# First consultation meeting on a framework
# for public health emergency operations centres

# Meeting Report

Geneva, Switzerland
27-29 April 2015

**World Health Organization**

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## Acknowledgements

# Abbreviations and acronyms

| | |
|---|---|
| AFRO | WHO regional office for Africa |
| AMRO | WHO regional office for the Americas |
| ASTM | American Society for Testing and Materials |
| CDC | Centres for Disease Control and Prevention |
| CO | WHO country office |
| CTI | Information communication technology and infrastructure |
| DGO | WHO director-general's office |
| DG SANCO | Directorate General for Health and Consumers of the European Commission |
| ECDC | European Centre for Disease Control and Prevention |
| EHR | Electronic health record |
| EM | Emergency management |
| EMRO | WHO regional office for the Eastern Mediterranean |
| EOC | Emergency operations centre |
| EOC-NET | The public health emergency operations centre network |
| EOC Framework | Framework for public health emergency operations centres |
| ERF | Emergency response framework |
| EU | European Union |
| EURO | WHO regional office for Europe |
| EVD | Ebola virus disease |
| FAO | Food and Agriculture Organization of the United Nations |
| FEMA | US Federal Emergency Management Agency |
| GHSA | Global Health Security Agenda |
| GIS | Geographic information system |
| GMG | WHO cluster of general management |
| HIS | WHO cluster of health systems and innovation |
| HQ | Headquarters |
| HSE | WHO cluster of health security |
| HVAC | Heating, ventilation and air conditioning |

| ICCS | Integrated communications control system |
| ICT | Information communication technology |
| ID | Identification |
| IHR | International Health Regulations |
| IMS | Incident management system |
| IOM | International Organization for Migration |
| ISDR | UN international strategy for disaster reduction |
| ISO | International Organization for Standardization |
| IT | Information technology |
| IVMS | Integrated video management system |
| JIC | Joint information centre |
| LAN | Local area network |
| MDSS | Minimum datasets and standards |
| MOH | Ministry of health |
| NFPA | National Fire Protection Association |
| NGO | Non-governmental organization |
| OIE | World Organization for Animal Health |
| PABX | Private automatic branch exchange |
| PEC | WHO cluster of polio and emergencies |
| P&P | Plans and procedures |
| PHE | Public health emergency |
| PHEOC | Public health emergency operations centre |
| PH NGO | Public health non-governmental organization |
| PHO | Public health organization |
| PIO | Public information office |
| PPE | Personal protective equipment |
| PST | WHO Headquarters Ebola virus disease preparedness strengthening team |
| PSTN | Public switched telephone network |
| RFID | Radio frequency identification |
| RO | WHO regional office |
| SDN | Software-defined networks |

| | |
|---|---|
| SEARO | WHO regional office for South-East Asia |
| SHOC | Strategic health operations centre |
| SOP | Standard operating procedure |
| T&E | Training and exercises |
| TOR | Terms of reference |
| TTX | Table-top exercise |
| UK | United Kingdom |
| UN | United Nations |
| VoIP | Voice/video over internet protocol |
| VPN | Virtual private networks |
| WASH | Water, sanitation and hygiene |
| WFP | UN World Food Programme |
| WHO | World Health Organization |
| WHOLIS | WHO Library Information System (library database) |
| WPRO | WHO regional office for the Western Pacific |

# Executive summary

A functioning public health Emergency Operations Centre (EOC) is an effective means of coordinating partners responding to public health events and emergencies. EOCs are central locations for strategic management of emergencies that have public health consequences. The terms used to refer to such EOCs vary widely, and include "health operations centre" and "coordination centre". To promote best practice and standards and support capacity building for EOCs, WHO has established the Public Health Emergency Operations Centre Network (EOC-NET).

In developing evidence-based recommendations for EOCs, WHO has initiated several research projects, including a series of five systematic reviews and a glossary development project. Based on research findings and expert consultations, a draft framework document was developed entitled A Framework for Public Health EOCs (henceforth the "EOC Framework"). The framework document aims to provide guidance on creating, using and assessing public health EOCs.

WHO convened the first consultation meeting on the draft framework on 27-29 April 2015 at WHO Headquarters in Geneva. More than 80 participants from 30 countries and six international organizations reviewed the research work, the draft framework document, the proposed core components matrix and the current state of the development of EOC-NET; then agreed on action points.

