



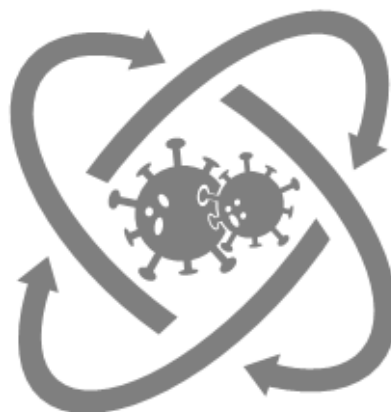
COVID-19 INTRA-ACTION REVIEWS & SIMULATION EXERCISES

A CONSULTATIVE MEETING &
EXPERIENCE SHARING FROM COUNTRIES

18 – 19 MAY 2021



COVID-19
INTRA-ACTION REVIEW



COVID-19
SIMULATION EXERCISE

Table of Contents

1. Abbreviations	3
2. Introduction	4
2.1. Background	4
2.2. Objectives of the consultative meeting	5
2.3. Participant profiles	5
2.4. Date and venue	6
3. Summary of the discussions.....	6
3.1. Informative sessions	6
3.1.1. Global update.....	6
3.1.2. COVID-19 Response Mechanism by The Global Fund to Fight AIDS, Tuberculosis and Malaria	9
3.1.3. WHO Technical Advisory Group on Simulation Exercises	9
3.2. Working groups and plenary discussions.....	10
3.2.1. Country Experience Sharing on COVID-19 SimEx.....	10
3.2.2. Country Experience Sharing on COVID-19 IAR.....	11
3.2.3. Interactive brainstorming sessions (Day 1-2).....	12
4. Future directions	13
4.1. Institutionalizing SimEx and IAR/AAR moving forward and partners collaboration.....	13
4.2. Conclusions	14
5. Annexes.....	15
5.1. Annex 1: Agenda of the global consultative meeting	16
5.2. Annex 2: List of participants.....	18
5.3. Annex 3: COVID-19 SimEx and IAR: Sharing of country experiences	24
5.4. Annex 4: Reflection questions for participants to propose actions needed.....	25
5.5. Annex 5: Prioritization of proposed actions based on voting results from participants ..	26

1. Abbreviations

AAR	After Action Review
CCDC	China Center for Disease Control and Prevention
COVID-19	Coronavirus disease
cPIE	COVID-19 vaccine Post-Introduction Evaluation
C19RM	COVID-19 Response Mechanism
ECDC	European Centre for Disease Prevention and Control
IAR	Intra-Action Review
ICU	Intensive care unit
IHR	International Health Regulations (2005)
IHRMEF	International Health Regulations Monitoring and Evaluation Framework
IPC	Infection Prevention and Control
ISS	Instituto Superiore di Sanità
JEE	Joint External Evaluation
Mini-cPIE	Mini COVID-19 vaccine Post-Introduction Evaluation
NAPHS	National Action Plan for Health Security
NDVP	National Deployment and Vaccination Plan
NIPH	Norwegian Institute of Public Health
OTS	Off the Shelf
PIE	Post-Introduction Evaluation
PHAC	Public Health Agency of Canada
PHE	Public Health England
PHEOC	Public health emergency operations centre
PHSM	Public Health and Social Measures
PoE	Point of Entry
RIVM	Dutch National Institute for Public Health and the Environment
RKI	Robert Koch Institute
RRT	Rapid response team
SimEx	Simulation Exercise
SOP	Standard Operating Procedures
SPAR	State-Party Annual Reporting
SPRP	COVID-19 Strategic Preparedness and Response Plan
ToR	Terms of Reference
TTX	Table-Top Exercise
UHPR	Universal Health and Preparedness Review
USAID	United States Agency for International Development
USCDC	United States Centers for Disease Control and Prevention
WHO	World Health Organization

2. Introduction

2.1. Background

The COVID-19 pandemic has underscored the importance of ensuring effective implementation of the International Health Regulations [IHR (2005)] by strengthening national capacities to prevent, prepare for, respond and recover from health emergencies, using a whole-of-government and whole-of-society approach. Multiple reviews and committees, such as the IHR review committee, have issued recommendations to review and strengthen tools and processes for assessing the monitoring and reporting on core capacities. WHO is carrying out this initiative with countries, partners, and the global preparedness monitoring board.

In addition, as Dr Stella Chungong, Director of Health Security Preparedness at the WHO headquarters highlighted in her opening remarks, on a backdrop of other high-level discussions on strengthening preparedness: “on 30th March 2021, 25 heads of governments and international agencies came together and issued an urgent call for a new international treaty for pandemic preparedness and response to build a more robust global health architecture that will better protect future generations”, with the goal “to strengthen national, regional and global capacities and resilience to future pandemics.”

The COVID-19 pandemic has been ongoing for more than a year and will likely continue into the months ahead although with differing phases globally, especially as countries start adjusting public health and social measures (PHSM) with changes in confirmed numbers of cases and deaths and as COVID-19 vaccines are rolled out. During the COVID-19 response, through Simulation Exercise (SimEx) and Intra-Action Review (IAR), countries have had an opportunity to reflect and improve their ongoing preparedness and response measures and identify and apply lessons, contributing to improved management of COVID-19 outbreaks in countries and other concurrent health emergencies.

Two previous global consultations have been held in February 2018 in Geneva, Switzerland and December 2019 in Tunis, Tunisia, where the value of SimEx and After Action Review (AAR) as a staple in emergency responses and strengthening future preparedness was discussed. This global online consultative meeting was also held under the same premise, focusing on the added value of SimEx and IAR during the COVID-19 response. During 18-19th May 2021, WHO organized a global consultative meeting to share best practices and peer-to-peer learning among countries on the country-level implementation of COVID-19 SimEx and IARs (please see Annex 1 for agenda). The overall goal of this consultative meeting was to further enhance the usefulness and benefits of these operational tools to strengthen preparedness and response capabilities and the overall resilience of the health system.

