelines and Procedures:

1. Initiation of the mechanism
2. Designation of resources to the mechanism
3. Pre-mission planning and preparations
4. On site investigation
5. Laboratory analyses
6. Report of investigation activities
7. Review of procedures

2. The Capstone Exercise

2.1. Project Context

The Capstone Exercise 2020|2022 was organized by the Robert Koch Institute (RKI) and formed part of a larger project financed by the German Federal Foreign Office. The RKI has been active with UNSGM-related projects since 2013, with a first practical 10-day exercise being organized 2014 in Berlin. More recently, the RKI has focused on developing training sessions for qualified experts (through its Centre of International Health Protection) and designated laboratories (through its Centre for Biological Threats and Special Pathogens[8]). For instance, the RKI organized a Hostile Environment Awareness Training (HEAT, 2019) and a HEAT refresher training (2021) for a number of qualified experts on the UNSGM roster. The RKI also prepared an e-learning module on the subject of personal protective equipment that was provided as an in-kind contribution to the UN Office for Disarmament Affairs (UNODA) in 2021.

2.2. Purpose of the Exercise

The Capstone Exercise was a two-part exercise including a table top exercise and a field exercise conducted by the RKI to strengthen the UNSGM. As the only second full-scale exercise for the UNSGM, it was intended to fulfil various purposes:

- Simulate a UNSGM investigation in its entirety in order to identify particular challenges that could be specifically addressed in future exercises schemes in preparation for a real mission;
- Offer qualified experts nominated to the roster the opportunity to test their skills (especially those developed during UNSGM training courses), proficiency with the UNSGM and team-building capabilities;
- Identify gaps in the training program for experts with a view to further developing additional training concepts;
- Visualize missing relevant expertise to be potentially included on the roster; and
- Test the coordination between experts and other stakeholders with a view to optimize interaction between the different actors and agencies involved within and outside the UN

[8] https://www.rki.de/EN/Content/Institute/International/Biological_Security/RefBio.html

system. These include inter alia the UN Internal Task Force (UNITF), nominated expert consultants, and the designated laboratories that are tasked with the analysis of samples.

All these aspects were examined in detail in a lessons learned process after the exercise.

The accompanying circumstances of a possible fact-finding mission were deliberately exaggerated in the scenario in order to make the challenges for those involved more visible and to be able to identify possible needs for action for the future more precisely.

2.3. Exercise Content and Procedure

The Capstone Exercise was designed as a simulation of an entire investigation mission where a selected group of qualified experts could apply the knowledge and skills they had trained in preceding years.

The exercise was divided into a table top component, where mission planning took place, and a field component. Due to the COVID-19 pandemic, both parts were adapted and delayed. The TTX, initially planned for June 2020 in New York, took place as a virtual event in November 2020. The field exercise that should have taken place in September 2020, was postponed until September 2022.

During the TTX, a selected head of mission together with three deputies was instructed to set up a mission plan. In the subsequent field exercise, a 19-person mission team conducted an investigation of the alleged biological weapons use in Alfacountry. The exercise covered most aspects of the whole mission cycle including assembling at UN Headquarters, the investigation in the host country and the final report to the UN again at the UN Headquarters.

During their mission, the team was free to consult UNSGM expert consultants, designated laboratories and UNODA at any time.

While the exercise intended to include all important aspects of a possible UNSGM mission, some aspects were still excluded or adapted by the organizers due to the complexity of a possible mission and the artificiality of an exercise of this scale. The exercise organizers would like to point out some of those exercise artificialities in order to contextualize the results described in this report:

- The size of the mission team was artificially large, as the intension was to give more qualified experts the opportunity to participate in the exercise which presented a rare opportunity.
- Between the mission planning phase and the deployment, there was a time gap of two years in the exercise (due to disruptions caused by the COVID-19 pandemic). This would of course not be realistic for a real mission.
- Flexibility for the Head of Mission regarding e.g. setting up a schedule for activities was not possible as transportation and use of the different training sites for the activities was prepared in advance by the organizers.
- Preparation and constant support by UNITF of the mission could not be provided as in a real situation for the exercise (e.g. in terms of equipment, logistics & transport, interpreters, UN documents, presence of UN personnel, etc.).
- The mission team handed over their sample parcels to fictitious UN staff, but the following sample transport to the designated laboratories was not part of the exercise.
- The analysis of samples in the designated laboratories was not part of the exercise, as no real agents were used. The mission team however received a fictitious report from two designates laboratories based on their sample types and quantities.

- There was no time gap between sending the samples to the designated laboratories and receiving the results in order to allow the mission team to directly write their report.
- Host country security staff for constant support of the mission team was not provided during the exercise.
- A number of observers was present during most activities, which may have an influence on the behaviour of individual participants.