The consultation advised that WHO should accelerate the EOC Framework process and publish an interim framework document as soon as possible. The Framework document should be simple and focussed on core principles, and should address the following issues:

- The basic functions and core components of a public health EOC

- Clarifying the five functional domains of an EOC as management/command; operations; intelligence/planning; logistics; and finance/administration

- Core principles of how to plan, operate and assess a public health EOC

- Provision of critical user input to the planning of an EOC (planning should focus on near term functionality, but take into account the need for long term evolution of EOC capacity and capability)

- Governance/legal authority as it relates the function of an EOC

- Highlighting command, control and coordination

- Recommending a structure that is modular, scalable and adaptable, but which covers all basic functions

- Tiered and interfaced operations

- The need for related plans and procedures including policy and legislation, planning frameworks, public health emergency plans and public health EOC plans

- Information communication technology and infrastructure (CTI) including high level requirements on hardware and services; information management software; facilities; security; furniture; training and exercises for ICT and related infrastructure; human resource needs for ICT and infrastructure support and maintenance

- The need for minimum datasets and standards of operational information to fit public health response needs and match basic functions

- The necessity for fully competent staff in EOCs

- The need for EOC-related training and exercises as an integral part of the EOC planning process. The training and exercises should include a cycle of five activities: design; development; delivery; evaluation; and continuous improvement

- The need for appropriately qualified trainers.

The draft EOC Framework will be revised according to the output of this consultation and tested in volunteering countries. A checklist will be developed as a tool for piloting the EOC framework. WHO will take offers from countries to pilot these documents and validate their utility to the document.

Participants agreed to take the following key actions after the meeting:

- Develop advocacy plan and messages

- Revise the EOC Framework

- Develop draft checklists for EOC Framework

- Conduct field tests of the EOC Framework using the checklist

- Publish a summary report of the four recent reviews of EOC literature commissioned by WHO

- Accelerate development of the glossary of public health EOCs

- Publish an interim EOC Framework

- Develop a depository for training & exercises resources

- Develop practical guidance regarding specific technical areas, prioritizing guidance on communication technology and infrastructure (CTI) and minimum datasets and standards (MDSS)

- Develop a standard public health EOC training package in line with the EOC Framework

- Develop and conduct standard training for EOC management and staff

- Build a roster of EOC experts to support public health EOC projects in countries

- Further develop EOC-NET and promote collaboration between EOC members.

# Background

Public health emergency operations centres (EOCs) are central locations where strategic management of public health emergencies (or events that may constitute public health emergencies) is conducted. To build the preparedness and response capacities required by the International Health Regulations (IHR), especially during the recent Ebola virus disease (EVD) response, many Member States have requested WHO to provide guidance in establishing or improving their EOCs for public health emergency preparedness and response.

In 2012, WHO established a public health emergency operations centre network (EOC-NET) to identify and promote standards and best practices for EOC capacity building in Member States.

 Since 2013, in order to develop evidence-based EOC guidance, WHO has also conducted a series of systematic reviews, in collaboration with EOC-NET partners, on public health EOCs. The 2013 review[1] was focused on peer-reviewed literature, while the 2014-2015 reviews were focused more on grey literature.

Based on the findings of the research and expert consultations held over the past three years, WHO has developed a draft document entitled "A framework for public health emergency operations centres" (Hereafter, "EOC Framework"). The EOC Framework aims to provide guidance on creating, using and assessing public health EOCs, and defines the core components of a functioning public health EOC.

As part of the process for developing the EOC Framework, WHO held the first consultation meeting on EOC Frameworks in Geneva on 27-29 April 2015. The meeting objectives were to evaluate evidence and further develop the EOC Framework document. See Annex 1 for the meeting agenda.

To optimize the chances of success in achieving these objectives, WHO had invited a group of experts to a preparatory workshop on 22-26 April—immediately before the consultation—to review research findings and propose a set of EOC core components for discussion at the meeting (See Annex 3 for the agenda of the preparatory workshop).

The consultation was attended by over 80 participants from 30 countries and six international organizations, including representation from WHO headquarters and regional and country offices. Participants comprised experts nominated by WHO Member States; temporary advisors; experts from EOC-NET working groups; representatives from UN agencies and regional partners; key players in the Global Health Security Agenda; staff from WHO regional and country offices and various clusters/departments in Headquarters; and representatives of donor agencies. See Annex 2 for the list of participants.

A range of information was presented and discussed at the meeting, including recent EOC research projects (four literature reviews, a summary report, and a glossary); proposed matrices of EOC core components; a draft EOC Framework document; and plans for the management of EOC-NET and future activities. Participants shared experiences, discussed the challenges of establishing, using and assessing EOCs for public health emergencies, and provided advice for the development of the EOC Framework and other supporting tools.

This report summarizes the key points of these presentations and discussions.

In general, comments are not attributed to individuals.

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[1]    http://www.who.int/ihr/publications/WHO_HSE_GCR_2014.1/en/

## Opening of the meeting

The meeting was chaired by Mr. Paul Cox, Team Leader, WHO Strategic Health Operations Centre.

WHO Assistant Director-General Dr. Keiji Fukuda made the opening speech, underlining the fact that the recent Ebola virus disease (EVD) outbreak and other emergencies highlight the need for intensified implementation of the International Health Regulations (IHR), bringing health systems and capacities together to improve response management, data management, risk assessment and fast dissemination of information. He emphasized that public health EOCs should have the ability to facilitate decision-making and collect and move information, and that they play a vital role both in emergencies and in peace time.