2.2. Objectives of the consultative meeting

The specific objectives of this consultative meeting were to:

- Present the findings and analysis from SimEx/IAR and describe the role of COVID-19 SimEx/IAR and their impact.
- Highlight experiences and lessons learnt by countries before and during the COVID-19 pandemic in terms of emergency preparedness and how gaps were addressed through SimEx/IAR.
- Recommend how SimEx/IAR can be further used to benefit countries in enhancing emergency preparedness and response, and how to build on other assessment processes.
- Identify countries' needs in order to improve the current tools and identify strategies to institutionalize SimEx/IAR.
- Encourage peer-to-peer learning among countries about SimEx/IAR experiences, including sharing and publishing SimEx/IAR findings.

2.3. Participant profiles

The consultation involved participants from the following organizations and entities:

- WHO Regional Offices (AFRO, AMRO, EMRO, EURO, WPRO, SEARO);
- Selected representatives from Member States/WHO Country offices (Indonesia, Moldova, Mongolia, Namibia, South-Sudan);
- WHO headquarters staff and expert consultants, and other stakeholders and experts working on SimEx and IAR;
- UN agencies (Food and Agriculture Organization, Office for the Coordination of Humanitarian Affairs);
- Partner agencies (Global Health Development; Resolve to Save Lives; Human Link; African Field Epidemiology Network; the Global Fund to Fight AIDS, Tuberculosis and Malaria); Academia (Georgetown University & Harvard T.H. Chan School of Public Health, Hopkins Center for Health Security); National and regional public health institutes (Centre for Military Medicine and Biothreat Preparedness; China Center for Disease Control and Prevention (CCDC); European Centre for Disease Prevention and Control (ECDC); Istituto Superiore di Sanità (ISS); Norwegian Institute of Public Health (NIPH); Public Health England (PHE); Public Health Agency of Canada (PHAC)); Robert Koch Institute (RKI); Dutch National Institute for Public Health and the Environment (RIVM); United States Agency for

International Development (USAID); United States Centers for Disease Control and Prevention (USCDC)).

A detailed list of all participants who attended this consultative meeting is provided in Annex 2.

2.4. Date and venue

This consultative meeting was hosted by WHO Headquarters and conducted virtually over two half-day sessions on 18-19 May 2021 via the Zoom platform.

3. Summary of the discussions

A succession of informative sessions, country presentations, working group sessions followed by plenary discussions took place during the two half-day consultation sessions, as summarized in the following sections.

3.1. Informative sessions

3.1.1. Global update

➤ Simulation Exercises (including drills)

Since the beginning of the COVID-19 outbreak, WHO has published seven COVID-19 tabletop exercise packages to support countries' preparedness effort. Those packages include:

- Two COVID-19 vaccine tabletop exercises that aim to assist countries to plan, develop and update their National Deployment and Vaccination Plan (NDVP) for equitable and timely access to COVID-19 vaccines.
- A PHSM tabletop exercise to conceptualize and manage ongoing COVID-19 outbreaks in the country, while minimizing social and economic disruption.
- An Urban COVID-19 tabletop exercise to discuss critical issues in urban environments.
- A Point of Entry (PoE) tabletop exercise for managing COVID-19 cases in international travel, including aviation and ground crossings.

- A Health facility & Infection Prevention and Control (IPC) tabletop exercise to examine the implementation of IPC strategies required to prevent or limit transmission of COVID-19 in health care facilities.
- A Generic COVID-19 tabletop exercise to examine and strengthen existing plans, procedures, and capabilities to manage the ongoing and future COVID-19 outbreaks.

Besides these discussion-based tabletop exercises, WHO has also developed four operational COVID-19 vaccine drills to facilitate countries in implementing their vaccine delivery strategy at the vaccination sites by deploying real resources and staff.

A host of resources have been developed to guide the execution of SimEx in response to COVID-19, including COVID-19 Off the Shelf (OTS) exercises and the aforementioned COVID-19 drills package on the [WHO webpage](#) to directly support countries, as well as training and webinars developed in collaboration with WHO Regional Offices.

For all relevant documentation to the WHO SimEx work, please see links below:

WHO SimEx information:

<https://www.who.int/emergencies/operations/simulation-exercises>

WHO COVID-19 SimEx Packages:

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/training/simulation-exercise>

➤ COVID-19 Intra-Action Reviews

In July 2020, WHO published the *Guidance for conducting a country COVID-19 IAR* and accompanying tools to support periodic reviews of the COVID-19 preparedness and response at both national and subnational levels. In April 2021, an addendum was published to provide additional direction and introduce new and updated tools based on the current global COVID-19 situation and the feedback received from countries that have successfully conducted IARs. Four new “pillars” were added: COVID-19 vaccination, Vulnerable and marginalized populations, National legislation and financing, and PHSM.

As of 17 May April 2021, 61 IARs have been successfully conducted by at least 47 countries using the WHO proposed methodology. Furthermore, 21 additional COVID-19 IARs being planned in 21 countries.

Based on country feedback, IARs, although a useful process, can be a heavy undertaking when reviewing multiple pillars. Hence, in the addendum to the IAR guidance, WHO has shifted to promoting a lighter approach by conducting IAR for one or a small number of pillars at a time (e.g., pillar 3 surveillance, case investigation and contact tracing paired up with pillar 5 national laboratory system) so IAR can be conducted more frequently (e.g., every two months) to ensure COVID-19 response can truly be fine-tuned as the outbreak evolves. This lighter approach will also allow for deep dives into the potential best practices and challenges based on the country's unique needs.

Given the rapid development in the COVID-19 vaccine landscape and the need to review the early COVID-19 vaccine roll-out in countries, WHO has actively promoted lighter and more focused IARs using the COVID-19 vaccination pillar as a relevant and timely example. As all new vaccines, including COVID-19 vaccines, are recommended to undergo the post-introduction evaluation (PIE) following their introduction, the COVID-19 vaccination pillar in the IAR package has been aligned to the NDVP and the classic COVID-19 vaccination PIE (cPIE). WHO is currently recommending countries to conduct the COVID-19 vaccination IAR (also referred to as a mini-cPIE) 2-6 months following COVID-19 vaccine introduction, and the classic cPIE 6-18 months following introduction. Beyond COVID-19 vaccines, there may also be other pillars that may warrant a lighter and more focused approach, such as grouping pillar 2 risk communication, community engagement and infodemic management with pillar 13 PHSM.

