



Federal Ministry
of Health

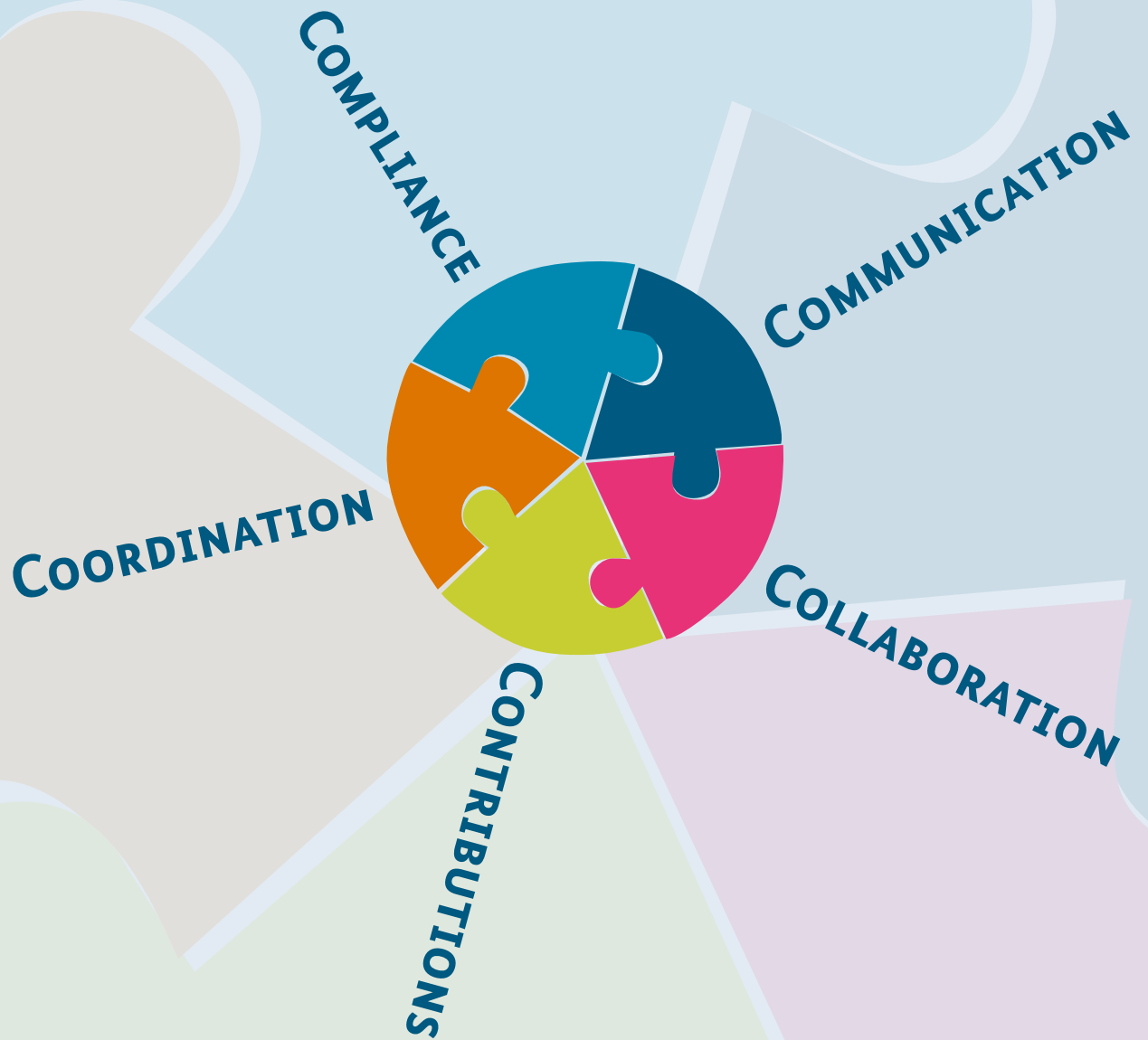


World Health
Organization

ROBERT KOCH INSTITUT



giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



The 5C Health Emergency Simulation Exercise Package

Manual

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Manual



Foreword

Dear readers,

Diseases do not respect borders and national interests – so vulnerability for one of us is vulnerability for us all. The wellbeing of all people – in industrialised, emerging and developing countries alike – depends on whether we manage to effectively address global health challenges.

The meeting of the G20 states under the German Presidency has laid down a milestone in strengthening global health. As the most populous and economic powerful countries in the world, the G20 have an obligation to support social and economic stability and the implementation of Agenda 2030. Under the motto ‘Together Today for a Healthy Tomorrow – Joint Commitment for Shaping Global Health’, my colleagues from the G20 countries and I met for the first time in Berlin on 19-20 May 2017 to discuss how we can join forces to improve global health.

To be better prepared for future health crises, the G20 Health Ministers, together with representatives from the World Health Organization (WHO) and the World Bank, took the opportunity to rehearse how to respond in the event of a transnational outbreak. The exercise revolved around five ‘C-topics’: communication, collaboration, contributions, coordination and compliance. Information flows and decision-making pathways were put to the test. How do we ensure that outbreaks of dangerous diseases are promptly reported by the countries concerned? How can we deliver a faster international response? What can the G20 do so that global health crises are quickly contained? And how can the World Health Organization be strengthened?

I was impressed by the vigour and honesty with which the G20 Health Ministers interacted. The simulation exercise very successfully brought to our attention the need to further improve global health crisis management and to invest in global preparedness so we are better equipped to face the next epidemic.

Just as every fire brigade holds regular drills to prepare for a fire, we need to rehearse regularly to prepare for health crises. I am sure that the ‘5C Health Emergency Simulation Exercise Package’ will help you to develop a constructive simulation exercise and facilitate its preparation.

A handwritten signature in black ink, appearing to read 'Hermann Gröhe', written in a cursive style.

Hermann Gröhe
Federal Minister of Health

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Abbreviations

CFE	Contingency Fund for Emergencies
EIS	Event Information Site
EOC	Emergency Operating Centre
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GOARN	Global Outbreak Alert and Response Network
IASC	Inter-Agency Standing Committee
IHR (2005)	International Health Regulations (2005)
MARS	Mountain Associated Respiratory Syndrome
NFP	National Focal Point
NGO	Non-governmental Organization
OECD	Organisation für Economic Co-Operation and Development
PEF	Pandemic Emergency Financing Facility
PHEIC	Public Health Emergency of International Concern
R&D	Research & Development
RKI	Robert Koch Institute
TTX	Tabletop exercise
UN	United Nations
WB	World Bank
WHA	World Health Assembly
WHO	World Health Organization

Acknowledgements and development team

The content of this document and the simulation exercise was developed collaboratively by Germany's Federal Ministry of Health; Germany's agency for international cooperation, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH; Germany's national public health institute, the Robert Koch Institute (RKI); and the World Health Organization (WHO). We are grateful to the World Bank for the support and input it provided during the preparation of the exercise.

Our special thanks go to the moderators of the G20 Health Emergency Simulation Exercise, Prof. David Heymann and Prof. Ilona Kickbusch, whose knowledge and experience not only provided valuable viewpoints in the development phase but was also crucial for the successful engagement and guidance of the health ministers during the exercise sessions.

Finally, we would like to thank the participants of the preparatory meetings and dry runs for their insightful comments, which significantly helped improve the exercise from a technical and practical perspective.

1. Introduction

Health emergencies such as infectious disease epidemics pose a potentially serious threat to people anywhere in the world. As these kinds of emergencies are typically unpredictable and fast-paced, they can cause tremendous human suffering with far-reaching social and economic consequences. The 2014–15 West African Ebola crisis demonstrated in a particularly dramatic way how local health events can rapidly become a regional or possibly even global threat in our interconnected world. Health emergency preparedness at all levels, from community settings to the highest political circles, is an indispensable prerequisite for an effective response.