Dr. Fukuda asked the meeting to look at the evidence and the gaps for developing EOC guidance. He argued that while the window of opportunity is limited, it is still open: the consultation should not wait for more decisive evidence, but rather should deliver interim guidance with a sense of urgency.

## Introduction of EOC-NET and its work

Mr. Paul Cox provided an overview of EOC-NET and its areas of work.

The need for a Public Health EOC Network was identified in 2011, in response to lessons identified in several major public health events and emergencies. As countries and response partners took different approaches to managing these events and emergencies, discrepancies and confusion in the flow of information made them "operationally incongruent". WHO established the Public Health Emergency Operations Centre Network (EOC-NET) in 2012 to promote best practice and standards and support EOC capacity building for effective public health responses.

At the EOC-NET launch meeting (19-20 November, 2012), representatives from WHO HQ and regional offices, Member States and regional and international organizations all committed to collaborating through EOC-NET. They declared the shared vision that:

> *…all public Health EOCs will have the capacity and capability to perform core functions to ensure an effective response to public health events and emergencies.*

Terms of reference for achieving this goal were agreed, and four priority areas of work were identified:

1. EOC communication technology and infrastructure (CTI)

2. Public health EOC minimum data sets and standards (MDSS)

3. Plans and Procedures (P&P)

4. Training and Exercises (T&E)[2].

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[2]   http://www.who.int/ihr/publications/WHO_HSE_GCR_2013.4/en/

The objectives of EOC-NET are to:

■ Develop guidance for appropriate standards and common terminologies related to public health EOCs

■ Develop appropriate toolkits for implementation of EOC standards at national level

■ Provide technical support to countries and international organizations on EOC development, assessment and information management.

In 2013, WHO, in collaboration with partners, conducted a systematic review of public health EOCs that identified a lack of standards and interoperability that was impeding the effectiveness of public health EOCs[3]. In order to make evidence-based recommendations, four reviews focused respectively on CTI, P&P, MDSS and T&E were conducted through EOC-NET in 2014 and 2015 to identify the core components of public health EOCs. A summary report of the four reviews is being developed, and will be available for public access.

Based on the research findings and further expert consultation, a draft framework document has been developed. The framework document aims to provide guidance on creating, using and assessing public health EOCs. Meanwhile, a draft EOC glossary document is also being developed.

A group of 20 experts were invited to a pre-consultation preparatory workshop on 22-26 April to review the research findings, the draft summary report of the four EOC reviews, and the draft EOC glossary document. The group—composed of review team representatives, temporary advisors and WHO staff from HQ and regional and country offices—proposed a set of EOC core components to be discussed at this meeting. Details of this proposal can be found in the section of this document on EOC core components.

Some immediate activities of the EOC-NET are proposed:

■ Further development of the EOC Framework, including tools for EOC assessment, development and improvement

■ Refinement, piloting and implementation of the EOC Framework and other tools

■ Development and implementation of standard training for EOC management and staff

■ Participation in global public health emergency exercises.

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3    http://www.who.int/ihr/publications/WHO_HSE_GCR_2014.1/en/

# EOC-NET latest research projects and findings

## Process and research teams

Dr Jian Li outlined the process and progress of six ongoing research projects – the four EOC reviews, the development of the summary report of those reviews, and the development of the glossary of public health EOCs.

In 2013, as previously stated, WHO and its partners conducted a systematic review of public health EOCs to document global best practices for effective public health emergency response by EOCs, with a focus on peer-reviewed literature. In 2014, WHO started to develop an evidence-based framework document to provide high-level guidance in building, using and assessing public health EOCs. As part of the process, further reviews were initiated to identify good practice and core components of EOCs in four specific technical areas (CTI, MDSS, P&P and T&E), examining current literature, standards, platforms and procedures in use, and other grey literature.

Calls for interest were spread through EOC-NET and relevant WHO teams, and the EOC-NET secretariat reached out to potential research teams. Due to limited funds, the tight timeframe and the large volume of work it proved difficult to attract research teams.

Individuals who expressed interest were advised to form teams and submit research proposals. Legal offices were consulted about the eligibility of applicants.

The selection of research teams was based on the assessment of team structure; team members' experience and expertise in public health emergency response and EOCs, as well as in specific areas addressed by the reviews; access to necessary resources (human resources and data); the draft proposal (the vision and approach of the work); and potential conflicts of interest. The following four teams were selected to conduct the reviews:

1.  For the CTI review: a team from Tsinghua University, China, led by Professor ZHANG Hui. Professor Zhang, the only applicant for the work, has been involved in building more than 20 EOCs in China and around the world.