Finally, as countries transition COVID-19 emergency response to a longer-term management approach, countries are encouraged to plan and prepare a COVID-19 After Action Review (AAR) after the emergency response phase, which for some countries may be only relevant one year or more down the line.

For all relevant documentation to the WHO IAR and AAR work, please see links below:

WHO IAR and AAR information:

<https://www.who.int/emergencies/operations/emergency-response-reviews>

WHO COVID-19 Vaccine Mini-Post-Introduction Evaluation (mini-cPIE) reference documents:

<https://www.who.int/tools/covid-19-vaccine-introduction-toolkit#Evaluation%20of%20COVID-19%20vaccine%20introduction>

The importance and the necessity for conducting IARs during the COVID-19 pandemic¹ and for preparing for and fine-tuning COVID-19 vaccine roll-out through SimEx and IAR² have also been underscored in two recent commentaries published in The Lancet Global Health.

3.1.2. COVID-19 Response Mechanism by The Global Fund to Fight AIDS, Tuberculosis and Malaria

During the consultative meeting, as highlighted by Dr David Lowrance, Senior Advisor of Health Security at the Global Fund to Fight AIDS, Tuberculosis and Malaria, they have available a funding stream called COVID-19 Response Mechanism (C19RM), whose section 3 pillar 1 covers the scope of SimEx and IAR. Under this funding stream, these are the type of activities that the Global Fund views as fundamental to supporting real-time planning, course correction and the coordination of efforts by national response coordinating bodies and key partners such as WHO. **Eligible countries are invited to submit a C19RM Full Funding Request through four defined submission windows, and/or a Fast-track Funding Request on a rolling basis.**

Please see more information on Global Fund opportunities in the link below:

Global Fund COVID-19 funding information:

<https://www.theglobalfund.org/en/covid-19/>

3.1.3. WHO Technical Advisory Group on Simulation Exercises

To facilitate the increasing adoption of SimEx as an evidence-based practice for continuous learning and system performance improvement of country preparedness and response to health emergencies, WHO has developed a Terms of Reference (ToR) for an Advisory Group for SimEx.

The Advisory Group will act as an advisory body to WHO in this field and will be expected to provide advice on the development and implementation of a strategic plan for simulation exercises. They will also recommend priority advices to the overall SimEx program by providing independent insight into its operations and methods. Finally, they will recommend

¹ Mayigane, L.N., Chiu de Vázquez, C., Vente, C., Charles, D., Copper, F.A., Bell, A., Njenge, H.K., Schmidt, T., Samhour, D., Htike, M.M., Kato, M., Stephen, M., Van Kerkhove, M.D., and Chungong, S. The Necessity for Intra-Action Reviews during the COVID-19 Pandemic. *Lancet Global Health*. 2020;8(12):E1451-E1452.

² Copper, F.A., Chiu de Vázquez, C., Bell, A., Mayigane, L.N., Vedrasco, L. and Chungong, S. Preparing for COVID-19 vaccine roll-out through simulation exercises. *Lancet Global Health*. 2021 Mar; [https://doi.org/10.1016/S2214-109X\(21\)00051-6](https://doi.org/10.1016/S2214-109X(21)00051-6).

approaches to help measure the impact of exercises as part of a comprehensive emergency management program.

A call for experts will be issued shortly and the advisory group will meet up to four times a year. Please see more information in the link below:

Advisory Group for Simulation Exercises:

<https://www.who.int/news-room/articles-detail/technical-advisory-group-on-simulation-exercises>

3.2. Working groups and plenary discussions

These discussions were aimed at capturing the impact that SimEx and IAR have had in the COVID-19 outbreak response in the respective countries.

3.2.1. Country Experience Sharing on COVID-19 SimEx

Two case studies were presented during this session. The Republic of Moldova conducted a nationwide field SimEx (or drill) on 3rd February 2021 to test country-level coordination, planning, deployment, and monitoring of the COVID-19 vaccination roll-out, including multiple programmatic areas such as the legal and regulatory framework for vaccine deployment, human resources and security, injection safety and waste management. From March to October 2020, Namibia conducted a total of 102 exercises, from tabletop exercises to drills involving a total of 2382 participants at national, regional and district levels. These included coordination and IPC tabletop exercises; drills for emergency call centre operation; drills for surveillance, case investigation and contact tracing; drills for case management; and intensive care unit (ICU) drill to assess the readiness of the healthcare system at all levels. Both case studies reinforced the advantages of exercises in identifying issues and how to address them to contribute to the overall preparedness.

For the Republic of Moldova, the main challenges experienced during the planning, conduct and following up of the SimEx were some level of scepticism from decision-makers given the true value of SimEx was unknown at that time with few examples of countries having conducted COVID-19 vaccination SimEx to serve as a reference. As for Namibia, the country identified challenges regarding their financial and human resources to conduct full-scale exercises. Many of the SimEx facilitators had other competing priorities being responders to the ongoing COVID-19 outbreak.

Despite these challenges, the Republic of Moldova highlighted good practices such as the fast approval to conduct and commit to a national field SimEx of this size. In addition, The Republic of Moldova conducted detailed mapping of needs, site inspection and tabletop exercise prior to this field exercise to develop appropriate minute-by-minute scenarios. The field exercise covered many elements, including the entire process from COVID-19 vaccine

reception at the Customs office at the airport, to distributing vaccines to the national vaccine warehouse, municipal public health centre and healthcare facilities, and finally to the preparation and administration of vaccines. For Namibia, good practices highlighted included developing simple and realistic IPC tabletop exercise to be easily conducted at the subnational level with minimal support from the national level. In addition, the involvement of partners during the development of the action plans following the exercises helped to ensure resource provision and adequate follow-up at all levels.