Health emergency simulation exercises provide an excellent opportunity not only to raise awareness and promote understanding of the key issues involved, but also to test and improve coordination mechanisms and crisis management structures (see Ref. 1). Exercises are instrumental in identifying gaps and consequently strengthening preparedness and response capacities at all levels (local, national, regional and global). The World Health Organization (WHO) has identified exercises as a central component in the validation of core capacities under the *International Health Regulations (2005) Monitoring and Evaluation framework* (see Ref. 1).

During Germany's G20 presidency in 2017, Germany decided to run a health emergency simulation exercise as part of the first ever meeting of the G20 Health Ministers. The exercise, which brought together a large circle of high-level political decision-makers, was unique within the G20 context and beyond, and prompted substantial interest in the exercise materials and thus the development of this Package.

The 5C Health Emergency Simulation Exercise is a tabletop exercise based on the simulation exercise run during the G20 Health Ministers' Meeting in Berlin in May 2017.

'A tabletop exercise (TTX) is an exercise that uses a progressive simulated scenario, together with series of scripted injects, to make participants consider the impact of a potential health emergency on existing plans, procedures and capacities. A TTX simulates an emergency situation in an informal, stress-free environment.'

WHO Exercise Manual, 2017 (see Ref. 2)

The name '5C Health Emergency Simulation Exercise' refers to the five C-topics around which the exercise revolves: communication, collaboration, contributions, coordination and compliance.

While most of the material used for the G20 Health Ministers' exercise remains unchanged, to make the material relevant for non-G20 participants all references to the G20 have been removed. It is therefore possible to tailor the resulting 5C Health Emergency Simulation Exercise, presented in this manual, to the specific needs and context of different target groups.

1.1 Development of the exercise

The exercise material that forms the basis of this manual was developed through a collaborative process led by Germany's Federal Ministry of Health, drawing on technical input from Germany's agency for international cooperation, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, and from Germany's national public health institute, the Robert Koch Institute (RKI). The development process was undertaken in close coordination with the World Health Organization (WHO) and supported by the World Bank.

The scope of the topics employed in the simulation exercise was determined based on an analysis of the Ebola lessons learned reports and on the recommendations of both the UN High-level Panel on the Global Response to Health Crises and the UN Global Health Crises Task Force. The refinement and eventual selection of the key topics addressed in the simulation exercise was facilitated by a series of preparatory events. Comments and suggestions made during these meetings were taken up in the development of the exercise.

- In October 2016 in Berlin, the Federal Chancellery held a high-level technical workshop for renowned international experts on 'Achievements and Next Steps: Pandemic Emergency Preparedness'.
- In December 2016 in Berlin, the G20 Expert Conference "Taking Action Against Health Threats – Is the World Better Prepared?" offered representatives from government, non-governmental organisations and the private sector an opportunity to discuss pressing issues in health emergency preparedness and response.
- In March 2017 in Berlin, representatives from the G20 countries' ministries of health and from international organisations (WHO, World Bank, Organization for Economic Co-operation and Development) convened for the meeting of the newly established G20 Health Working Group.

1.2 Purpose of this manual and package

The purpose of the package is to make the 5C Health Emergency Simulation Exercise available to those intending to run a similar simulation exercise to explore core issues in global health crisis management. Developing new simulation exercises is a resource-intensive activity. This manual is therefore intended to support this process by providing users with a full package of adaptable content. The manual does not, however, aim to replace any existing manuals, guidelines or tools for designing, implementing and evaluating simulation exercises. The 5C Package is available for download on the website of the German Federal Ministry of Health as well as on the attached USB card in the back of this booklet and comprises the following components:

- **Manual**
- **Films**
- **Supplementary artefacts (postcard, newspaper)**
- **Fact sheet**
- **Glossary**
- **Sample agenda for the exercise**

The selection of topics is neither exhaustive nor definitive and should be customised to meet the specific objectives of the exercise at hand, its target audience, and delivery time frame. Examples from the original G20 version of the exercise and lessons learnt from its implementation have been included to demonstrate ways of adapting the exercise material to meet specific needs. A range of simulation exercise manuals (the 'how to' guides) and supporting templates can be accessed online and consulted for further details (see Refs 2–6). The material provided in the *WHO Simulation Exercise Manual 2017* and the accompanying *WHO Exercise Package* is particularly comprehensive.

2. Structure of the 5C Health Emergency Simulation Exercise

The 5C Health Emergency Simulation Exercise is based on a progressing outbreak scenario and consists of different components – interactive sessions interspersed with injects such as short films, multiple choice voting questions, artefacts and discussion questions – centred around the five C's. Participants are guided through the programme by one or more moderators. The following chapter looks in more detail at these components, namely

- 2.1 The exercise scenario, an open-ended background story for the discussions;
- 2.2 The five C-topics, which offer an overall structure for the exercise;
- 2.3 The short films (injects) and artefacts (injects) that convey the unfolding scenario; and
- 2.4 The discussion questions (injects) for each topic, which lead into the interactive sessions.

2.1 Exercise scenario

The 5C Health Emergency Simulation Exercise is based on a fictitious scenario of an unfolding epidemic originating in 'Anycountry', an imaginary low-income country with a weak health system. The film material shown in the exercise is entirely fictitious. Identification with current or previous health events, pathogens, persons, places, buildings or other elements neither is intended nor should be inferred, and any similarities are coincidental.

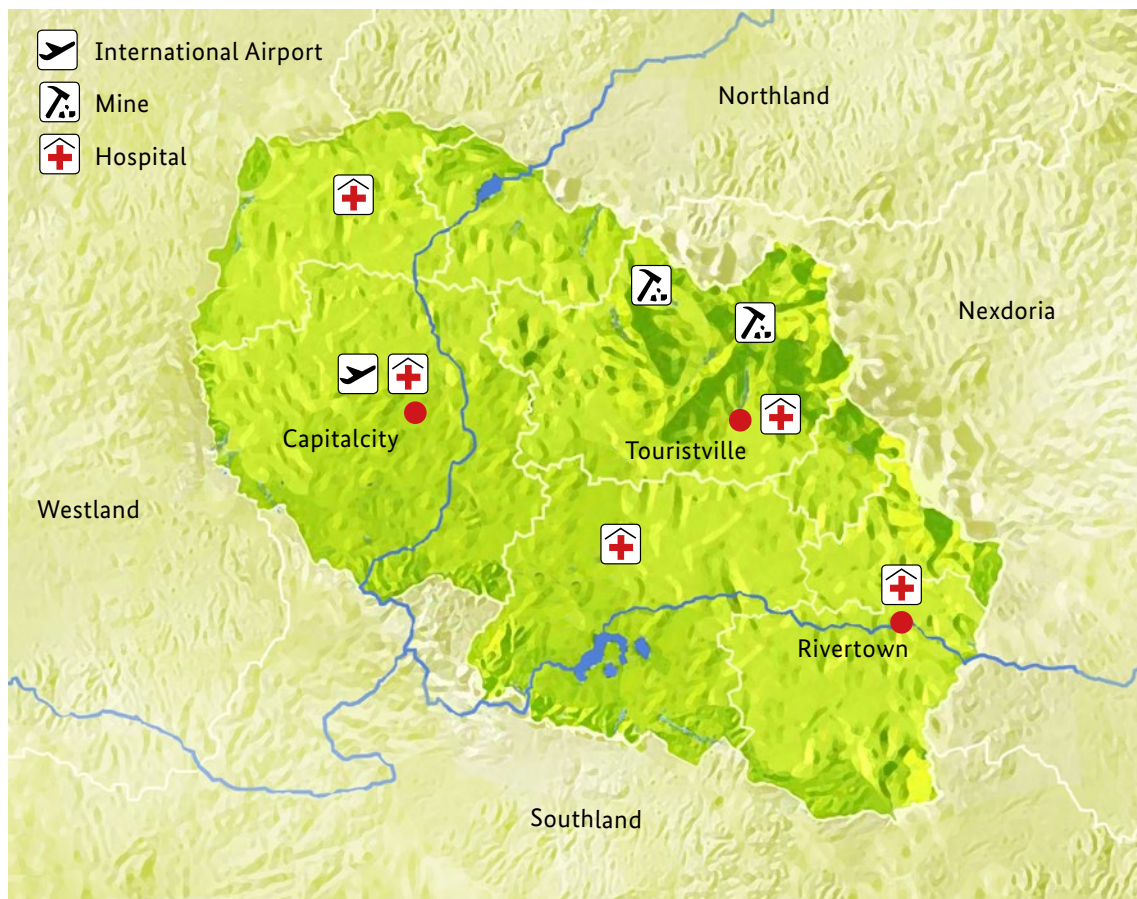


Figure 1. Map of Anycountry showing its main features, resources and boundaries

Topography

Anycountry is a small landlocked state surrounded by four neighbouring countries. It is a predominantly rural territory with three main cities: Capitalcity, Touristville and Rivertown. Anycountry's sole international airport is situated in Capitalcity and offers direct flight connections to multiple foreign countries. Touristville is located in a world-famous mountain range, which is the main attraction drawing international tourists to Anycountry and thus represents an important source of income (Figure 1).