2.  For the P&P review, team from James Cook University, Australia, led by Ms Rosalie Spencer. Ms Spencer has wide experience of EOCs and teaches emergency management at the university.

3.  For the MDSS review, a team from China CDC led by Dr LI Qun. Dr Li is the Director of a public health emergency centre, and is greatly experienced in coordinating emergency responses and using EOCs for effective response.

4.  For the T&E review, a team from the Greek National Health Operations Centre led by Dr Efstathiou. Dr Efstathiou is the Commander of the Greek National Health Operations Centre and has great experience in coordinating emergency responses and using EOCs for effective response.

In March 2015, six experts from US CDC joined in the review work to provide technical support, particularly to the CTI, MDSS and P&P reviews.

The four review teams worked closely with WHO at HQ and regional level through weekly teleconferences, emails and phone-calls throughout the review process, on finalizing review questions; developing search strategies; extracting data; writing discussions and conclusions; and drafting reports. The process lasted over five months.

After her team completed the P&P review work, Ms Spencer took the lead in developing a summary report of the four reviews as well as the draft glossary document for EOCs proposed by the EOC-NET secretariat.

# Review of EOC related plans and procedures (P&P)

Ms Rosalie Spencer reported on behalf of the P&P review team.

The P&P review questions and goals were as follows:

1.  What are the existing national and international standards and regulations (including legislation, codes of practice and treaties) related to preparing for and responding to public health emergencies (i.e. what regulatory frameworks exist for responding to emergencies)? Do these standards specify the role of EOCs? Do they specify the core components of PHE plans?

2.  What frameworks and guidelines exist for developing plans for public health emergencies (i.e. planning frameworks)?

3.  What PHE plans exist, both general and hazard-specific? What are the core components of these plans? Appraise the components according to a set of predetermined criteria.

4.  What frameworks and guidelines exist for managing an EOC (i.e. operational/response frameworks)?

5.  Do EOC frameworks/guidelines/plans or SOPs address general PHE, or are they hazard-specific, or both (e.g. do they have annexes about specific hazards)?

6.  What usual roles do these EOC plans and procedures describe?

7.  What core components of an EOC do these EOC frameworks describe? Include a case study. Identify minimum and optimal requirements for plans and procedures for a functional EOC.

8.  How is the effectiveness of a public health EOC measured?

9.  What are the barriers to complying with any plans and operating procedures that are activated in an EOC setting?

10. What are the gaps in research around measuring the effectiveness of (a) public health emergency (PHE) plans and (b) EOCs?

In total 298 sources of information were selected for review, including 23 peer-reviewed articles and 35 relevant standards and regulations.

## Key findings:

**1. PHE frameworks and guidelines generally included the following approaches:**

■ Risk management (identifying, analyzing and mitigating risks)

■ All-hazards approaches (common in areas with predictable high risks)

■ Multi-agency approaches (where it is often not only the health sector that responds to an emergency; this is particularly common for natural disasters)

■ Comprehensive approaches (prevention, preparedness, response and recovery)

■ A prepared community (community resilient to disaster)

■ An incident management system (in most of the findings).

2. **For general disaster management plans, general public health emergency plans, and hazard specific plans – 85 core components were found in the following four categories:**

- A basic plan (describing legislation, authority, triggers, emergency phases etc.)

- Functional annexes (describing functions of the incident management team)

- Hazard-specific annexes (response plans and general disaster plans)

- Other appendices (checklists, job cards, templates, contact lists, etc.).

3. **The most common functions/roles/components of an EOC are:**

- Command/control/coordination

- Operations

- Planning

- Logistics

- Public communication/information

- Finance/admin/policy

- Intelligence/data/information management.

4. **Public health EOCs need to add public health functions, such as:**

- Surveillance, epidemiology

- Data collection and analysis

- Disease control

- Laboratory functions

- Environmental health

- Health promotion, community engagement, and social mobilization.

5. **Findings related to measuring EOC effectiveness were as follows:**

- Effectiveness is most often measured using indicators of preparedness (e.g. whether or not there is an emergency plan, whether staff been trained, etc.)

- Some current benchmarks include response-time objectives (e.g. time taken to activate and staff an EOC, time taken to issue risk communication messages)

- Little evidence was found on measuring effectiveness of an EOC response to a public health emergency in terms of impact (e.g. time taken to identify and control the cause of an outbreak).

The team identified the following key research gaps and questions:

■ What is the best way to measure the effectiveness of an EOC's activities?

■ Is it useful/possible to measure outcomes and impacts?

■ Traditional IMS is hierarchical while public health is more collaborative in nature; a way is required to incorporate evolving public health information and learning into responses (e.g. new virus detection methods, vaccines, diagnostics or other interventions)

■ How should an incident management system best incorporate public health functions?

## Review of EOC information and communication technology and infrastructure (CTI)

Professor ZHANG Hui reported on behalf of CTI review team.