2.4. Stakeholders of the Exercise

The Capstone Exercise included all relevant stakeholders that would be needed for the activation and deployment of a UNSGM mission and aimed at simulating an investigation as close to reality as possible. This comprised the activation of the mechanism by the SG (after receiving report(s) of allegations by a UN Member State and consulting, as needed, with expert consultants), the preparation and deployment of the mission to the affected country, taking environmental and biomedical samples, conducting interviews, examining records and undertaking other investigative activities, preparing collected samples for transport, and finally preparing and transmitting a report containing the results of the investigation.

The participants of the exercise consisted of qualified experts from 16 UN Member States with various professional backgrounds. In addition, representatives of different UNSGM stakeholders (UNODA and UNITF, designated laboratories and expert consultants), the evaluation team, other observers, technical support, role players, and the organizers were present.

The RKI was the responsible institution throughout the planning, preparation and implementation of the Capstone Exercise. The evaluation of the exercise was conducted in cooperation with the Swedish Defence Research Agency (FOI). The FOI provided its knowledge of evaluation methodology and developed the data collection plan and data collection tools (surveys, templates, etc.). During the exercise, the FOI staff gave guidance to the evaluating observers, consolidated the evaluation data, and provided the structure and textual elements for the evaluation report.

The RKI also closely collaborated with UNODA: UNODA provided its expertise of the UNSGM throughout the preparation of the exercise and selected the experts for the exercise from the UNSGM roster. As the link to the UNITF, UNODA was also responsible for communication with all relevant UN institutions.

The exercise was closely monitored by the organizers and a number of observers, some of them in an evaluating capacity. In addition, the exercise benefitted from skilled role players and an agile support staff. For both the virtual TTX and the field exercise, the RKI contracted Training In Aid Ltd[9], which provided its Remote Exercise Management System (REMS) and 24/7 technical support throughout the exercise.

2.5. Scenario

The overarching scenario was set in fictional Alfacountry (UN Member State) which had seen a major disease outbreak with severe symptoms and human-to-human transmission. The source of the infection was under investigation, the causative agent, a highly pathogenic bacterium with a high rate of morbidity and mortality, had been preliminarily identified as *Yersinia pestis*. In addition, the

[9] https://www.traininginaid.com/

pathogen was suspected to be a modified agent, since unusual antibiotic resistances could be observed. The victims consisted mostly of the Mindorian minority from fictional Betaland that were seeking political asylum in Alfacountry. In their home country Betaland they were facing extensive human rights violations. Due to initial investigations, Alfacountry identified the so-called Welcome Reception Center as the assumed site of the attack. Tensions between Alfacountry and the neighbouring country Betaland had been a reality for years. Alfacountry also claimed to have knowledge of an illicit biological weapons program in Betaland.

Due to their assessment of the situation, Alfacountry had asked the SG to launch a UNSGM investigation. After review of the allegation that was provided by Alfacountry, the SG decided to activate the UNSGM and appointed a Head of Mission for the investigation. In the following, a mission team was selected to depart for an investigation in Alfacountry.

3. Evaluation

3.1. Method

The exercise evaluation was based on a case study-design centred around the implementation of the procedures outlined in the Guidelines and Procedures for the investigation of reports of possible use of CBT weapons[10]. A team of expert observers with diverse disciplinary backgrounds and experiences assessed the exercise which were organized in an evaluation team to cover all exercise components. The task of the evaluation team was to collect data and analyse the subsequent events of the exercise. An array of different data collection methods was used to capture the chain of events and observers' comments, including observers, surveys, cameras and videorecorders, voice recording, files and documents. A general principle was that the evaluation should have minimal interference with the investigation team and other participants. Surveys to mission participants were only conducted at the end of the TTX and the field exercise. The focus of the evaluation was to gather information regarding the team's activities and how they implemented the Guidelines and Procedures, not the individual performance of single participants. In addition, special attention was also given to the interaction of the different involved stakeholders of a UNSGM mission.

3.2. Reflections on Evaluation Process

The evaluation team recognizes that a UNSGM investigation mission would be a highly complex and demanding task, requiring a range of skills from the team overall as well as from each member. Individuals who agree to be nominated to the roster of qualified experts show a significant degree of courage and commitment to the mechanism, as the position requires them to be willing to take on tasks beyond their core expertise, undergo additional training, and deploy to potentially dangerous locations to carry out the mission.

The evaluation team is conscious that the observers could not be privy to all of the intricate details of the team's comprehensive response activities. Therefore, all observations are made and stated in awareness of this circumstance. Moreover, the evaluation team is also aware that the mere act of observation may impact upon the observed action, and that a number of artificialities come up during

[10] https://undocs.org/a/44/561

such an exercise that may have been handled differently, or may not have appeared in the first place, in a real mission.