Population

Anycountry has a population of eight million, 30% of whom are below 15 years of age. Its inhabitants have an average life expectancy of 60 years and the overall literacy rate is 76% (Table 1).

Economy

Agriculture and mining are Anycountry's strongest economic sectors and form the basis of most people's livelihoods. The average monthly net income is USD 98 (Table 1). Only 66% of the population has access to electricity and running water. Cross-border trade with neighbouring countries traditionally plays a major role in the economy, but many goods are exported globally. The most financially profitable export products are rare earth elements used for high-tech products and within industrial settings abroad.

Health system

Anycountry has 0.5 physicians per 1,000 people or approximately 4,000 physicians in total (Table 1), and it has five tertiary care hospitals (Figure 1). The overall number of hospital beds per 1,000 people is very low at 0.8. Private clinics play a major role in primary health care provision and fill the gaps left by a weak public health system. Health care is mainly financed through out-of-pocket payments. Total expenditure on health is USD 45 per capita – one of the lowest levels in the world. The infectious disease surveillance system is based on public health care facilities. The private sector is not yet integrated into this system.

Key Indicators	Anycountry	G20 countries		
		Minimum	Maximum	Median
General indicators				
Population in millions (total)	8	23	1,400	79
Population ages 0–14 (% of total)	30	13	30	19
Population ages 15–64 (% of total)	65	62	74	66
Population ages 65 and above (% of total)	5	3	25	13
Life expectancy (years)	60	57	83	78
Rural population (% of total)	70	8	68	21
Average monthly income (current USD)	98	104	4,400	1,600
Literacy rate of population aged 15 and above (% of total)	76	71	99	99
Agriculture, value added (% of GDP)	26	0.7	18	2
Employment in agriculture (% of total employment)	57	0.6	50	4
Selected health indicators				
Total health expenditure (% of GDP)	3.2	2.8	17.1	8.5
Annual health expenditure per capita (current USD)	45	69	9,000	1,500
Physicians (per 1,000 people)	0.5	0.2	4	2
Hospital beds (per 1,000 people)	0.8	0.7	8	3

Table 1. Comparison of key indicators of Anycountry and the G20 (see Ref. 7)

Timeline of the unfolding epidemic

February

Local news reports claim that a severe respiratory disease has led in rapid succession to 10 casualties, some of whom are health care personnel, at a tertiary care hospital in Touristville in Anycountry's mountain region. Local public health officials are reluctant to publicise the incident, and WHO comes to learn about the unfolding situation through press screenings. WHO therefore requests Anycountry to verify the reports. Anycountry lacks the epidemiological and diagnostic capacity to adequately investigate the event. Its public surveillance system fails to register cases because many patients do not have access to health care and private clinics are not integrated into the surveillance system. However, Anycountry's government declines offers of external support and opposes the publication of information.

March

The neighbouring country of Nexdoria recognises a cluster of similar cases along its border with Anycountry and notifies WHO accordingly. Despite Anycountry's objections, yet in full compliance with the International Health Regulations (IHR), WHO proceeds with publishing the event on the IHR Event Information Site (EIS) system. With the epidemic continuing to spread, Anycountry eventually agrees to accept help from a WHO-supported international assessment team, which is tasked with investigating the events. The hypothesis evolves that the infection is possibly being transmitted at busy market sites in the mountainous border region shared by Anycountry and Nexdoria. However, the exact origin of the outbreak remains unclear. In parallel, WHO is closely monitoring the situation, deploying an emergency manager to support the WHO Country Office and coordinate operational support to the government. Samples from infected patients are shipped to an accredited foreign WHO reference laboratory.

April

The laboratory succeeds in identifying the pathogen as a novel respiratory virus, provisionally named Mountain Associated Respiratory Syndrome (MARS) virus. Based on clinical observations, it is characterized by medium to high pathogenicity and person-to-person transmissibility (see brief fact sheet below). WHO convenes an Emergency Committee, which issues recommendations on control measures such as the implementation of strict hygiene practices, effective triage, isolation of infectious cases, contact tracing and public awareness campaigns, among other measures. However, Anycountry's health system proves incapable of controlling the epidemic. Rising case numbers increase both international media interest and political pressure to take action.

Brief fact sheet on the Mountain Associated Respiratory Syndrome (MARS) virus

- **Transmission:** The virus is transmitted person-to-person via droplets or contaminated surfaces. Those infected develop symptoms approximately four days (with a range of two to ten days) after initial exposure.
- **Clinical course:** Symptoms include shortness of breath, fever and a dry cough. Approximately 20% to 30% of patients require intensive care and 14% depend on mechanical ventilation. The case fatality rate is around 10%.
- **Control measures:** No specific therapy or vaccine is available; management relies on symptomatic support. Outbreaks are mitigated by effective case detection, the implementation of strict hygiene practices including patient isolation, and contact tracing.

May

The first imported cases are confirmed in other parts of the world and a public debate ensues on the necessity of, among other restrictions, suspending flight connections with the affected region. Based on the Emergency Committee's recommendations, the WHO Director-General declares a Public Health Emergency of International Concern (PHEIC), reinforces the urgency of implementing its recommended control measures and objects to any unjustified travel and trade restrictions. Despite this, many airlines suspend their flight connections, which impedes international support efforts in the affected region. Nexdoria threatens to close its border with Anycountry. The epidemic's impact on Anycountry's economy is increasingly severe. Four months into the epidemic, the situation in the affected region is putting national, regional and global response mechanisms to the test.

2.2 The five C-topics

The 5C Health Emergency Simulation Exercise is so named because it is structured around five 'C' topics – **communication, collaboration, contributions, coordination and compliance**. These reflect some of the core issues identified in the insightful lessons-learned reports on the response to the West African Ebola crisis, which have formed the basis for numerous subsequent reform efforts. Each of the five C's leads into a wider range of factors and issues.

Due to their overlapping and loosely defined nature, the five C's provide a structure for the exercise without constraining its content. It is therefore possible to engage with the subject matter from many different perspectives, widen the scope of the topics addressed or focus on specific target groups. Chapter 3 provides suggestions on how to adapt the content.

The original G20 Health Emergency Simulation Exercise was focused on a limited set of key issues which were especially relevant to the discussions within the G20. It was therefore necessary to restrict the scope of the five C's to selected aspects. For example, the topic on communication had a strong focus on early reporting in accordance with the IHR and did not cover other issues which might be expected under that same heading, i.e. risk communication. The subsequent explanations of the five C's therefore reflect their interpretation within the G20 context only.

COMMUNICATION

Informing early about events of potential international relevance



Given the global interconnectedness of international travel and trade, health events arising anywhere on the planet can rapidly turn into health threats everywhere in a matter of hours or days. To enable a timely and adequate response, the global community relies on each country reporting early on local health events of potential international relevance. Article 6 of the IHR requires that affected countries notify WHO of such events, and Article 8 recommends that affected countries consult with WHO when in doubt on the issue of notification.