The CTI review questions and goals were as follows:

1. What are the existing standards, guidelines, regulations, requirements and policies at international, regional and national levels pertaining to CTI for public health EOCs?

2. What are the current EOC CTI best practices?

3. What are the challenges/barriers related to the development and implementation of public health EOCs?

4. What frameworks could be recommended as CTI solutions for public health EOCs, and what core components are specified?

5. What are the existing finance/cost-sharing models for public health EOCs? How is their performance measured? How effective are these models?

The review work was guided by the need to provide guidance on the technological aspects of establishing a public health EOC, based on requests from some Ministries of Health and public health agencies and WHO's plan to develop practical guidance for public health EOC technology and infrastructure.

According to agreed inclusion criteria, 155 peer-reviewed articles and 70 grey literature documents were selected, including international and national standards; documents on websites of governments and NGOs/foundations; in-use industrial guidelines/reports; interview reports; visit reports; and documents from other review teams.

### Key findings:

Core components were identified and displayed in a table covering six categories of findings (ICT hardware and services; information management software; infrastructure; training and exercises; human resources needs; and support) over two EOC types (permanent/static EOC, portable/field EOC). As discussed with WHO and the CTI working group, each component was given a requirement level designation (basic, general, optimum or specialized) and emergency management phase designation (mitigation, preparedness, response and all phases).

The table was further developed at the preparatory workshop before the consultation[4]. For detail please see the final table in the section of this document on EOC core components.

The review team advised that an EOC CTI system should be created to function not only in the present but also for at least the five years following installation. The future of EOC CTI appears headed towards a unified ICT system, cloud- & mobile-based, with the capacity to handle and display multidimensional data. EOC software should be scalable, modularized, based on cloud computing and with improved functions for prediction, multi-sector and multi-level collaboration, and the ability to process and visualize massive amounts of data from various sources (resources/facility).

## Review of EOC related training and exercises (T&E)

Dr Panos Efstathiou reported on behalf of the T&E review team.

The T&E review questions and goals were as follows:

1.  What are the existing national and international standards and regulations related to public health emergency (PHE) training programmes and exercises (i.e. what regulatory frameworks exist for conducting training programmes and exercises)? Do these standards refer to EOC training programmes and exercises?

2.  What frameworks and guidelines exist for developing and conducting PHE training programmes and exercises (i.e. how a curriculum is developed; key staff competencies/standards of competencies; existing types of training activities and techniques; and how training activities and exercises are evaluated)?

3.  What PHE T&E exist, both general and hazard-specific? What are the core components of these training programmes and exercises?

4.  What frameworks and guidelines exist for public health EOC training programmes and exercises?

5.  What public health EOC training programmes and exercises exist, both general and hazard-specific? What are the core components of these training programmes and exercises? How are they evaluated for effectiveness?

6.  What are the gaps in research on evaluating PHE and EOC training programmes and exercises?

A total of 216 sources in the grey literature and 46 in peer-reviewed literature were selected. Grey literature sources included the websites of WHO's six regional offices, WHOLIS, national government sites, regional and international standards organizations, public health and aid organizations, academic research institutes and associations, training sites, materials shared by review teams, and others.

### Key findings:

Training and exercises should be regarded as integral parts of the emergency planning process.  Each EOC should have in place a multi-year training and exercise plan that integrates strategic, high-level priorities informed by existing assessments, strategies, and plans.

The training and exercise cycle includes five steps: design; development; execution or delivery; evaluation; and continuous improvement.

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[4]    See Annex 3, Preparation Workshop Agenda.

'Training' is instruction in core competencies and skills. It is the principal means by which individuals achieve a level of proficiency. Training provides the tools needed to accomplish a goal, meet programme requirements and acquire a specified capability. A training plan should include a training goal, learning strategies, training prerequisites, logistics and equipment requirements, identification for trainees and trainers, time and place of training, and an assessment process.

All personnel working in an EOC should be trained in the functions, roles and procedures they will undertake in the EOC. The review suggests some "core" competencies that all public health care workers should possess and specific competencies applicable to particular roles, positions or professions, as well as the levels of proficiency required.

Based on competencies and requirements for public health preparedness capabilities, training curriculums should include general management; public health emergency management; EOC basics (organizational structure and staffing, main functions, roles and responsibilities, design, technology and equipment); ethics and integrity; incident management; information management; communication management; finance and administration; IT and communications technology; biosurveillance; community resilience countermeasures and mitigation; and surge management.

Training records should be kept either electronically or as hard copies or both, and should be organized in such a manner as to be retained, identifiable and accessible.

'Exercises' are events that allow participants to apply their skills and knowledge to improve operational readiness. The primary purpose of an exercise is to identify areas that improve an EOC's capability. Planners use exercises to validate plans and evaluate effectiveness. An exercise can determine whether policies and procedures are effective, training is up to standard, and adequate resources are available.