For the Republic of Moldova, the changes and impacts triggered by the exercise was a smooth process of COVID-19 vaccine receipt and secure delivery once the vaccines arrived in the country and immunization campaign started one month after this exercise, given all arrangements were already in place to ensure sufficient surge capacities for vaccine storage and transport at all levels. The exercise also triggered the updating of enhanced IPC measures and good practices of immunization services at vaccination centers to the highest international standards. At the time of this consultative meeting, the Republic of Moldova has vaccinated >80% of hospital healthcare workers and >70% of all medical and non-medical frontline staff, and saw an 82% reduction in healthcare worker COVID-19 infections. For Namibia, the changes and impacts triggered by the numerous exercises conducted were multifold. These included the timely ordering of IPC materials and consumables for healthcare facilities to meet the IPC standards, which allowed better adherence to IPC measures to reduce healthcare worker infections; training of staff with the knowledge and skill needs that were identified through the exercises so they could perform their respective duties more effectively; the revision and broad dissemination of COVID-19 outbreak response protocols and guidelines to frontline responders; and the identification of needs by the projection of human resources, supplies and materials to ensure an effective response.

3.2.2. Country Experience Sharing on COVID-19 IAR

Three countries (Indonesia, Mongolia, South Sudan) and one WHO regional office (EMRO) presented their experiences in conducting COVID-19 IAR. Indonesia conducted a comprehensive IAR on 11-14 August 2020 involving 170 multisectoral stakeholders. Like Indonesia, Mongolia also conducted a comprehensive IAR on 6-8 May 2020, covering all nine pillars proposed in the IAR plus an additional pillar on PHSM. South Sudan reviewed seven public health response pillars on 26-27 October 2020, six months following the first case was detected in the country on 5 April 2020, and one month following an outbreak peak in May 2020. These case studies reiterated the usefulness of undertaking IARs as a learning and reflective process during the ongoing COVID-19 outbreaks in-country and fine-tuning their response as needed.

A good practice seen in Indonesia was continual monitoring and follow up of IAR recommendations, with three periodic monitoring sessions conducted between November 2020 and April 2021. During these monitoring sessions, the level of attainment of the proposed actions was also scored to monitor the progress over time. For South Sudan, the

IAR report is currently being used as a resource file to update its national response plan. Many of these countries saw successes in their IARs due to government commitment and national ownership of the reviews. In addition, coordination across multiple sectors during IARs facilitated and further strengthened the multisectoral collaboration of COVID-19 response activities. Some countries found that the IAR process was an opportunity to validate their various SOPs to ensure their adherence. Finally, having a dissemination plan for the IAR findings after implementation of priority actions was also a beneficial endeavour.

Challenges encountered by some countries were inconsistent follow-up on proposed actions identified during IAR due to various reasons, including a lack of financial resources. In addition, other countries found the planning of the IAR was disrupted by travel restriction and lock-down measures, as well as the ongoing overall high workload with responding to the COVID-19 outbreak, especially with many IAR participants still preoccupied with the response itself. Finally, it was also challenging to bring together all key stakeholders for IARs where IARs were conducted onsite.

For Indonesia, the changes and impacts triggered by the IAR were the national and subnational COVID-19 operational response plan and updating of Indonesia situation on the COVID-19 Partners Platform. For Mongolia, the changes and impacts triggered by the IAR were at multiple levels, including the rapid scale-up of healthcare equipment, resources, designated hospitals for COVID-19 care, and expansion from 6 to 60 rapid response teams (RRT). Digital information platforms were also developed for surveillance and laboratory data, as well as the establishment of multi-sourced surveillance strategies to match the different phases of the COVID-19 transmission situation in the country. Other major developments triggered by the IAR included the decision for Mongolia to establish its own CDC and develop a multisectoral incident management system SOP. For South Sudan, IARs triggered the designation of state liaison in the public health emergency operations centre (PHEOC) to improve reporting and communication with states for a more effective response. In addition, IAR generated the momentum for launching the National Action Plan for Health Security (NAPHS) and donor interest in funding NAPHS implementation. Furthermore, the IAR also triggered the formation of audit committees to assess and enforce COVID-19 SOPs compliance in institutions and public spaces. Some countries also reported that following IARs, specialized training programs were developed for staff at PoE; in addition, PoE premises were also restructured and modified to reduce the risk of COVID-19 transmission.

In all these case studies, IAR led to the development of an action plan based on IAR findings, which in some cases led to the updating of countries' national COVID-19 response plans and response activities.

3.2.3. Interactive brainstorming sessions (Day 1-2)

Following the SimEx and IAR sessions on day 1, participants were invited to review and critically reflect on the topics and issues raised. Participants interacted anonymously using

the Mural platform where they posted their views of SimEx and IAR guided by four topics: “best practices”, “challenges”, “lessons learned”, and “ideas for consideration”. The WHO headquarters team grouped the ideas by four themes into “1. Planning and timing/ frequency for IAR and SimEx”, “2. Resources availability (funding, timing, logistics)”, “3. Stakeholders and coordination”, and “4. Follow up of SimEx and IAR recommendations” (please see Annex 3).

To stimulate the generation of ideas so participants can propose actions to institutionalize COVID-19 SimEx/IAR/AAR, the WHO headquarters team also developed several reflection questions for each of the four themes for day 2 of the brainstorming session (please see Annex 4). Participants were once again invited to propose any actions they perceived as required using the Mural platform. The proposed actions were then prioritized by a voting session from participants. Proposed actions with two or more votes are shown in Annex 5.

4. Future directions

4.1. Institutionalizing SimEx and IAR/AAR moving forward and partners collaboration

Part 1: Identification and prioritization of proposed actions

Using the approach described in the section above, the most pertinent seven actions proposed by participants to better institutionalize SimEx and IAR are listed below (i.e. received the highest number of votes from participants). Please note that the wording of the proposed actions has been largely retained exactly as participants have proposed them during this meeting.

- **Review frequency** – A review process should be regularly conducted at 3-4 months intervals*.
- **Linkage to IHRMEF** – Stronger links should be established between SimEx/IAR/AAR and JEEs and post-JEE planning, including operational planning.
- **Peer-to-peer learning** – This should be maximized by inviting partners and/or peer countries to participate as an observer.
- **Emergency preparedness and response cycle** – SimEx/IAR/AAR should be made an essential part of this national cycle.
- **Alignment with existing WHO guidelines** – WHO should update SimEx/IAR/AAR tools in parallel with the WHO COVID-19 Strategic Preparedness and Response Plan (SPRP) guidelines.
- **A network or roster of trained SimEx/IAR/AAR facilitators** – This network of trained facilitators can support the implementation of SimEx/IAR/AAR – each

country should ideally establish a team of experts that can organize and runs SimEx/IAR/AAR not only for COVID-19 but also for future emergencies.