4. Outcomes of the Table Top Exercise

4.1. Reflections on the Exercise Format

The development of a mission plan within a short amount of time and under the constraints of exercise artificialities (such as the virtual environment and the location of the qualified experts in different time zones) presented a big task to master. Hence, all participants of the TTX expressed their gratitude to the team of qualified experts who contributed their impressive expertise and a remarkable amount of time to develop an extensive and comprehensive mission plan at a very high qualitative level.

4.2. Team Dynamics

In general, the mission team considered it very helpful to know each other's expertise and personalities for the task of planning a fictious mission, which stresses the positive effect of regular personal encounters for the creation of team cohesion, and hence, supports the importance of regular training for nominated UNSGM experts and the facilitation of information exchange and networking among UNSGM experts. In this context, the team of qualified experts also recommended further skilled training courses for the following topics: Use of personal protective equipment and decontamination, International Air Transport Association (IATA) regulations, and bioagents that pose a severe threat to public health and safety.

4.3. Cooperation of UNSGM Stakeholders

Throughout the exercise, the possibility of exchange between qualified experts and expert consultants during the exercise was highly appreciated and considered important for the planning of the mission within the Capstone exercise. In addition, the facilitation of collaboration and exchange between qualified experts and designated laboratories, in accordance with the UNSGM Guidelines and Procedures, was identified as beneficial for the success of the planning and the following mission, acknowledging the need for a sound and impartial investigation process. In a similar way, the cooperation with departments in the UN Secretariat and other UN entities was considered of high importance, with a possible need identified to specify UN support in the mission planning phase.

4.4. Contingency Planning

As an outcome of the various discussions during the TTX, the participants agreed that it is crucial for the team to adapt their planning to reality, that mission plans need to remain flexible and that regular review of mission plans is recommended, as pointed out in previous trainings.

5. Outcomes of the Field Exercise

5.1. Planning

According to the provisions of the United Nations General Assembly (UNGA) resolution on which the UNSGM is based, the UN is responsible for making the necessary arrangements for experts to collect and examine evidence. The Secretary-General will also seek assistance as appropriate from Member States and the relevant international organizations, which should provide any necessary assistance in order to facilitate preparation for and conduct of investigations (UNGA Resolution 42/37C (1987), see also Guidelines and Procedures section A).

An important element that has a direct effect on planning is the information provided to the team. The guidelines state that the qualified experts should be provided with any necessary information available to the Secretary-General relating to the possible use of chemical, biological or toxin weapons (section D.2, paragraph 92 c). The mission team evaluates this information and, based on its analysis, develops a tentative program of work. The team then finalizes this work plan after discussion with local authorities at the site of the investigation and the relevant international organizations.

The exercise demonstrated the importance of planning, both in the sense of mission planning (that is, consideration of the mission as a whole), and operations planning (consideration of the specific operations that are conducted during the investigation). The evaluating team did not observe the mission team exploring alternative scenarios to the one presented by Alfacountry. Consideration of alternative scenarios is a crucial part of investigations and has implications for both mission and operations planning. The time devoted for mission planning during the Capstone exercise was shorter than it would be in the event of a real-life investigation. The evaluation team has sought to take this into account in its observations and recommendations.

During the exercise, the mission team generally adhered to the guidelines with respect to mission planning. The evaluation team observed that the team collected and requested information from the national representatives and used that information as a basis for mission planning. The mission planning included equipment selection, security, communications, emergency and contingency plans, logistics, itineraries, investigation sites, situational awareness, safety, personnel, sample packaging and transportation. With the support of the representative of UN DSS, the team established a situation room in the investigation location where they depicted these aspects graphically on whiteboards and bulletin boards, which they regularly updated during the mission.

With regard to operations planning, the team conducted several different types of field operations, including interviews and sampling operations. The mission team could have devoted more time to planning for these specific operations, which would have allowed them to prepare more detailed and refined operations plans and to prepare for contingencies during operations. Such operations-planning would enable the team members to visualize the steps of operation, thoroughly review the procedures, and prepare for contingencies, reducing the need for ad hoc decision-making and improvisation. Planning and further definition of requests to laboratories could be more specific regarding e.g. types of data needed, prioritization of samples, interim reporting and level of depth of analysis. This should take into account the capacities and capabilities of the mission team in terms of analysis of these data.

5.2. Command and Control

The UN Secretary-General designates the team leader for a mission (Appendix A). Additional team members are selected by the Secretary-General from the roster of qualified experts designated by Member States (Appendix IV). The Guidelines and Procedures list suggested areas of expertise for qualified experts, and note that where possible these experts should have acquired working experience in the field (Appendix IV). In addition, the guidelines underscore the need for clear command and control for the efficiency and success of an investigatory mission (Appendix A). Command and control principles should establish authority, responsibility, and accountability among team members (Appendix A).