There are two broad categories of exercises: discussion-based (including orientation seminars and table-top exercises); and operations-based (including drills, functional exercises, and full-scale exercises). Types of exercises and areas to be tested, as well as factors to be considered, are listed in Table 4. EOC staff should participate in exercises of increasing complexity. For an exercise to be useful, it must be accompanied by an evaluation.

Based on core capability gaps identified in T&E, a corrective action programme or plan should be developed to improve an EOC's capabilities.

## Review of EOC operational information minimum dataset and standards (MDSS)

Dr Jian Li reviewed the special challenges encountered by the MDSS review, and the efforts made to move forward.

MDSS turned out to be the most difficult review category among the four, as little information exists in the literature about core components of minimum data sets for EOC operational information. Having worked closely with the WHO team (HQ and regional) for four months, the review team was advised to look into in-use EOC information platforms. The team managed to access and analyze in-use platforms from national, provincial, city and county level CDCs in China, along with other commercial or non-commercial systems in other countries, and systems described by in the literature; WHO meanwhile reached out to several national EOCs asking for demonstration of their in-use EOC platforms for inclusion in the research. US CDC shared information about their EOC platform and offered a group of experts to join the review work in March.

Dr SUN Hui reported the review work on behalf of the MDSS review team.

The MDSS review questions and goals were as follows:

1.  What information is needed for EOC operation?

2.  What are the components of EOC operational data?

3.  What are the sources of EOC operational data?

4.  How is operational information used?

5.  Are there any standards on EOC information?

6.  What are the existing problems for EOC information management?

The review included a total of 93 peer-reviewed papers (journal articles, conference papers, book sections), 28 standards, and 32 other documents (frameworks, guidelines, government reports, etc.), as well as 13 in-use information systems/platforms.

## Key findings:

An EOC's roles in information management include collecting, processing, storing, displaying and disseminating data and information, as well as protecting data intrinsic to the EOC's operations. An EOC provides critical information for decision-making, emergency coordination, directing and supporting emergency response activities, and updating situational awareness for all responders and partners. Effective information sharing can improve emergency coordination and communication.

EOC information sources include both public health and non-public health sources, such as:

- Ongoing surveillance systems

- Health systems data (hospitals, health agencies)

- Other agencies (WHO, other public health agencies, public health NGOs)

- Reports from lower level public health agencies

- Response teams (deployed to the field)

- Other branches of the EOC agency

- Other departments and agencies (department of agriculture, department of environment, water supply companies, etc.)

- NGOs and other partners

- Media.

Some typical problems pertaining to EOC information management are listed below:

Data and information are collected and owned by a large number of organizations at different levels, such as the field, local EOCs, hospitals, etc.; but they are not shared among responders and partners sufficiently or in a timely manner. There is lack of defined and practical procedures for information gathering and reporting. For some jurisdictions, existing information technology is inadequate.

The review found no standardized definitions of specific terms for use in public health EOCs, and no consensus on EOC datasets and data components.

The team listed emergency response-related data categories from existing standards, and the common information categories and data/datasets collected by various EOC platforms.

However, as there is as yet no consensus on EOC core functions and tasks, the list of EOC minimum datasets is not completed. The team proposed a matrix describing the minimum dataset. At the preparatory workshop, a template for MDSS was developed (see Table 5). This template—which contains a small subset of the necessary information for exemplary purposes and should NOT be perceived as a comprehensive minimum data set—used the functional model proposed by WHO, split into categories of command/management, operations, intelligence/planning, logistics, and finance/administration. Details can be found in the section of this document on EOC core components.

## Summary report of the four EOC reviews

Ms. Rosalie Spencer introduced the draft summary report of the four reviews.

WHO is trying to produce a simplified, condensed, information product at minimum cost, summarizing the four reviews so that the public will have easy access to their research work and findings. The findings of the research work have been incorporated into the draft EOC Framework. The report will summarize the process, methodology, and key findings of the four EOC reviews (of CTI, P&P, T&E and MDSS), keeping terminology consistent across the four reviews.

The draft format of the summary report at this stage is as follows:

1. Executive summary

2. Introduction

3. Methods: review questions; overview of search strategies; search results; critical appraisal

4. Discussion of each review team's findings

5. Gaps in research

6. Overall conclusion of four reviews

7. References.

## Glossary for public health EOCs

Ms. Tammy Allen summarised progress to date in developing a glossary for public health EOCs.

There are numerous inconsistencies in the terminology used around emergency management and EOCs, and single terms may have various interpretations when used by different agencies/EOCs. Such inconsistency is a significant challenge to effective coordination and communication. A common terminology is needed for public health EOCs.

The P&P review team was tasked with drafting a glossary document based on key EOC terms found in the 2013 systematic review and the four area-specific reviews carried out in 2014 and 2015, as well as the draft EOC framework document.