- **Implementation and follow-up of findings** – Countries should ensure that SimEx/IAR/AAR are strongly connected to the follow-up recommendations and actions to get the support they need to implement the recommendations and be commended for doing so.

**Please note that further discussion took place after the voting session. It was discussed that reviews should be conducted based on needs but also resources available, instead of a set timeframe.*

Once again, for the list of other proposed actions with two or more votes, please refer to Annex 5.

Part 2: Synergies between proposed actions and the role of partners

Following the proposal of actions moving forward, partners were invited to discuss their role in supporting and accomplishing these recommendations.

Partner agencies highlighted that with multi-faceted aspects surrounding COVID-19 preparedness and response activities, they are best suited to provide targeted technical support, especially in implementing recommended actions from SimEx/IAR/AAR. Moreover, they can provide a systems-thinking approach to develop targeted solutions for COVID-19 related challenges.

Partners in academia expressed their perceived role as providing technical assistance and resources needed for an effective SimEx/IAR/AAR. In addition, they expressed willingness to help with the identification of patterns that emerge from cross-country comparisons of SimEx/IAR/AAR findings. Finally, they can help to document and publish articles on the benefits and impacts of SimEx/IAR/AAR on COVID-19 and beyond.

4.2. Conclusions

Key conclusions and next steps for SimEx and IAR for countries with WHO support were formulated at the end of the two half-day consultation sessions, which included the following:

1. keep SimEx and IAR light and agile so it can be conducted regularly tailored to countries' specific needs;
2. conduct SimEx and IAR regularly with proper planning;
3. produce actionable reports and share them nationally and internationally;

4. develop systems to implement and monitor SimEx and IAR recommendations as part of the continual process to improve core capacities to address future health emergencies; and
5. document impacts of SimEx and IAR in peer-reviewed publications.

It was also noted during the meeting that SimEx and IAR should help and not distract from the ongoing response to the COVID-19 outbreak in-country.

There is also a need to link SimEx and IAR to other country-level assessments and planning processes, including the Joint External Evaluation (JEE), State-Party Annual Reporting (SPAR), Strategic Risk Assessment, and the NAPHS. As Dr Stella Chungong, Director of Health Security Preparedness at the WHO headquarters, eluded to in her opening remarks, plans are already in place to develop a Member State-led intergovernmental mechanism backed by the WHO – named the Universal Health and Preparedness Review (UHPR) in which “countries voluntarily agree to a regular and transparent peer-to-peer review of their national preparedness capacities”, which will “build upon existing national preparedness assessment tools and processes”.

As the COVID-19 pandemic continues to evolve, it is important for countries to take a comprehensive approach to continuously test, fine-tune, and adapt their preparedness and response capacity to the rapidly-changing landscape, including through the use of SimEx at all levels, conducting regular IAR, and AAR after the outbreak is controlled in the countries, as a series of system improvement processes.

5. Annexes

Annex 1: Agenda of the global consultative meeting

Annex 2: List of participants

Annex 3: COVID-19 SimEx and IAR: Sharing of country experiences

Annex 4: Reflection questions for participants to propose actions needed

Annex 5: Prioritization of proposed actions based on voting results from participants

5.1. Annex 1: Agenda of the global consultative meeting

Day 1: 18 MAY 2021	
13:00 – 13:10	Session 1: Introductions, Meeting Overview & Opening <i>Moderated by Dr Liviu VEDRASCO (CER Team)</i> Opening remarks from Dr Stella CHUNGONG (HSP Director)
13:10 – 13:30	Session 2: Setting the scene <i>Moderated by Phuong Nam NGUYEN (WPRO)</i> - Purpose & Objective of the Meeting (<i>Dr Liviu VEDRASCO</i>) - Global update on COVID-19 SimEx and IAR (<i>Frederik COPPER and Dr Landry MAYIGANE</i>)
13:30 – 14:30	Session 3: Country Experience Sharing on COVID-19 SimEx <i>Moderated by Dr Ihor PEREHINETS (EURO)</i> - Moldova (10 mins) - Namibia (10 mins) Compilation of other countries and partners experience on COVID-19 Simulation Exercises (challenges, best practices, achievements & lessons learned) and discussion (30 mins)
14:30 – 14:40	Break
14:40 – 16:00	Session 4: Country Experience Sharing on COVID-19 IAR <i>Moderated by Dr Roberta ANDRAGHETTI (AMRO)</i> - Indonesia (10 mins) - Mongolia (10 mins) - South Sudan (10 mins) - EMRO countries (10 mins) Compilation of other countries and partners experience on COVID-19 Intra-Action Reviews (challenges, best practices, achievements & lessons learned) and discussion (40 mins)
16:00	Closing of Day 1

All times are GMT+2

Day 2: 19 MAY 2021	
13:00 – 13:15	Recap of Day 1 <i>Moderated by Allan BELL (CER Team)</i>
13:15 – 14:30	Session 5: Institutionalizing IAR/AAR & SimEx Moving Forward & Partners collaboration <i>Moderated by Dr Maung Maung HTIKE (SEARO)</i> Part 1: Working session: how to build on challenges, best practices, achievements & lessons learned to institutionalize IAR/AAR & SimEx Part 2: Plenary discussion on recommendations and proposed actions
14:30 – 14:40	Break
14:40 – 15:20	Session 5: Institutionalizing IAR/AAR & SimEx Moving Forward & Partners collaboration <i>Moderated by Dr Mary STEPHEN (AFRO)</i> Part 3: Panel discussion: synergies between these recommendations and the role of partners (30 mins) Part 4: Prioritization of recommendations and proposed actions –
15:20-15:40	Session 6: Strategic updates <i>Moderated by Dr Liviu VEDRASCO (CER Team)</i> - Country funding mechanism for COVID-19 IAR & SimEx (<i>Global Fund</i>) - Simulation Exercise Advisory Group (<i>Allan BELL CER Team</i>)
15:40 – 16:00	Next steps by HSP Director <i>Moderated by Dr Liviu VEDRASCO (CER Team)</i>