In the TTX pre-mission planning, the mission team developed a command and control plan. The plan encompassed the key aspects highlighted in Appendix A of the Guidelines and Procedures, including rules of the investigation, permissible and non-permissible activities, chain of command, specific functions and tasks of various team members, channels of communication, agreed protocols for tasks, and the agreed priority and schedule for tasks. The evaluation team observed some variability in team members' adherence to this plan.

The mission team was large (which may have been an exercise artificiality in order to optimize the training opportunity). Many members did not know each other and had not worked together previously. For several team members, the mission was their first time in the field. Some members had had only basic UNSGM training. The leadership and team members therefore had extra communication work to familiarise themselves with everyone's skillsets.

The leadership emphasised safety, inclusivity and mental health. All team members seemed to have high regard and respect for the Head of mission and their leadership. Directions regarding the inspections were clear, calmly and firmly given so there should have been no confusion as to what was required and by whom. Team cohesion and morale appeared solid and the leadership style seemed to impress the team members. There was no questioning of directions (apart from clarifications), and the evaluation team did not observe any dissension in the ranks. The exercise showed that a clear division of roles is also important at the sub-team level and that qualified experts will need to possess not just technical skills but also team skills in order to carry out a successful mission.

The team seemed to have a trusting, scientific mindset, demonstrating their great expertise in solving and answering scientific questions. Further engagement of the experts to integrate critical investigative mindsets of UN representatives may be advantageous to a mission team.

Further training opportunities to engage rostered experts should be encouraged, including training activities focused on team building.

5.3. Equipment

The Guidelines and Procedures do not contain any specifications for technical equipment for sampling, decontamination, personal security, communication, or any other requirements during an investigation mission. The guidelines provide some examples of sources from which the team might collect samples (such as neat agent, munitions, food and drinking water, or affected vegetation), and state, "Where possible, internationally recognized protocols for the collection of environmental and clinical samples should be followed" (Appendix VII), but they do not provide any specific details on equipment. Appendix III notes that "The equipment and supplies needed for a particular investigation

will be determined in a pre-mission assessment," so the choice of what equipment to bring is largely left to the mission team.

Technical equipment is a crucial element of an investigative mission, and the team members must have trust in and be familiar with the available equipment during all phases of a mission. There is no universally agreed-upon set of equipment that would be necessary for a UNSGM mission, nor are there any stockpiles of such equipment; the UN must, both for exercises and real missions, rely upon Member States, International Organizations or the private sector to provide the required equipment. However, the UN does have some stockpiles of general equipment such as communication systems, which UNDSS would provide to the team for a real mission.

There is no explicitly defined international standard for equipment for environmental and biomedical sampling and decontamination. Qualified experts around the world use different suppliers and brands in their daily work, each of which may have advantages and disadvantages with which they would be intimately familiar. During an exercise or a real mission, the investigative team may need to use equipment they have only encountered during a UNSGM training event or that they have never seen before. The evaluation team observed some frustration among the team members about their reliance on unfamiliar equipment. The stressful environment, the need to adhere to strict biosafety and chain of custody standards, and the high expectations from the international community add to the burden on these individuals' shoulders. In addition, the evaluators filmed and photographed the team members as they handled unfamiliar equipment during some events, which created an additional source of pressure.

It is essential that qualified experts have a say on which specific equipment they prefer to use during both training exercises and real missions. Training together in a UNSGM setting can help with this, as it gives qualified experts the opportunity to harmonize their requirements and desires for technical equipment for future exercises and real missions. UNODA should keep a regularly updated list of equipment preferred by qualified experts.

Additionally, the mission team should perform a just-in-time short training on all practical procedures, including how to use all equipment, during the preparatory phase right before deployment or at the base in the host country. In selecting equipment, the mission team should make use of existing guidance available through UNODA.

5.4. Sampling and Analysis

5.4.1. Collection of Samples

The Guidelines and Procedures in section E.1, paragraph 97(b)(ii) state that "Samples of importance in the investigation include neat agent, munitions, remnants of munitions, environmental samples ... and ... biomedical samples ...". Paragraph 97(b)(iii) continues with "When possible, ... control samples should also be collected from an uncontaminated area located at a suitable distance from the site of the alleged attack or from a human or animal source believed not to have been exposed to the agent." Appendix VII notes that "A stringent regime should be established to govern the collection, handling, transport, and analysis of samples taken to support the investigation of alleged use of CBT weapons." The Appendix then goes on to describe "detailed procedures for collection of physical samples" and notes specifically that "Where possible, internationally recognized protocols for the collection of environmental and clinical samples should be followed." There is also existing guidance on sampling available through UNODA.