The team first listed key terms from the P&P review report, the other four review reports, and the framework draft document. Terms and definitions were then identified from existing glossaries/standards and compared.

The first draft contained 300 listed terms. A total of 51 relevant glossaries and lists of abbreviations and acronyms were identified in existing PHE plans, frameworks and guidelines; publications of key organizations as WHO, FEMA, US CDC, NFPA and Emergency Management Australia; and standards including ISO and ASTM.

Definitions were extracted from 37 of the above-listed existing glossaries for comparison. Where applicable, multiple definitions have been suggested for some terms; while some terms have no definitions. The work is still ongoing, with terms and definitions still to be extracted from the remaining 14 glossary documents.

After all terms and definitions are extracted, a methodology should be developed for determining the final list of terms and definitions. The Delphi process might be considered, as might other consultation methods involving a range of different user groups.

## Framework for Public Health EOCs – draft document

Mr. Paul Cox introduced the draft EOC Framework document.

Historically, some guidance documents on health emergency operations and developing critical infrastructure for EOCs were drafted several years ago. The initiative to develop the Framework for Public Health EOCs is based on previous work and the research findings, as well as expert opinions from a series of consultations. It also makes reference to emergency management programmes.

The project's mission is to promote sustainable emergency management capability that enables an organized response to public health events.

The EOC Framework provides a broad overview or outline of key considerations for establishing, improving and assessing a public health EOC. The focus is on the EOC facility, how it works, and how to sustain it. The final document must be easy to read, simple and practical. Translation into other languages is considered.

The first draft, a work in progress, was distributed to meeting participants for comments. The content is subject to change. Currently it focusses on purposes and is descriptive of 'best practices,' but is not overtly prescriptive.

### Planning an EOC

When planning an EOC, users must provide critical planning input ('users' in this context meaning people who will work in the facility and/or be responsible for its output and effectiveness). A planning or steering committee consisting of users should be formed to guide EOC development. It should plan for long term evolution of EOC capacity and capability, but focus on near term functionality.

### Legal authority

Governance is critical. A directive is necessary that establishes legal authority for the EOC, with a mandate to provide leadership and coordinated response policy.

### Tiered and interfaced operations

The framework needs to provide a description of how various levels of EOCs work together and how coordination occurs between the levels. It should also outline the possible thresholds for activating a higher level of EOC.

**Command, control and coordination**

The framework emphasizes the need to develop command, control and coordination capacities. The recommended structure is modular, scalable and adaptable, but basic functions must be covered. The command, control and coordination concept is flexible.

The draft will be further developed according to the output of this consultation, and a checklist will be developed to support implementation of the EOC Framework. WHO will then take offers from countries interested in piloting these documents and validating their utility. Participants were requested to provide feedback on the draft distributed at the meeting.

# EOC core components

In the week before this meeting, a group of 20 experts comprising representatives from the review teams, the EOC-NET secretariat, WHO Regional Offices and HQ, and selected experts who have supported the review work and the EOC-NET initiative gathered together to cross-check their findings on EOC core components (See Annex 3 for the preparatory workshop agenda). The 20 experts worked out a core components matrix for each of the technical areas, and these were brought to the consultation. These matrices will support the EOC Framework.

**P&P draft matrix**

Ms. Rosalie Spencer and Mr. Eric Sergienko presented the group work on the draft P&P matrix for EOCs.

As the group agreed it would be impossible to cover everything, this matrix aims to cover the minimum requirements, capturing 80% of the core components for plans and procedures of an EOC.

The core components of EOC-related plans and procedures were grouped into the following four categories for three levels of EOC capacities: basic, general and optimal  (see details in Table 1):

1. **Policy & legislation**

   Regardless of the level of the EOC, there is a need for it to have the legal authority to manage a public health emergency, and to have policy that supports emergency management principles in dealing with public health emergencies.

2. **Planning framework**

   Basic requirements include risk analysis and principles of command, control, and coordination that address operations, planning, logistics, finance and administration, such as the Incident Management System.

3. **Public health emergency plans**

   Basic requirements include a base plan, preferably an all-hazard plan, and a business continuity plan.

4. **EOC plans**

   Basic requirements should cover incident management functions, public health functions and human resources.

Two questions were raised by the team:

- How do we define basic, general and optimal?

- Can we provide means for cost estimates for initial implementation and for sustaining key functions?

The expert group also identified some research gaps too; for more information, see Table 1.