All times are GMT+2

5.2. Annex 2: List of participants

COUNTRIES

Buthan

Mr Kinley Dorji
Chief Program Officer Emergency
Ministry of Health
Email: dorjik@health.gov.bt

Canada

Dr Joshua Muncaster
Senior Advisor
Public Health Agency of Canada
Email: joshua.muncaster@canada.ca

Dr Adha Roselli
Policy Analyst
Public Health Agency of Canada
Email: adha.roselli@canada.ca

Moldova

Dr Alexei Ceban
Epidemiologist
Surveillance of Vaccine-Preventable
Diseases Department
National Agency for Public Health
Email: alexei.ceban@yahoo.com

Mongolia

Dr Mandakhnaran Davaadorj
Scientific Committee
Ministry of Health
Email: mandakhnarandavaadorj@gmail.com

Namibia

Dr Theo-Ben Raumana Kandetu
Head Case Management, Clinical Operations
and Therapeutics
National Covid 19 Task Force
Ministry of Health and Social Services
Email: Theo-Ben.Kandetu@mhss.gov.na

Mrs Undjee Kaura
Control Health Programme Officer
Ministry of Health and Social Services
Email: meejakaura2019@gmail.com

Oman

Mr Seif Al-Abri
Disease Surveillance and Control
Muscat Governorate
Email: salabri@gmail.com

South Sudan

Dr Joseph Francis Wamala
Country Preparedness & IHR (CPI) Officer
WHO South Sudan
Email: wamalaj@who.int

Thailand

Dr. Khanchit Limpakarnjanarat
Advisor, GHSA Coordinating Office
Department of Disease Control
Ministry of Public Health
Email: khanchit.limp@gmail.com

Indonesia

Dr Endang Budi Hastuti
Emerging Infectious Disease Program
Coordinator
Ministry of Health
Email: endangbb@yahoo.com

Dr Rita Djupuri
National Health Manager for emergency
response and early recovery
Ministry of Health
Email: rdjupuri@gmail.com

INTERNATIONAL ORGANIZATIONS, NON-STATE ACTORS, ACADEMIA (PARTNERS)

Mr Jobin Abraham
Director of Learning and Capacity
Development
Resolve to Save Lives
Email: jabraham@resolvetosavelives.org

Dr Baigalmaa Baljinnyam
Email: baigalmaab@gmail.com

Ms Morgan Brown
Health Scientist
Global Health Security Agenda Team
Division for Global Health Protection
Center for Global Health
US Centers for Disease Control and
Prevention
Email: ofi0@cdc.gov

Dr Júlio Carvalho
Unidade Militar Laboratorial de Defesa
Biológica e Química
Email: carvalho.jmcfg@exercito.pt

Mr Michael Coninx
Fellow Global Health Security Team
US Centers for Disease Control and
Prevention
Email: pxi6@cdc.gov

Ms. Leen Daoud
Technical Officer
Global Health Development
EMPHNET
Email: ldaoud@globalhealthdev.org

Ms Sarah Esquevin
Epidemic Intelligence Officer
Robert Koch Institute
Email: esquevins@rki.de

Ms Frode Forland
Norwegian Institute of Public Health
Email: Frode.Forland@fhi.no

Dr Richard Garfield
*Team Lead, Analysis Unit, Emergency
Response and Recovery Branch and member
Global Health Security Team*
US Centers for Disease Control and
Prevention
Email: chx8@cdc.gov

Dr Ashley Greiner
*Team Lead, Emergency Response Capacity
Team*
U.S. Centers for Disease Control and
Prevention
Email: iwh2@cdc.gov

Ms Ulrike Grote
Research Associate
Robert Koch Institute
Email: groteu@rki.de

Dr Ghazi Kayali
Chief Executive Officer
Human Link
Email: ghazi@human-link.org

Mr Herbert Kazoora
Acting Director of Programs
African Field Epidemiology Network
(AFENET)
Email: hkazoora@afenet.net

Mr Todd Lazaro
Learning Experience Designer
Resolve to Save Lives
Email: tlazaro@resolvetosavelives.org

Jéssica Kayamori Lopes
Emergency Management Specialist
Emergency Management Centre for Animal
Health (EMC-AH)
Food and Agriculture Organization of the
United Nations (FAO)
Email: Jessica.KayamoriLopes@fao.org

Dr David Lowrance
Senior Advisor, Health Security
The Global Fund to Fight AIDS,
Tuberculosis and Malaria
Email: David.Lowrance@theglobalfund.org

Dr Michael Mahar
*DGHP Lead for GHSA and WHO IHR
Collaborating Center*
Global Health Security Agenda Team
Email: Kul1@cdc.gov

Ms Dawn Mapatano
*ORISE Fellow, Global Health Security
Agenda Team*
Division for Global Health Protection
Center for Global Health
Email: Pwp3@cdc.gov

Ms Farah Massoud
Technical Officer
Public Health Emergency Management
Center / Public Health Programs
Global Health Development Organization
Email: fmassoud@globalhealthdev.org

Dr Inessa Markus
Infectious Disease Epidemiologist
Robert Koch-Institute
Email: markusi@rki.de

Ms Amanda McClelland
Senior Vice President, Prevent Epidemics
Resolve to Save Lives
Email: amcclelland@resolvetosavelives.org

Ms Lucia Mullen
Research Associate
Hopkins Center for Health Security
Email: lmullen3@jhu.edu

Dr Autilia Newton
IHR lead for the UK Overseas territories
Public Health Programme
Public Health England (PHE)
Email: Autilia.Newton@phe.gov.uk

Dr Simo Nikkari
Director
Centre for Military Medicine and Biothreat
Preparedness
Email: simo.nikkari@mil.fi

Dr Howard Njoo
Deputy Chief Public Health Officer, Vice president's Office
Infectious Disease Prevention and Control
Branch
Public Health Agency of Canada
Email: howard.njoo@canada.ca