The mission team carefully planned which sites to sample and adequately explored all opportunities to collect samples. On several occasions, the host country offered the mission team samples that its representatives had already taken. The mission team seemed to be aware of the possibilities that such samples may offer, but recognized that the host country would expect them to analyse any samples that they accepted; thus, their acceptance of samples offered by the host country and not taken in the presence of the mission team could have consequences for the political perception of the mission's results. The team took this into account in its decision process.

The environmental and biomedical sampling teams were well organized and the tasks of each member were well defined. Work in the hot zone was rational and well structured; the team member doing the actual sampling orally informed the other team members about visual assessment of the situation and each action that he or she took. The sampling teams in the hot zone dealt with time pressure efficiently, determining which samples would take highest priority in order to make best use of the available time. In a few instances, the limited time available led to discussions among the sampling team members in the hot zone about sample priorities. These instances should be avoided, which is why an unambiguous chain of command for operational decision making is central. Furthermore, it is always important to have clarity about which samples should take priority and how to record all visual information, including information that might provide valuable evidence for intelligence assessments and forensics. In this regard, it may prove valuable in the future for the mission team to approach the analytical laboratories as they develop their sampling plan in order to determine what kind of samples should be taken.

The exercise also showed that it is important for the sampling team to know when to use rapid tests, to be aware of contamination risks for the team members and their equipment, and to practice the appropriate behaviour in a dry run in a safe place first.

Sampling teams generally followed the Guidelines and Procedures and rightly adapted their risk assessments in real time, based on information received on site.

In general, the sampling teams performed their work professionally. In order to maintain this proficiency level and increase confidence of all sampling team members, there is value in exploring options for periodic training sessions on the following topics:

- Sampling in specific terms of the Guidelines and Procedures
- Working under time pressure in a biological hazardous environment (e.g. prioritization)
- Exercising with the specific equipment that will be available to the mission team (e.g. suits)
- Awareness about the value of information for intelligence assessments and forensics
- Awareness that depending on the scenario extensive sampling may be required (e.g. Amerithrax)
- Awareness about exhaustion levels of samplers (i.e. need for drinks and food)
- Decontamination procedures (see 'safety and security' section)

5.4.2. Sample Processing

The Guidelines and Procedures in section E.1, paragraph 97(c)(i) and (ii) set out the sample processing procedure. Paragraph 97(c)(i) says that "... *the qualified experts should return to the secure work area in order to divide and prepare the samples for transportation to the analytical laboratories*.". Paragraph

97(c)(ii) then outlines the preparation of sample sets, each of which consists of three individual samples: the sample to be analysed (labelled as possibly contaminated sample) and two negative controls (one labelled as uncontaminated sample and one labelled as possibly contaminated sample). Preparing negative control samples and applying seals systematically are crucial elements of the sampling process.

The Guidelines and Procedures say that sample processing should take place in a 'secure work area' without defining this term further. In the Capstone scenario, the mission team faced the restriction that the split samples for the host country were not to leave the country, so the sample processing had to take place in country. In a real-life situation, however, a mission team could request that a designated laboratory perform the sample splitting at a fixed installation under the supervision of the mission team, which would likely reduce stress levels for the team in-country and minimize potential cross-contamination issues when having to carry out sample splitting in non-fixed installations.

The sample processing sub-team organized its work, worked properly and calmly, and communicated appropriately. The whole procedure was documented on video to avoid any chain of custody issues. The sample processing sub-team realized the limitations of the equipment at hand (as part of the exercise) and noted several issues needing improvement: size of gloves, sizes of pipettes available, preferred decontamination solution, available labels, and the size of the working area, that would be established in a real response scenario. The team seemed well aware of the limitations and potential cross-contamination issues.

In general, the mission team performed its sample processing professionally and effectively. In order to maintain this proficiency level and increase confidence, there is value in exploring options for periodic training sessions on the following topic:

- Sample processing in specific terms of the Guidelines and Procedures, including the 'secure work area' options

5.4.3. Sample Transfer and Chain of Custody Aspects

The Guidelines and Procedures in section E.1, paragraph 97(d) outline the steps to take for sample transfer: the samples "should be transported as soon as possible to three designated laboratories. Of these, two laboratories should be requested to carry out immediately the analyses required for the investigation." Paragraphs 97(c)(iii) and (iv) describe steps to take that are of relevance to ensure an unbroken chain of custody. According to paragraph 97(d)(iii), "If possible, a member of the secretariat or of the team of qualified experts should accompany the samples to guard against mishandling or loss."