According to the IHR (see Ref. 8), countries are required to report public health events of potential international relevance to WHO. As presented in the exercise scenario, this may not always be the case. Early reporting enables WHO to assess the event and the need for timely information-sharing and response.

One approach to improve the early reporting of relevant health events to WHO might be the international community's commitment to provide support on outbreak investigation and response operations to countries in need. The underlying principle is that, in exchange for their transparency in reporting relevant health events, countries benefit from the solidarity of the international community, which steps in to provide assistance before domestic capacities become overwhelmed.

In addition, certainty with regard to the availability of emergency funding for response efforts to help control epidemics may encourage countries to report health events in a timely fashion. Transparency and compliance not only have the potential to build trust and appreciation among the wider peer group, but also provide countries and WHO with the opportunity to engage in a constructive dialogue on IHR application and share the lessons learned in different countries. Another benefit may be WHO's support on avoiding unnecessary travel and trade restrictions.

Notifications and other types of reporting to WHO initiate a dialogue between the affected country and WHO concerning the event in question. This does not necessarily mean that WHO will take the lead in a response or that the notified event will go on to be determined a Public Health Emergency of International Concern (PHEIC), because, in practice, this is quite rare.

To encourage countries to communicate events to WHO, the IHR stipulate that information will not be made generally available to other countries unless circumstances arise that justify dissemination to address the risk of international spread. Information that other countries need to protect their populations is shared internationally through WHO's web-based Event Information Site (EIS) platform. Each countries' IHR National Focal Points (NFP) have password protected access to the EIS.

WHO manages the information provided by an affected country in a way that seeks to protect that country from any unjustified over-reaction by other countries, while at the same time ensuring that other countries are provided with the information they need to protect their populations – including citizens who travel to the affected country.

However, “WHO Secretariat's authority to distribute information received from States to other States Parties has so far been mostly conditioned by the consent of the State Party providing the information. The Secretariat can, under limited circumstances, make information received from States Parties and 'other reports' available to other countries and even to the public without the consent of the concerned State Party (Articles 10 [4] and 11 of the IHR)” (see Ref. 8).

The circumstances that justify the communication of such information to other countries are clearly specified in the IHR and include situations where the Director-General of WHO has determined that a PHEIC is occurring, where international spread has been confirmed, where control measures are not likely to succeed, or where implementation of international control measures is required immediately. WHO may also make information available to the public if other information about the event is already in the public domain and if a need exists for public information from an authoritative body.



COLLABORATION

Working together internationally for timely assessment

Despite ongoing efforts, many countries have not yet been able to establish and maintain the IHR core capacities required for the surveillance, risk assessment and reporting of and the response to public health risks and emergencies. While the responsibility for implementing the core capacities falls primarily to its Member States, WHO does play a coordinating role by convening technical expertise and providing countries with support. In countries where technical expertise is less readily available, it is essential for international expert teams to provide support on the initial assessment of an outbreak, as this will ensure a timely response.

Early acquisition of information is the basis for timely and effective interventions, which, in turn, save lives and resources. In countries (like Anycountry) that have yet to acquire the expertise and build the capacities needed to rapidly deal with acute public health events, international collaboration offers the opportunity to provide short-term assistance when acute events arise. Support from an international team of experts – e.g. through the Global Outbreak Alert and Response Network (GOARN) – can ensure the timely assessment of and joint response to an outbreak. Article 10 of the IHR sets out the relevant procedures for verifying an event and the support WHO can provide to countries undertaking such verifications.

Possible options for conditions that may make countries more willing to accept the offer of support in assessing an outbreak include the involvement of their own experts, the guaranteed participation of their national governments in any decision-making process, and the provision of external (financial) support.

Aside from providing rapid support during acute events, international collaboration simultaneously aims to deliver longer-term assistance that builds and strengthens the IHR core capacities required to detect and assess, notify as well as report on, and respond to public health risks in a more self-reliant way.

In 2008 the World Health Assembly (WHA) adopted a resolution in accordance with Article 54 of the IHR that requires countries and WHO to report to WHA on progress made in implementing the IHR core capacities (see Ref. 9). However, the reporting is based on self-assessment, and the evidence-based mechanisms required to assess and test the functionality of these core capacities are lacking. To address the fact that IHR implementation at the country level relies on a self-assessment process with inherent transparency and accountability issues, WHO has launched the IHR Monitoring and Evaluation Framework, which promotes external evaluations alongside other tools (see Ref. 1). This evaluation, which countries can volunteer to undertake, aims to help countries identify and prioritise gaps in their health systems and address them accordingly.



Chancellor Angela Merkel opening the G20 Health Ministers' Meeting in May 2017



CONTRIBUTIONS

Adequately funding preparedness and response

Adequate financial resources are the basis for timely and effective public health emergency preparedness and response. This includes mechanisms that enable the short-term provision of emergency funds for rapid deployment in the case of a public health emergency (i.e. the Contingency Fund for Emergencies and the Pandemic Emergency Financing Facility), as well as longer-term investments in IHR core capacities and health systems strengthening.

Following the Ebola crisis, WHO, as the UN's specialised agency for health, was reaffirmed in its leadership role in health emergency preparedness and response. There is broad agreement that WHO needs to develop and expand its operational and other capacities so that it can deliver on this leadership role, particularly after a period of budget constraints. The new WHO Health Emergencies Programme enables WHO to provide better support to countries by building their capacity for health emergency risk management in response to all hazards (including natural disasters, disease outbreaks and conflicts), and to do this by working in close collaboration with countries, the UN and other partners.

Meanwhile, WHO's Contingency Fund for Emergencies (CFE), which is WHO's only source of immediate funding for launching disease outbreak investigations or mounting initial disease outbreak responses, has raised only 33% of its USD 100 million target capitalisation as of March 2017. At this same point in time, two thirds of the funds raised had already been disbursed to successfully address eight outbreaks occurring over the previous 12 months. While this serves to highlight the need for the fund, it has also left the CFE worryingly depleted. Furthermore, as of March 2017, the new WHO Health Emergency Programme is facing a severe funding gap of 41% (see Ref. 10).

As the CFE primarily finances WHO emergency operations for up to three months, remaining gaps in funding longer-term operations and in supporting affected countries' domestic responses also need to be addressed. Suitable instruments for this include innovative insurance-based mechanisms such as the World Bank's Pandemic Emergency Financing Facility (PEF). The PEF mobilises and leverages resources from the private sector (reinsurance and capital markets) and public sector, and then quickly disburses them to governments, multilateral agencies, non-governmental organisations (NGOs) and other agencies, which then use the resources to finance their efforts to keep localised outbreaks from turning into large-scale epidemics. Technically, the PEF is financed through two windows: insurance and cash. To complement the insurance window, a cash window will provide more flexible funding to address a larger set of emerging pathogens that may not meet the activation criteria for the insurance window. In contrast to the CFE, which exclusively funds WHO response operations, a broad range of actors can be provided with PEF funding.

Regarding longer-term investments at the country level, bilateral/multilateral support is required for sustainable development projects aimed at the implementation of IHR core capacities and health systems strengthening. A similarly important issue is the adequate allocation of domestic funds for preparedness and response.



COORDINATION

Improving public health emergency response

Previous public health emergencies have revealed room for improvement in the coordination of response efforts, in particular with regard to health personnel, medical supplies and equipment, training capacity, and emergency funding. To ensure effectiveness and timeliness and to avoid gaps and duplications in the response, global coordinating mechanisms need to be strengthened. This includes affirming WHO's role as the technical lead agency in public health emergencies, while appreciating the necessity of close linkages to international organisations, academia and the private sector.