Dr Karin Nygård
Senior advisor Infectious Diseases and Preparedness
Norwegian Institute of Public Health
Email: IKarinMaria.Nygard@fhi.no

Dr Yingxin Pei
Mentor CFETP
China Center for Disease Control and
Prevention
Email: peiyyx@chinacdc.cn

Mr Thomas Peter
Manager Simulation and Training Network (STN)
Emergency Response Section (ERS)
Response Support Branch (RSB)
Office for the Coordination of Humanitarian
Affairs (OCHA)
E-mail: petert@un.org

Ms Asma Quannas
Technical Officer
Public Health Emergency Management
Center
Public Health Programs
Global Health Development Organization
Email: aquannas@globalhealthdev.org

Dr Paul Riley
Principal expert preparedness and response
European Centre for Disease Prevention and
Control
Email: paul.riley@ecdc.europa.eu

Ms Dorothee Roskamp
Senior Policy Advisor Preparedness
Dutch National Institute for Public Health
and the Environment
Email: dorothee.rosskamp@rivm.nl

Dr Peter Rzeszutarski
Senior Advisor for Global Health Security
Division of Emergency Operations
US Centers for Disease Control and
Prevention
Email: bqq3@cdc.gov

Dr Flavia Riccardo
Researcher
Istituto Superiore di Sanità (ISS)
Email: flavia.riccardo@iss.it

Dr Meike Schöll
Public Health Scientist and Physician
Robert Koch Institute
Email: SchoellM@rki.de

Dr Michael Stoto
Professor of Health Systems Administration and Population Health, Georgetown University and Adjunct Professor of Biostatistics & Senior Preparedness Fellow Harvard T.H. Chan School of Public Health
Email: stotom@georgetown.edu

Dr Jonathan Suk
Senior Expert
Public Health Emergency Preparedness
European Centre for Disease Prevention
and Control (ECDC)
Email: Jonathan.Suk@ecdc.europa.eu

Mr Daniel F. Stowell
Global Health Security Specialist
US Centers for Disease Control and
Prevention
Email: xl66@cdc.gov

Dr Corien Swaan
Head Department for Prevention & Control
National Coordination Centre for
communicable disease control (LCI)
National Institute for Public Health and the
Environment (RIVM)
Email: corien.swaan@rivm.nl

Dr Sudarat Damrongwatanapokin
Regional Animal Health Advisor
USAID
Email: sudarat.d@gmail.com

Dr Angela Wirtz
Seconded National Expert
European Centre of disease control and
prevention
Email: Angela.Wirtz@ecdc.europa.eu

WHO Regions and countries

AFRO

Dr Mary Stephen
Technical Officer
Email: stephenm@who.int

Dr Tieble Traore
Technical Officer
Email: traoret@who.int

Mr Roland Kimbi Wango
Technical Officer
Email: wangokimbi@who.int

Mr Petrus Kosmas
Intern
Email: kosmasp@who.int

Dr Siriki Martin Traore
Consultant
Email: traoresi@who.int

Dr Sikota Zeko
Consultant
Email: zekos@who.int

AMRO

Dr Roberta Andraghetti
Advisor
Email: andragro@paho.org

EMRO

Dr Mahgoub Hamid
Technical Officer
Email: hamidm@who.int

EURO

Dr Stela Gheorghita
National Professional Officer
Email: gheorghitas@who.int

Dr Ihor Perehinets
Technical Adviser
Email: perehinetsi@who.int

Dr Anna Pashalishvili
National Professional Officer
Email: pashalishvilia@who.int

Mr Jussi Sane
Consultant
Email: sanej@who.int

SEARO

Dr Arturo Pesigan
Deputy Head of WHO Country Office
Email: pesigana@who.int

Dr Masaya Kato
Programme Area manager
Email: katom@who.int

Dr Aarti Garg
Technical Officer
Email: garga@who.int

Dr Maung Maung Htike
Technical Officer
Email: htikem@who.int

Dr Endang Widuri Wulandari
Epidemiologist
Email: wulandarie@who.int

Mr Kencho Wangi
Technical Officer
Email: wangdik@who.int

WPRO

Mr Phuong Nam Nguyen
Technical Officer
Email: nguyenp@who.int

Dr Ariuntuya Ochirpurev
Technical Officer
Email: ochirpureva@who.int

Ms Dulamragchaa Buyanbaatar
Consultant
Email: buyanbaatard@who.int

Dr Gerelmaa Danzan
Consultant
Email: danzang@who.int

WORLD HEALTH ORGANIZATION (HQ)

Dr Stella Chungong
Director, Health Security Preparedness
Department
Email: chungongs@who.int

Dr Stephane De la Rocque
Team Lead, HAI
Email: delarocques@who.int

Dr Carmen Dolea
Unit Head, IHR Secretariat EPA
Email: doleac@who.int

Dr Qudisia Huda
Unit Head, Disaster Risk Management and
Resilience, DRR
Email: hudaq@who.int

Dr Rajesh Sreedharan
Team Lead, Country Capacity Assessment
and Planning, CAP
Email: sreedharanr@who.int

Mr Ludy Suriantoro
Unit Head, MHS
Email: suryantorol@who.int

Dr Liviu Vedrasco
Unit Head, Country Simulation Exercises
and Reviews, CER
Email: vedrascoll@who.int

Mr Allan Bell
Technical Officer, Country Simulation
Exercises and Reviews, CER
Email: abell@who.int

Mr Frederik Copper
Technical Officer, Country Simulation
Exercises and Reviews, CER
Email: copperf@who.int

Dr Marc Ho
Technical Officer, Evidence and Analytics
for Health Security, EHS
Email: hoz@who.int

Dr Landry Ndriko Mayigane
Technical Officer, Country Simulation
Exercises and Reviews, CER
Email: mayiganel@who.int

Ms Sara Barragan Montes
Technical Officer, Emergency Response
Email: barraganmontess@who.int

Mr Abbas Omaar
Technical Officer, Evidence and Analytics
for Health Security, EHS
Email: omaara@who.int

Ms Filiz Onalan
Technical Officer, Strategic Planning &
Performance Monitoring BOS
Email: onalanf@who.int