The mission team shipped the samples via UN courier to the analytical laboratories. Primary containers together with absorbent material were put into tamperproof bio bottle bags and then into a styrofoam box. Systematic and consistent applications of seals on all layers could maximize the strength of the chain of custody, particularly in the event that the samples are shipped without a mission team member escorting the samples.

Several events over the course of the entire mission showed the importance of observing the chain of custody during the entire life cycle of a mission, since equipment for sampling could be compromised before sampling is actually carried out. In order to maintain the chain of custody, the mission team should maintain constant awareness of the potential for broken seals and report any such incidents as part of the chain of custody.

The mission team should expect that any piece of evidence will be politically scrutinized and do all in its power to ensure the integrity of results. The Guidelines and Procedures emphasize that “samples collected by team members and for which the team maintains physical custody at all times would be of greatest value” (paragraph 97 (b) (i)). Emphasis should be placed on the use of seals on shipment boxes, samples, sample boxes, or storage rooms. Samples and their storage and shipment containers should be sealed; depending on the security situation, seals can also be used to assess if equipment has been tampered with by sealing their containers and/or the storage rooms. Future training could include information on how to assess breach of a seal and how to react.

The Guidelines and Procedures allow the mission team the flexibility to take situational decisions. In this case, for certain situations (particularly in the hospital setting), the team decided to use an adapted version of the chain of custody form.

In general, awareness about the significance of events in relation to the chain of custody is of utmost importance. Therefore, there is value in exploring options for periodic training sessions on the following topic:

- Chain of custody aspects with regard to their impact on samples and their quality as serving as evidence

5.4.4. Sample Analysis

The Guidelines and Procedures in section E.2, paragraph 101 detail what analysis the designated laboratories will undertake. With regard to analytical identification, paragraph 101(c)(i) states that "In its selection of techniques, instruments and procedures for use in analyses, each laboratory should give priority to those for which competence has been demonstrated in the interlaboratory calibration."

Prior to shipping samples to the analytical laboratories, the mission team reached out to the labs in order to clarify import restrictions and acceptance of sample types, and to get a sense of the methodologies available for sample identification and characterization. In this regard, a mission team should clearly define the scope and goal of the analysis with a respective mandate to the laboratories, whereas the laboratories should have the flexibility to decide on how they see fit to fulfil the mandate, based on their methodologies, accreditations and expertise. Depending on the amount of samples to be analysed, laboratories might welcome guidance, since it may not be possible to carry out all analyses in the time available. Analysis of the results of the laboratories is then to be assessed in relation to the various aspects of chain of custody, provenance and quality of samples, a task that was meticulously undertaken by the mission team.

To further improve appreciation of the interface between mission team and analytical laboratories, there is value in exploring options for periodic training sessions and documentation:

- Training on interaction possibilities with analytical laboratories before sample transfer, including mandate and terms of reference
- Training on laboratory report evaluation
- Guidance on mission team and analytical laboratory interaction, including mandate, terms of reference and laboratory report evaluation

5.5. Interviews

Interviewing is an integral part of any investigation mission under the UNSGM. The interview plan is one of five specified elements of the mission plan and should be considered in the pre-mission planning phase (appendix A). Appendix IV, which states the areas of expertise to be considered in the nomination of qualified experts to the roster, indicates that nominated experts "should also be able to conduct appropriate interviews".

When carrying out the mission, team members should interview "eye witnesses and others who may have relevant information, such as medical personnel and social workers etc" (section E.1, paragraph 95(ii)), as well as victims of the alleged attack, to collect as much information as possible about circumstances and effects of the alleged attack (section E.1, paragraph 98). Moreover, "the team should interview any representatives of local authorities who may have been directly or indirectly involved in the alleged use of CBT weapons, such as military personnel, civil defence staff, and social workers participating in relief activities following the alleged CBT attack" (Section E.1, paragraph 100). In conducting their interviews, the qualified experts should not be precluded from interviewing any individual that they deem necessary (section C.3, paragraph 68).

To prepare for the interviews, the qualified experts are encouraged to develop a questionnaire that could be based on guidance provided by Appendix IX and draw on existing "medical, epidemiological, and other (e.g., veterinary) questionnaires developed by relevant international organizations" (Appendix IX), and they should take into account interpretation needs for the interviews. Appendix IX notes that interviews should aim to elicit information pertinent to the investigation, be structured but with flexibility for additional and unexpected information, be conducted in a culture-sensitive way, ensure interviewees' consent and guarantee confidential treatment of identities and information received, and be recorded. These recordings shall be included in the final report as supporting evidence (section F, paragraph 102.c)

Any investigation of an alleged bioweapon incident will very likely rest to a significant extent on biomedical and environmental samples as well as on information gained from interviews. It is a demanding task to conduct interviews with a diverse range of potential interviewees, particularly in a potentially very complex, sensitive and tense situation. While the number of qualified experts on a mission team must be limited and the Guidelines and Procedures specify that qualified experts should also have interview skills, interviewing in such an environment requires specific skills and training.