WHO's role as global coordinator in public health emergencies is internationally endorsed by its Member States. Furthermore, WHO is integrated in the existing humanitarian framework as a member of the Inter-Agency Standing Committee (IASC – the leading humanitarian coordinating body for the UN, the Red Cross Movement and NGOs) and it leads the Global Health Cluster in the context of major humanitarian crises. During the West African Ebola crisis, it was not clear at what point public health emergencies become humanitarian emergencies that trigger a system-wide response. Also, the key interventions required to end this specific outbreak were not aligned with the humanitarian clusters, making coordination challenging. Therefore, in December 2016 the IASC Principals endorsed a new IASC response protocol that addresses the issues relating to the coordination of the international humanitarian community (see Ref. 11).

In the wake of the West African Ebola crisis, WHO responded to the general criticism of its role by initiating a reform process that included establishing the new WHO Health Emergencies Programme. This marked a major departure from WHO's long-established modus operandi, as it supplemented the Organization's traditional technical and normative roles with stronger operational capacities. The WHO Health Emergencies Programme aims to address the full risk-management cycle – from prevention and preparedness to response, relief and recovery. Central to this reform is a unified set of procedures adopted across all levels of the organisation for performing risk assessments, grading emergencies, and communicating the results internally and externally to the UN Secretary General, IHR National Focal Points, the IASC and the public. Further aspects of the reform process include the creation of a rapidly deployable Global Health Emergency Workforce (involving the closer coordination of the Global Health Cluster, Emergency Medical Teams and GOARN). Together these initiatives enable access to experienced humanitarian and outbreak response workers via a multidisciplinary network of technical and operational resources. However, the availability of sufficient readily-deployable and trained staff remains a key challenge.

The successful improvement of WHO's emergency response capacity relies on the support and efforts of its individual Member States. Each country has individual strengths and areas of expertise or resources to offer, including health personnel, laboratory capacity, medical supplies and equipment, training capacity, emergency funding and other forms of assistance. To avoid gaps and duplications in the response, WHO must coordinate these efforts while remaining embedded in and optimally linked to the wider UN system and its partners. At the national level, effective coordination requires multi-sectoral/multidisciplinary approaches based on national partnerships for effective alert and response systems. It also requires the coordination of nationwide resources, including the sustainable functioning of an IHR National Focal Point – a prerequisite for IHR (2005) implementation (see Ref. 1). The need for the rapid activation of research and development (R&D) activities during epidemics prompted the development of the R&D Blueprint, a global strategy and preparedness plan that aims to fast-track the availability of effective tests, vaccines and medicines and thus to save lives and avert a large-scale crisis. With WHO as convener, a broad global coalition of experts from a range of medical, scientific and regulatory backgrounds contributed to the R&D Blueprint. At the World Health Assembly, held in May 2016, WHO Member States also welcomed the development of the R&D Blueprint.

COMPLIANCE

Adhering to the IHR and temporary recommendations issued under the IHR



The IHR constitute a legally binding international framework for preventing, protecting against, controlling and providing a public health response to the cross-border spread of disease while avoiding unnecessary interference with international travel and trade. However, countries' compliance with the IHR and with temporary recommendations issued under the IHR needs to be enhanced.

Put into effect in 2007, the IHR (2005) constitute an international legal instrument that is binding on all WHO Member States and aims to reduce the international spread of disease and minimise disruption to international travel and trade.

Temporary recommendations are non-binding advice issued by WHO pursuant to Article 15 of the IHR that are to be applied on a time-limited, risk-specific basis in response to a public health event. Article 43 of the IHR does not preclude countries from implementing additional measures that exceed the temporary recommendations, provided they are 'not more restrictive of international traffic and trade and are not more intrusive to persons than reasonably available alternatives'. They should also be based on scientific principles, evidence or advice from WHO.

If a country implements additional measures that 'significantly interfere with international traffic' (i.e. cause delays of more than 24 hours), it should inform WHO within 48 hours and present the public health rationale justifying these measures. If the rationale is considered insufficient, WHO may ask the country to review its measures within three months to mitigate their social and economic impact and ensure a continuous flow of support to the affected region. In practice, very few countries inform WHO about the implementation of additional measures and few justify or reconsider enacted measures, even when asked to do so.

The IHR and WHO respect national sovereignties and encourage countries to lead by example and act collectively for public health security, counting on peer pressure to promote compliance with the internationally agreed legal framework of the IHR. This peer pressure might be increased by officially publishing information on countries' compliance with the IHR. Countries not fulfilling their obligations might be perceived by the international community to be violating international law and thus risk reputational damage.

Affected countries are frequently confronted by travel and trade restrictions that lie outside their government's direct influence and result from decisions made by non-state actors, such as the private sector. Some of these detrimental decisions might be mitigated or avoided by WHO and countries having in place a transparent, proactive and evidence-based risk communication strategy for health events that targets all actors and their individual constraints. Seeking partnerships with the private sector may have an additional beneficial impact at all stages of an outbreak – from preparedness to response and recovery.

2.3 Injects – films and artefacts

Films

To introduce the participants to the fictitious scenario unfolding in Anycountry, a series of nine short films were produced. A brief summary of each film can be found in Table 2. The films are available for download as part of the package.

Minor adaptations have been made to the original G20 films to make them suitable for other target groups. Most of the films use a TV news format to convey the progression of the fictitious epidemic and, building on each other, highlight the key challenges encountered during each phase of the outbreak.

Film 1 serves as an attention-grabbing introduction to the exercise, recounting the human and economic impact of previous epidemics. Films 2 to 5 go on to describe the unfolding scenario, which then escalates in films 7 and 8. Film 6 illustrates the threat posed by the virus and can be used to conclude the first part of the exercise and allow for a break. Film 9 provides a summary of the epidemic and leads into an open ending, suggesting that the outcome depends on the efforts of all involved. Films 1 and 6 are optional and can be removed or shown independently. The other films rely on a logical sequence as shown in Table 2 on the next page.



Examples of films shown at the G20 Health Emergency Simulation Exercise

Key functions and content of films

Film 1: Optional 'dramatic opening' (01:00 min)	<p>Attention-grabbing overview of previous epidemics</p> <p>This opening film highlights historic epidemics and how they affected mankind. The main message is that we do not know when or where – but the next epidemic will come!</p>
Film 2: TV news, 25 February (01:36 min)	<p>Introduction to the scenario</p> <p>The newsreader informs viewers that smaller infectious disease outbreaks are frequently occurring. Most are being quickly contained but, despite modern medicine, the epidemics continue to pose a challenge. A correspondent briefly presents some background on Anycountry and reports news of a mysterious cluster of patients with a severe respiratory disease and 10 casualties in Touristville Hospital.</p>
Film 3: Continuation of TV news, 25 February (02:26 min)	<p>Introduction to the topic of communication</p> <p>A live report from Touristville Hospital provides more details on the ongoing and unusual outbreak and on the Government of Anycountry's lack of communication on the matter. Two experts (trade and legal) explain Anycountry's apparent reluctance to communicate, its obligation to report early and the potential consequences of not doing so.</p>
Film 4: TV news one month later, 20 March (01:43 min)	<p>Introduction to the topic of collaboration</p> <p>The disease spreads to the neighbouring country of Nexdoria. After initial reluctance, Anycountry accepts support from a WHO-led international assessment team. A member explains the team's role.</p>
Film 5: TV news three weeks later, 11 April (01:50 min)	<p>Introduction to the topic of contributions</p> <p>The causative pathogen has been identified and a short characterisation is given. A virologist explains the necessity of sample and data sharing for R&D efforts. A public health expert elaborates on why the events are worrisome due to Anycountry's lack of response capacity, making the further spread of the disease seem inevitable.</p>
Film 6: Optional 'cliffhanger' (00:41 min)	<p>Dramatic summary (cliffhanger)</p> <p>This film sequence briefly summarises key facts about the outbreak in a dramatic way.</p>
Film 7: Breaking news TV show, 20 May (02:15 min)	<p>Introduction to the topic of coordination</p> <p>The virus has now begun to spread globally, with cases being reported in other parts of the world. The WHO's Director-General is prompted to declare a Public Health Emergency of International Concern (PHEIC).</p>
Film 8: Continuation of TV show, 20 May (02:18 min)	<p>Introduction to the topic of compliance</p> <p>The newsreader discusses a number of public reactions expressed on Twitter. In a 'live' broadcast from an airport, a reporter interviews travellers returning from Anycountry. People are also questioned in the street about how they perceive their government's reaction.</p>
Film 9: TV news several weeks later, 13 June (01:18 min)	<p>Summary of the epidemic and open ending</p> <p>A chronology of the outbreak is presented. An NGO representative expresses his concerns as initial interest and funding are depleting. It remains unclear where the crisis is headed.</p>

Table 2. Overview of the films, their key functions and content

Artefacts

To support the film content, supplementary artefacts can be introduced as more tangible elements to enhance the participant’s experience and interaction with the scenario. The selection of supplementary artefacts depends on the exercise’s aim and objectives and the specific target group.