Mrs Magdalena Rabini
Technical Officer
Email: rabinim@who.int

Ms Tatiana Resnikoff
Data Manager, Pandemic Influenza
Preparedness WPE, PIP
Email: resnikofft@who.int

Dr Ndir Awa
Consultant
Email: ndira@who.int

Mr Andrew Black
Consultant
Email: andrewblack@who.int

Mr Denis Charles
Consultant
Email: charlesd@who.int

Dr Cindy Chiu de Vázquez
Consultant
Email: chiuc@who.int

Dr Armand Mbanya
Consultant
Email: mbanyaa@who.int

Mr Hilary Kagume Njenge
Consultant
Email: njengeh@who.int

Ms Sophie Portal
Consultant
Email: portals@who.int

Ms Candice Vente
Consultant
Email: ventec@who.int

5.3. Annex 3: COVID-19 SimEx and IAR: Sharing of country experiences

BEST PRACTICES	CHALLENGES	LESSONS LEARNED	IDEAS FOR CONSIDERATION
1: Planning and timing/ frequency for IAR and SimEx			
- Preparedness activities need to be tested continuously. - Planning needs to be with key stakeholders from the onset.	- Limited expertise to conduct IAR	- Important to change and adapt during the pandemic - Information availability on different aspects was supportive in conducting reviews.	- How do you deal with the uncertainty of available information to base the exercise on? - Can we have more templates for simulation exercises?
2: Resources availability (funding, timing, logistics)			
- Use of new software to facilitate sessions while social distancing	- Limited resources available and budget constraints - Time constraints in the preparation - Logistics and time management - Human resource preoccupied with other priorities such as COVID-19 response - Competing priorities (Preparedness vs Response) - Funding for field exercises - Hesitancy for using SimEx during the COVID-19 pandemic		
3: Stakeholders and coordination			
- Engagement of stakeholders needs to be active. - Participation by multiple stakeholders. - Multiple sectors need to be involved in coordination. - Exercises need to involve multiple sectors.	- Leadership & political commitment to conduct SimEx during a pandemic. - Trying to obtain broad inputs while keeping the IAR focused - Effective coordination.	- The whole-of-government approach is the way to respond. - Multisectoral involvement. - Multisectoral exercises (ensuring all stakeholders and included) allow for a more realistic discussion. - Identify the problems faced by other sectors and solve them together.	- Reach out to partner organizations as early as possible in the planning process. - Political commitment and involvement. - Potential for multisectoral collaboration and inclusion of other sectors in the SimEx context.
4: Follow up of SimEx and IAR recommendations			
- Keeping the outputs to a small number of actionable activities. - Operational drills performed to support surge staff. - How might we integrate a consistent framework for timeliness into IARs/AARs?	- Implementing recommendations. - Using the challenges identified in an IAR to inform decision making. - Addressing gaps post-IAR/SimEx. - Addressing gaps post SimEx, both for the immediate response (in the case of COVID-19) and for longer-term preparedness capacity.	- Need for clear evaluation criteria to identify action points/ recommendations - Debrief to decision-makers.	- Developing a database of conducted SimExs for easy reference and to monitor implementation of recommendations while discouraging duplications. - Publishing lessons learned, challenges and best practices in generalizable format for sharing with other countries and global health security field. - Identify further incentives to encourage countries to conduct SimEx/IAR/AAR and publish findings. - Increase transparency around reports on SimEx. - More publishing & evidence-based impact of national SimEx. - Include near-term operational planning as part of the standard debrief. - Refresher training of staff involved in COVID-19 response as previously trained staff are being repurposed for this. - What are the key opportunities for leveraging IARs/AARs to inform the design/prioritization of preparedness plans? - How do you feed findings from exercises into training for staff?

5.4. Annex 4: Reflection questions for participants to propose actions needed

THEMES FROM DAY 1	REFLECTION QUESTIONS	THEMES OF PROPOSED ACTIONS FOR INSTITUTIONALIZING COVID-19 SimEx/IAR/AAR
1: PLANNING AND TIMING/ FREQUENCY FOR IAR AND SIMEX	Evolving nature of the pandemic: - How to take into account this uncertainty in developing SimEx/IAR materials? - How to keep tools, guidance and expertise up to date? - How frequently do you need to exercise and review to remain relevant to your response cycle?	- Improving existing tools and materials. - Platforms to market SimEx/IAR. - Updating of WHO documents to include SimEx/IAR. - When to conduct SimEx/IAR.
2: RESOURCES AVAILABILITY (FUNDING, TIMING, LOGISTICS)	Resources availability for SimEx and IAR: - Are the existing mechanisms (funding, logistics, IT) sufficient to support the conduct of SimEx/ IAR? - How to promote the added value of conducting frequent SimEx and IAR at different stages of the response?	- Roster of experts. - Availability of funds. - Promoting SimEx/IAR (how and where). - Tracking change/impact due to SimEx/IAR.
3: STAKEHOLDERS AND COORDINATION	Stakeholders' engagement: - Are we equipped and able to involve all stakeholders in planning and conducting SimEx/ IAR? - How can we better advocate for strong leadership and political commitment for SimEx/ IAR? - How to promote national ownership of the SimEx/ IAR processes and follow-up?	- How and who to involve? (Being focused on the scope) - Advocacy and transparency.
4: FOLLOW UP OF SIMEX AND IAR RECOMMENDATIONS	Follow up of SimEx and IAR: - Do we have the necessary systems and tools to follow up on SimEx IAR recommendations and findings? - How to link SimEx / IAR with training and surge programmes? • Findings to update training contents? • Use of SimEx for training purpose? - How can COVID-19 SimEx and IAR contribute to the overall strengthening of emergency preparedness and response capacities? - How to maximize peer to peer learning/ sharing of experience at all levels? - How to collectively analyze and disseminate the evidence-based impact of SimEx, IAR/AAR activities on the timeliness and effectiveness of the response?	- Tools and systems. - Dissemination and transparency. - Peer-to-peer learning.

Note: For the list of actions proposed by participants that received two or more votes, please refer to Annex 5.

5.5. Annex 5: Prioritization of proposed actions based on voting results from participants