During the exercise, the team conducted interviews with potential witnesses, potential victims, and representatives of national and international organisations. The way in which these interviews were conducted varied greatly. The exercise showed the importance of interviewers being aware of and observing the necessary formalities, being able to adopt an empathetic interview style, being prepared to follow a culture- and gender-sensitive approach and react to culture- and gender-related situations, and being flexible enough to deviate from prepared questionnaires where appropriate, especially when there may be additional leads gained from the interview. Having different kinds of expertise available on the interview team may hence benefit the output of interviews. Alternative hypotheses and narratives should also be considered when preparing and conducting the interviews.

In general, the level of information gathered from some interviews seemed limited from the evaluators' perspective, though in some instances the interviews elicited crucial information that provided the mission team with additional leads (such as the dead rat). These observations underlined

the assessment that interviewing is a complex task and would be a crucial part of any real investigation mission.

Two approaches to strengthening the UNSGM with regard to interviewing could be considered that should not be viewed as mutually exclusive, but rather as complementary to each other. First, UN Member States should consider nominating individuals to the roster of qualified experts that have professional interviewing skills, including but not limited to police interrogators, epidemiologists, or social scientists. Second, more in-depth interview training should be provided to rostered experts to ensure that all team members have thorough interviewing skills. This could be particularly important in situations in which very few mission team members have access to interviewees and those same team members would have to carry out both sampling and interview procedures. Regardless of their specific expertise, mission team members should also consult the Guidelines and Procedures and other existing guidance available through UNODA. Just-in-time training could include recapitulating basic elements such as the necessary formalities (e.g. consent, confidentiality, identity of interviewee, technical equipment), personal safety including prevention of contamination, and creating a conducive atmosphere for the interview.

The need for a culturally and socially sensitive approach, which was also highlighted by the interviews in the exercise, underlines the need for sound interview training and skills, so that as many team members as possible can take on interviewing roles ad hoc, if need be. This also points to the need for gender balance as one of the criteria for team composition along with expertise and geographical distribution, among other elements.

Informed consent of the interviewees is crucial to the interview process and the investigation. Some UN consent forms might not be appropriate to all interview situations given their length and formal legal style. Simplified versions should be considered for interviews with persons that may be under intense pressure, ill, uncomfortable in the interview situation, or unable to comprehend formal legal terminology and concepts. Consent forms should be available in the language(s) of the host country and/or interviewees. Interpreters should be available for interviews and should be briefed about the specifics of interviews carried out in an investigation context.

Based on experiences from UNSGM mission training as well as from other pertinent contexts, model questionnaires could be developed that could be tailored to the various categories of interviewees. These could serve as blueprints that could then be adapted to the specific mission context, as appropriate, which could expedite the preparation process. Questionnaires and interviews should be designed in a way that leaves room for unexpected information and for alternative scenarios that could be checked through the interview or be developed based on new information gained.

5.6. Safety and Security

The security of the investigation team in a UNSGM mission is generally an obligation of the host country (section C.1, paragraph 44 and section D.2, paragraph 90 (b)). However, the “Secretary-General should convene expert(s) to assess the health, safety, and security risks that the team could reasonably anticipate” (Appendix A). UN DSS will therefore likely be involved in assessing and mitigating security concerns of the team and a representative of UN DSS might be present within the investigation team.

The exercise did not have role-players representing the host country’s security team, but they were nevertheless considered to be present. This exercise artificiality complicated the evaluation team’s ability to assess the mission team’s awareness of security concerns. Furthermore, in a real-life scenario,

a UN representative and a host country representative would receive the mission team and facilitate the border crossing, but the constraints of the exercise did not allow for this. A fragile or even volatile safety and security situation is not easily portrayed in an exercise setting in a safe environment with many observers present; consequently, the behaviour of the mission team members during the exercise might not necessarily reflect their behaviour in a real scenario. Nevertheless, some lessons can be drawn from the observations.

Safety and security result from attention to many details, and the neglect of small details can easily jeopardize the whole mission. The evaluation team observed that the mission team followed many safety measures (biosafety, not leaving hotel premises, no walks alone, daily radio check, etc.), and assessed that overall the team performed well. The evaluation team also acknowledged that the artificialities of the exercise had a negative effect on the safety and security performance of the team. The exercise showed that safety and security issues, which can be crucial for the success of a mission, are relevant in various contexts. These include, among other things, awareness of and contact with liaison officers as well as of the team's rights and privileges as members of a UN mission, safety protocols for equipment and samples, internal communication and reporting procedures, biosafety measures and personal protection as well as individual resilience in tense situation. The latter can for example be enhanced through participation in HEAT basic or refresher courses.