If suitable, further artefacts (injects) can be developed to suit the exercise, they can be used to add to a sense of realism to the exercise environment or convey additional information needed during the exercise. Please note that any injects (films or artefacts) used during the exercise should be clearly marked as being ‘for simulation purposes only’.

What approach was taken for the G20 Health Emergency Simulation Exercise?

At the beginning of the exercise, the participants of the G20 Health Emergency Simulation Exercise received a printed and stamped postcard from Anycountry, which could be sent from the G20 Health Ministers’ Meeting to anywhere in the world. The aim was to provide the participants with a reference map and to remind them of the fact that Anycountry is a popular tourist destination (see Figure 2). Prior to the escalation phase of the scenario depicted in film 7, the participants were handed the front page of a fictitious newspaper with headlines conveying the breaking news in the film. Please see the sample newspaper front page in Figure 3, which can be adapted to the required context.

Figure 2. Postcard from Anycountry providing a reference map (available for download in the package)



Figure 3. Front-page news headlines breaking news during the G20 Health Emergency Simulation Exercise (available for download in the package)

2.4 Discussion questions

Following each film viewing, the moderators should help the participants to engage with the topics presented to them. They can do this by asking the participants to imagine themselves in Anycountry's position and discuss how they would respond to the evolving situation. Note that participants can either contribute from the perspective of their actual role or can adopt fictitious roles for the exercise. Another option is to discuss how they would respond if Anycountry were a neighbouring country.

Depending on the specific target group and their interest, desired objectives and available time frame, different formats can be employed such as group discussions, working group sessions or other forms of interaction. Chapter 3 provides guidance on how to design both the format and content of the interactive sessions.

What approach was taken for the G20 Health Emergency Simulation Exercise?

First, a survey session was held in which the 28 participants individually and anonymously answered multiple-choice questions using a hand-held electronic voting device. The survey results, which were immediately displayed on screen, were then summarised by the moderators and used as the lead-in to the main facilitated group discussion.



G20 Health Ministers using hand-held electronic voting device to answer questions anonymously



Two experienced moderators guiding the G20 Health Ministers through the G20 Health Emergency Simulation Exercise

3. Practical steps for implementing the exercise

This chapter summarises the main steps and lessons learned from the G20 Health Emergency Simulation Exercise. For general guidance on developing and implementing simulation exercises including templates, please refer to the WHO Simulation Exercise Manual (2017 – see Ref. 2).

- Step 1: Formulate the overall exercise aim and specific objectives**
- Step 2: Select the appropriate target audience to meet the objectives**
- Step 3: Adapt the format to the specific target audience and objectives**
- Step 4: Adapt the content to the specific target audience and objectives**
- Step 5: Develop optional briefing material**
- Step 6: Select and brief the moderator(s)**
- Step 7: Conduct the exercise**
- Step 8: Evaluate the exercise**

Step 1: Formulate the overall exercise aim and specific objectives

The starting point when preparing the exercise is to clearly define its overarching aim (what should be achieved) and then to break this down into smaller-scale objectives (how should the aim be achieved). The aim and objectives define the reasons why the exercise is being conducted and the specific outcomes desired.

What approach was taken for the G20 Health Emergency Simulation Exercise?

The overall aim of the original G20 Health Emergency Exercise was to promote awareness of the key issues surrounding global health crisis management and to generate sustainable support among the G20 for the continuous improvement of epidemic preparedness and response capacities at the national and international level. The key objectives were to:

- Advance the discussion on global health emergency preparedness among the G20
- Familiarise participants with global mechanisms for coordination and response
- Underline the WHO's leadership and coordination role in health emergencies
- Stress the utmost importance of compliance with the IHR (2005)
- Discuss the operability of reformed structures within the WHO, UN and World Bank
- Demonstrate that investment in preparedness pays off
- Create an opportunity for the G20 to lead by example

Step 2: Select the appropriate target audience to meet the objectives

To contain a public health emergency all relevant stakeholder groups – from the community level to high-level decision-makers – must be prepared and must react efficiently to minimise negative consequences. Therefore, stakeholders from a diverse range of backgrounds and sectors can be a suitable target group for simulation exercises.

Participants should be selected based on how well they match the objectives and how likely they are to advance them in the future. Their backgrounds, perspectives and knowledge of the subject matter will be considered in the design the exercise (see Ref. 2).

Possible target groups might include representatives from

- Regional or international organisations involved in preparedness or emergency response;
- National public health institutions or emergency response structures, including government institutions;
- Non-governmental organisations such as civil society actors or groups;
- Academic or training institutions; and/or
- Private companies such as contributors to the supply chain, etc.

What approach was taken for the G20 Health Emergency Simulation Exercise?

The 28 exercise participants were the health ministers of the G20 and guest countries, and representatives of international organisations. In line with the event's '1+1 format', each participant was entitled to bring along one additional staff member to the simulation room in case they needed technical assistance. A video stream was provided for other delegation members and the interpreters. No members of the media or any other non-G20 participants were permitted to follow the exercise.



Other delegation members watching the simulation exercise via a video stream in a separate room

Step 3: Adapt the format to the specific target audience and objectives

The chosen format and structure needs to reflect the time available and the objectives of the exercise. To ensure participants buy into the scenario and engage in the facilitated discussions, the pace of the exercise, the moderators' style and the expected level of engagement must also be considered. The scheduling and duration of the films, presentations and discussion session must therefore be planned and adjusted to meet the audience's needs and expectations as well as the event's objectives.

It might be useful to incorporate one or more of the following options in the exercise, depending on the context involved:

- Brief presentations by relevant stakeholders to illustrate key challenges or share previous experiences.
- Open or multiple-choice questions to identify key issues and/or foster discussion between the participants.
- Group tasks to improve theoretical knowledge or to practice procedures.
- Working group sessions to develop new ideas or approaches.

All of these options can lead into discussions of the key issues identified.

What approach was taken for the G20 Health Emergency Simulation Exercise?

As an integral part of the G20 Health Ministers' Meeting, the G20 simulation exercise took place in two parts on both days of the conference. Part one set the scene for the developing epidemic, while part two addressed its escalation phase. Each part lasted approximately two hours and was held in a separate simulation room within the conference venue (see Table 3).

The exercise was conducted in the form of a tabletop exercise. Each of the five C's was broached in the exercise with a short introductory film outlining the progression of the fictitious epidemic and highlighting the key challenges encountered during each phase of the outbreak. Additionally, brief pre-prepared presentations were delivered to bring in real-world examples and experiences related to the topic under discussion. These injects created the background and the context for the discussion sessions and helped introduce additional current information into the discussions.

To initiate the discussion of each topic, participants were asked to answer a multiple-choice question using an electronic voting system that allows users to respond anonymously and provides an instant summary of the group's overall response. There were no correct or incorrect answers to the multiple-choice questions. Rather, the answer options reflected on or led into the discussion of current approaches to tackling bottlenecks occurring in each thematic area.

The subsequent facilitated discussions comprised voluntary oral contributions from the participants that were based on briefing material provided for each topic beforehand. To promote lively discussion and provide as many participants as possible with the time to express their views, these contributions were subject to a time limit of no more than two minutes. The moderators ensured that every participant had an equal opportunity to speak, and participants were successfully encouraged to refrain from reading prepared statements. Although the event was held in English, it was interpreted simultaneously into the six official languages of the United Nations.

G20 Health Emergency Simulation Exercise – Part 1	
1 min	Film 1: optional 'dramatic opening' film
10 min	Moderators: introduction to part 1 of the exercise
Topic: Communication – informing early about events of potential international relevance	
2 min	Film 2
10 min	Interactive session (voting questions, discussion, working groups, etc.)
3 min	Film 3
30 min	Interactive session (voting questions, discussion, working groups, etc.)
2 min	Moderators: summary and transition
Topic: Collaboration – working together internationally for timely assessment and intervention	
2 min	Film 4
25 min	Interactive session (voting questions, discussion, working groups, etc.)
2 min	Moderators: summary and transition
Topic: Contributions – adequately funding preparedness and response	
2 min	Film 5
30 min	Interactive session (voting questions, discussion, working groups, etc.)
3 min	Film 6: optional 'cliffhanger'
5 min	Moderators: summary and closure of part 1
G20 Health Emergency Simulation Exercise – Part 2	
2 min	Moderators: introduction to part 2 of the exercise
Topic: Coordination – improving public health emergency response	
3 min	Film 7
30 min	Interactive session (voting questions, discussion, working groups, etc.)
2 min	Moderators: summary and transition
Topic: Compliance – adhering to IHR and temporary recommendations	
3 min	Film 8
30 min	Interactive session (voting questions, discussion, working groups, etc.)
5 min	Film 9
2 min	Moderators: summary and transition to final discussion
Closure of the exercise	
30 min	Closing discussion based on a guiding question that is focused on the main desired outcome of the exercise
6 min	Moderators: summary of key messages and closing remarks
240 min (4h)	

Table 3. Agenda of the G20 Health Emergency Simulation Exercise

Step 4: Adapt the content to the specific target audience and objectives

Each of the five C's offers a wide range of different discussion points to be addressed by the stakeholders during each interactive discussion session. Table 4 lists sample discussion points and questions from the G20 context, which might be useful as a starting point in the process of adapting the content to the specific target group. The list of discussion points in Table 4 is not exhaustive and can be extended if needed.

As a general rule, ensure that all the exercise objectives are met by all elements of the planned sessions. When time is more limited, a good way to achieve the session's objectives and ensure better outcomes for participants is to focus on fewer topics but in more depth.

What approach was taken for the G20 Health Emergency Simulation Exercise?

In line with the high-level political setting and diverse backgrounds of the participants, the G20 simulation exercise did not involve functional testing of response capacities or technical knowledge. Instead, the simulation exercise provided a forum for the open exchange of ideas and perspectives and to raise awareness.

The choice of topics was based on an analysis of the Ebola lessons learned reports and on the recommendations of both the UN High-level Panel on the Global Response to Health Crises and the UN Global Health Crises Task Force.

Two aspects were repeatedly stressed during the design of the exercise as a way to stimulate participants' interest:

- Injects were designed to create linkages to the progressing scenario and to make the participants' experience of an urgent outbreak situation more engaging and realistic.
- The exercise was designed to be highly relevant to political decision-makers throughout. For example, topics included political pressure generated by public opinion and how this influences the early reporting process during outbreaks.



Lively interaction and open discussion between the G20 Health Ministers during the G20 Health Emergency Simulation Exercise

C topic	Sample discussion points
Communication Informing early about events of potential international relevance	<ol style="list-style-type: none">1. National surveillance systems2. International reporting mechanisms and obligations3. Barriers to and facilitating factors for early reporting4. Role of traditional and social media
Collaboration Working together internationally for timely assessment	<ol style="list-style-type: none">1. Multi-sectoral initial rapid assessment2. External assessment teams3. Sovereignty and national capacities versus international collaboration
Contributions Adequately funding preparedness and response	<ol style="list-style-type: none">1. National mechanisms for financing emergency preparedness and management2. Multilateral funding mechanisms (e.g. the World Bank's Pandemic Emergency Financing Facility, WHO's Contingency Fund for Emergencies)3. Private sector involvement

Selected Sample questions

Sample questions referring directly to the scenario

- If you were in a similar situation like Anycountry, how would you react?
- If you were a neighbouring country of Anycountry, would you want to know about this event?
- What challenges does Anycountry face with regard to early reporting?
- Which measures do you think would encourage Anycountry to report early?
- If you were the Minister of Health of Anycountry/a non-affected country, would you agree to WHO sharing information on this event with other countries at this point?

Sample questions for further discussion

- In your country, are multi-sectoral, multidisciplinary coordination and communication mechanisms updated and tested regularly?
- Does your surveillance system have standardised protocols defining roles, responsibilities and procedures related to the standardisation, collection, management, analysis and dissemination of data?
- Does your surveillance system provide for multi-sectoral data-sharing with agricultural, veterinary and environmental disease surveillance systems? Is early-warning capacity in place to enable the detection and reporting of any event of potential public health concern?
- According to the IHR, what are your country's and WHO's main obligations in the context of early reporting?
- Does your national information-management system facilitate reporting according to IHR and other mandatory reporting requirements?

Sample questions referring directly to the scenario

- Can you understand Anycountry's reluctance towards accepting an international expert team?
- How would you respond in the same situation of Anycountry?
- What are the main challenges in accepting WHO-supported international expert teams to assist with an ongoing outbreak investigation?
- What would your prerequisites be for allowing a WHO-supported international expert team to investigate an outbreak in your country and provide advice on actions to be taken?

Sample questions for further discussion

- Do mechanisms exist for carrying out rapid assessments in your country?
- Are the necessary resources and trained staff available in your country for carrying out rapid assessments?
- Do procedures exist for the communication of the assessment outcome to health personnel and responders in your country?
- Are procedures in place for integrating external assistance for rapid assessment in your country?
- Is there a system in place in your country for sending and receiving health personnel and/or medical counter-measures during a public health emergency?
- With regard to public health emergencies, do you have cross-border agreements, protocols or memoranda of understanding (MoUs) in place with neighbouring countries?

Sample questions referring directly to the scenario

- How can adequate funding for a response in Anycountry be ensured at the national and global level?

Sample questions for further discussion

- Does your country have a national public health emergency preparedness and response plan?
- Are national funds, including surge funding, available for the multi-sectoral preparedness and management of emergencies at the national and subnational levels?
- What international funding mechanisms are available to you and what are their individual (dis)advantages?
- Are procedures in place for the request, acceptance and utilisation of international financial assistance?

C topic	Sample discussion points
<p>Coordination Improving public health emergency response</p>	<ol style="list-style-type: none"> 1. National multi-sectoral emergency management 2. External health-related emergency assistance 3. Coordination and leadership role of WHO 4. Roles of the humanitarian and private sector 5. Community engagement 6. Coordination of research and development efforts
<p>Compliance Following the IHR and temporary recommendations issued under the IHR</p>	<ol style="list-style-type: none"> 1. Barriers to and facilitating factors for compliance with IHR and temporary recommendations 2. Risk communication with the public and media 3. Compliance and public pressure

Suggestions for general questions:

- What previous experience do you have with regard to [insert required aspect of the preparedness and response cycle]?
- Based on your experience, where do you see the greatest need when it comes to filling existing gaps in personnel/technical knowledge/financial resources/supplies and equipment/organisational procedures/etc.?
- What actor(s)/sector(s) should be more closely involved in standard procedures?
- Where do you see areas of conflict between (national and international) interests?

Table 4. Sample discussion points and questions for each of the five C's as used in the G20 context (see Ref. 12)

Selected Sample questions

Sample questions referring directly to the scenario

- What support does Anycountry need as part of a coordinated response?
- What role does WHO have in the coordination of the response in Anycountry?
- What might your country contribute to a coordinated international response in Anycountry?