The evaluators would like to highlight that these points could be addressed in further trainings and that exercise artificialities should not distract from the overall good performance of the team.

5.7. External Communication

The Guidelines and Procedures contain little information on how the mission team should conduct external communications, whether with UNODA, the host country, media, or others. With the exception of section F, which covers the final report, the guidelines provide few details on what types of communication the team should expect or how it should engage with stakeholders. Nevertheless, this engagement was an important element of the Capstone Exercise. The Guidelines and Procedures do note, in paragraph 95, that the team should meet with local authorities to receive information, review the work plan, etc., and that they should also meet with representatives of international organizations in-country.

Both types of meetings were part of the exercise. Given likely time constraints on a mission, it is important that team members use such meetings as efficiently as possible, both in terms of securing agreement from the host country on the mission plan as early as possible and exploiting interview opportunities with organisations present in-country. It was also evident that all team members need to be aware of and assert their UN privileges and immunities and that interpreters need to be available at all stages of a mission.

The team members were not distracted by the social media injects and were able to stay focused on the task at hand. Interaction with media was in general limited during the exercise. The evaluating team felt the press conference at the end of the mission was professionally handled. In a real mission, there would likely be more pressure from both social and traditional media.

There is value in exploring options for training sessions on:

- the range of external communication a mission team might encounter,
- when and how individual mission team members should engage with media, and

- how to practically and psychologically handle social media targeting the mission team or mission team individuals

6. Feedback by Exercise Participants

As part of the evaluation procedure, feedback on the experiences of the exercise participants was collected in an end-of-exercise discussion round and in the form of a survey. In light of their different professional backgrounds and previous UNSGM training experience, the participants provided a diverse feedback regarding their learnings, main challenges during the Capstone Exercise, and their recommendations for the development of future UNSGM training and capability building.

The post-exercise survey confirmed that simulation exercises are an important part of UNSGM training. The participants pointed to a number of learnings and benefits that they took away from the Capstone Exercise, including:

- Opportunity to meet and connect with other qualified experts;
- Experience of working as part of a UNSGM mission team;
- Receiving an overview of the roles needed for a mission including UN stakeholders and their involvement in a mission;
- Training for challenging situations, such as time pressure and the need to adapt;
- Experience the whole process of a possible UNSGM mission from beginning to end.

During the feedback round, the exercise participants reflected on the different phases of the exercise and pointed to some of the main challenges experienced by them, such as:

- The complexity of a UNSGM mission and the difficulty to test all aspects within one exercise;
- The diverse backgrounds of qualified experts with different levels of training, professional background, culture and language;
- Team building within the short available timeframe of the exercise;
- Dealing with restricted time that resulted in time pressure and limitations regarding e.g. the possibility to explore several hypotheses;
- Different existing protocols (e.g. for sampling);
- Lack of knowledge amongst the team regarding UN procedures and support during a mission;
- Planning for all eventualities and scenarios that could occur while in the host country;
- Dealing with equipment that the team was not familiar with;
- Exercise artificialities such as related to equipment, transport in country and working in a large team.

In addition, the participants discussed the potential for future UNSGM training and further necessary resources. Their recommendations resonate with many aspects that were also observed by the evaluators, including *inter alia* the following suggestions:

- Develop an equipment list for UNSGM missions and include a variety of equipment to be able to adapt adequately to different situations (e.g. regarding Personal Protective Equipment);
- Develop and provide more guiding documents for UNSGM procedures (e.g. for evidence collection);
- Develop collective forms for the mission team and the laboratories to facilitate the analysis of laboratory results;
- Improve the knowledge base amongst qualified experts regarding UN structures and the privileges of experts on mission;
- Promote the nomination of interview experts for the roster of qualified experts and offer more interview training;
- Provide security trainings such as HEAT or SSAFE for all UNSGM qualified experts;
- Extend the time for certain exercise activities for future exercises, e.g. mission preparation and report writing.

7. Conclusion by Evaluators

The Capstone Exercise proved to be extremely valuable in demonstrating that the UNSGM is functional and fully operational for "the timely and efficient investigation of reports of the possible use of…biological…weapons" (Guidelines and Procedures, title). In this sense, the evaluators are grateful to the organizers to have been involved in this timely undertaking involving a truly committed, highly engaged, and geographically broad group of qualified experts. The exercise was a perfect setting to train the many steps involved in a UNSGM mission and highlighted the importance of having this type of training. The proficiency of the qualified experts needs to be sustained through periodic training offered by Member States, including advanced training activities focused on specific aspects such as those identified during this Capstone Exercise, and through the development of further specific guidance documentation.

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CAPSTONE EXERCISE

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