Sample questions for further discussion

- In your country, is there coordination within relevant ministries on events that may constitute a public health event or risk of national or international concern?
- In your country, do you have a national emergency operations centre for health (EOC)?
- If so, how does your health EOC link into broader multi-sectoral emergency response management?
- In your country, have functional mechanisms for inter-sectoral collaborations that include animal and human health surveillance units and laboratories been established?
- In the case of an outbreak in your country, would a national committee for multi-sectoral emergency management be convened?
- If so, does the committee include high-level representatives of all relevant sectors?
- Are the responsibilities and authority of the committee members defined?
- Does the committee possess sufficient resources and support systems to enable it to fulfil its mandate?
- Do existing mechanisms of emergency coordination and partnership-building include agreements with entities in the public and private sector and civil society?
- Are there any regulations relating to the entry of foreign health workers to provide emergency relief services?
- Are there procedures to efficiently link national and external resources to create synergies?
- Are exit strategies in place to determine when external assistance is no longer required?

Sample questions referring directly to the scenario

- WHO has not recommended any travel and trade restrictions at this time. Do you agree?
- What measures could encourage Anycountry's neighbouring countries to comply with this?

Sample questions for further discussion

- From a national perspective, where do you see the main barriers to compliance with the IHR, including temporary recommendations issued under the IHR?
- Is information regarding ongoing activities systematically communicated to the public and the media in your context?
- Are there coordination mechanisms in place to involve stakeholders in the formulation of information for the public and the media and thus ensure consistency?
- Do procedures exist for the dissemination of information?
- Do the communication strategies also target minority and vulnerable populations and can they be adapted to different cultural backgrounds?

Step 5: Develop optional briefing material

Depending on the participants involved, it might be useful to share some briefing material in advance of the exercise. This can help to ensure that the participants feel comfortable coming into the exercise and are prepared to fully engage with the exercise topics and contribute to the desired outcomes. Briefings can be used to orientate the participants at the start of the scenario and give clarity on the set-up and roles during the exercise.

When briefing participants, the perceived benefit of sharing exercise information in advance needs to be weighed up against retaining the ability to reveal the unknown during the exercise. To enable spontaneous reactions and retain an element of surprise, it is often advisable to limit the briefing content.

The scenario employed in the 5C Health Emergency Simulation Exercise is presented in detail in the films, meaning additional briefing is not prerequisite to understanding the evolving emergency situation. If required, participants can consult the glossary of the technical terms and concepts used in the exercise, which is provided with the package. Where appropriate, a copy of the IHR (2005), which can be ordered from WHO, may be distributed as reference material.

What approach was taken for the G20 Health Emergency Simulation Exercise?

The G20 simulation exercise was a high-level political event and its participants had no prior experience of the format or setting. Therefore, a detailed briefing was necessary to ensure that all the parties involved were well informed about the process and topics and could fully engage with the subject matter. Three months prior to the exercise, the G20 Health Working Group was briefed on the exercise in a face-to-face meeting in Berlin, following which written background material was circulated.



Step 6: Select and brief the moderator(s)

The 5C Health Emergency Simulation Exercise requires one or more experienced moderators to guide the participants through the exercise, facilitate the discussion sessions, manage the time, summarise key points and help to ensure all participants are included and kept on topic.

The moderators must be familiar with the exercise's aim and objectives, the agenda, the participants' backgrounds, the content of the film material and potential backup plans. Most importantly, however, they must have a thorough understanding of the underlying issues to be discussed. It is therefore recommended to involve the moderators early on in the design process and to make use of their knowledge and experience.

To facilitate the complex task of moderating a simulation exercise, moderation cards can be helpful. These may include scenario key points, technical summaries, the discussion questions and backup questions, information for time management, and other key talking points and useful information that might be needed during the exercise.

Dry runs of the exercise are useful for rehearsing and refining both its content and time management. Having people role-play and observe the dry run can provide the development team with useful information in the form of 'fresh eyes' perceptions and different perspectives.

What approach was taken for the G20 Health Emergency Simulation Exercise?

For the G20 exercise two highly experienced and respected public health experts were approached to act as moderators and guide the participants throughout the event. These moderators were actively involved in the design and final adjustment of the exercise material and participated in two dry-run events in preparation for the G20 Health Ministers' exercise.



Germany's Health Minister Hermann Gröhe and chancellor Angela Merkel

Step 7: Conduct the exercise

The successful delivery of the exercise relies on the interaction between the prepared injects (films, artefacts and discussion questions), the moderators and the participants.

To make time management effective throughout the exercise, the moderators need to manage and adjust the sessions as needed to achieve the exercise objectives. To help focus the discussion and to enable contributions from as many participants as possible, a time limit can be enforced for each participant's contribution. Timekeeping can also be facilitated by placing a conspicuous timer in a location visible to all participants.

A time frame of (at least) four hours is recommended for the entire 5C Health Emergency Simulation Exercise, but this will need to be adjusted depending on the objectives, set-up, participants, topics chosen and level of detail. If the group of participants comprises more than 30, it is worth splitting the group into two or more smaller groups for the interactive sessions.

To ensure the continuation of the simulation exercise in the case of technical failure or other unforeseen events, it is recommended to prepare backup plans and inform the moderators accordingly.

What approach was taken for the G20 Health Emergency Simulation Exercise?

At the beginning of the exercise, the two moderators introduced themselves and the rules for the simulation exercise, which included setting a two-minute speaking time limit per contribution. Participants were walked through the voting technology and were then asked test questions that enabled them to try out both the single-answer and multiple-answer voting procedure. Participants were also reminded about the method for indicating when they would like to give input during a discussion session (which involved placing a sign upright).

The moderators tightly controlled the voting and discussion sessions to ensure that the pace of the exercise kept everyone engaged, the programme stayed on track and the topics were covered in the time allocated. Throughout the discussions, whenever a new person started to speak, a two-minute countdown would commence on screen. Limiting the speaking time to two minutes helped to ensure very lively and participatory discussions and meant more people were able to contribute.

The moderators took turns leading the sessions, drawing on their extensive knowledge of the topics and bringing recent examples into the discussions where appropriate. Following each voting session, the moderators briefly analysed the voting results and helped to stimulate the subsequent discussion. They also provided summaries of the key discussion points after addressing each of the five C's and also at the very end of the exercise.

As part of the planning process, several possible risks were identified and suitable backup plans were drawn up to ensure the exercise could run in the event of such problems arising. For example, to manage a situation where the films failed to play, presentations were put together comprising PowerPoint screenshots of the films and a pack of additional moderators' cards with bullet points to support the oral presentation of the unfolding scenario. The day before the exercise and again immediately prior to the event, the technical teams thoroughly tested the technology to ensure that all the systems were up and running.

Step 8: Evaluate the exercise

Producing an exercise report is a very useful way to capture and share the exercise proceedings, key outcomes, achievements, challenges, recommendations and lessons identified. The exercise report is often also required to support the follow-up activities or action planning process. Additionally, most exercises include an oral debriefing immediately after the exercise (hotwash).

Depending on the exercise objectives and the desired outcomes, an evaluation and reporting process should be discussed and decided upon early in the project scoping phase. Please refer to the WHO Simulation Exercise Manual (2017) for further details on the evaluation and documentation process including templates (see Ref. 2).

What approach was taken for the G20 Health Emergency Simulation Exercise?

For the G20 simulation exercise, the key outcomes were reported and communicated in the Berlin Declaration, which is available at:

<https://www.bundesgesundheitsministerium.de>

Verbal and informal feedback was received from the participants and moderators towards the end of and after the exercise.



The development team of the G20 Health Emergency Simulation Exercise after a successful G20 Health Ministers' Meeting

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Content of the memory card:

- Manual
- Films
- Supplementary artefacts
- Fact sheet
- Glossary
- Sample agenda for the exercise

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