## Table 1. P&P draft Matrix

**Recommended plans and procedures frameworks for public health emergency operations centres**

| Category | Level | Description | Details |
|---|---|---|---|
| Policy and legislation | All | Legal authorities to manage public health emergencies<br>Policy supports emergency management principles in public health emergencies | |
| Planning framework | Basic | Limited risk analysis, all-hazards approach that is response-focused, but may have components of other emergency management phases, responding partners identified<br>Uses principles of command, control, and coordination that address operations, planning, logistics, finance, and administration, such as the Incident Management System | |
| | General | Comprehensive risk management, all hazards approach that is response-focused but includes aspects of all phases of emergency management, whole health, liaisons with appropriate agencies, preparedness/resiliency goals established<br>As above | |
| | Optimal | Comprehensive and integrated risk management, all-hazards approach that addresses all phases of emergency management, whole health, incorporates all agencies, prepared/resilient community<br>Adopts and is integrated with the national system for incident management | |
| Public health emergency plans*<br><br>*These are agency-level plans that allow the efficient functioning of the agency in a public health emergency | Basic | Base plan only<br>- Preferably an all-hazards plan, that is mostly response focused.<br>- May be hazard specific if there is no existing plan at the time of a public health emergency.<br>If a hazard specific base plan is developed it should be expanded to an all-hazards plan at the earliest opportunity.<br><br>Business continuity plan | Base plan including:<br>- Introduction<br>- Purpose, scope, situation overview, guiding principles, planning assumptions<br>- Concept of operations: response phases, incident levels or grades<br>- Triggers and authority for EOC activation<br>- Assignment of responsibilities<br>- Command, control, and coordination system that addresses operations, planning, logistics, finance, and administrative functions<br>- Authorities<br><br>None |
| | General | Base plan and expanded annexes and appendices as permitted by planning resources<br><br>Business continuity plan | Base plan<br>- Introduction<br>- Purpose, scope, situation overview, guiding principles, planning assumptions<br>- Concept of operations: response phases, incident levels or grades<br>- Triggers and authority for EOC activation<br>- Assignment of responsibilities<br>- Command, control and coordination system that addresses operations, planning, logistics, finance, and administrative functions<br>- Developed response plan with potential for concepts of operation for preparedness and resiliency<br>- Authorities<br>- Functional annexes<br>- Hazard-specific annexes<br>- Appendices<br><br>Plan developed as an appendix to the base plan to address reduction in routine services |
| | Optimal | Comprehensive plan<br><br>Business continuity plan | Includes:<br>- Base plan: Contents as above<br>- Prevention/preparedness/response/recovery/mitigation components as separate plans<br>- Functional annexes<br>- Hazard-specific annexes<br>- Branches and sequels**<br>- Appendices<br>- SOPs for EOC operations<br>- Etc.<br>**Branches and sequels definition is in the attached glossary<br><br>Well-developed stand-alone plan that addresses continuity of operations |

| EOC Plan core components | | | |
|---|---|---|---|
| | Basic | Incident management functions:<br><br>Command /control /coordination function, operations, planning, logistics, public communication /information, finance / admin /policy, and information management | - All functions need to be addressed but may be assumed by a higher level in the absence of an established section<br>- Impact to routine programmes secondary to diversion of personnel and resources to any response |
| | | Public health functions:<br><br>Threat and hazard specific examples to right | - Epidemiology: data collection, data analysis, disease control, laboratory data management<br>- Environmental: safe burial, WaSH<br>- Health promotion: community engagement |
| | | Human resources | - Roster of watchstanders/duty officer available 24/7 to respond to notification of a potential public health emergency and initiate operations in the PHEOC as needed<br>- No requirement for full-time dedicated PHEOC staff<br>- Additional staffing for functional roles within the PHEOC is obtained from other programmes as needed to manage the incident.<br>- Funding mechanisms to be determined by the member state |
| | General | Incident management functions:<br><br>Command/control/coordination function, operations, planning, logistics, public communication /information, finance /admin /policy, and intelligence/data/information management | - Ability to staff key EOC functions with limited scalability<br>- Impact to routine programmes secondary to diversion of personnel and resources likely for any large scale or sustained response. |
| | | Public health functions:<br><br>More depth and breadth in all areas of public health with examples as shown on right | - Epidemiology: early warning, data collection, complex data analysis, better data display and ability to share<br>- Disease control: mass prophylaxis, mass vaccination, contact tracing, quarantine<br>- Environmental:Vector control, safe food and water<br>- Laboratory: expanded capability, able to test for other diseases of concern<br>- Health promotion: community participation |
| | | Human resource | - Dedicated limited number of personnel (1-2) staffing a PHEOC watch desk during business hours.<br>- Roster of watchstanders/duty officers available 24/7 to respond to notification of a potential public health emergency and initiate operations in the PHEOC as needed.<br>- Additional staffing for functional roles within the PHEOC is obtained from other programmes as needed to manage the incident.<br>- Funding mechanisms to be determined by the member state |
| | Optimal | Incident management functions:<br><br>Command/control/coordination function, operations, planning, logistics, public communication /information, finance /admin /policy, and intelligence /data /information management | - Ability to staff an expanded and protracted response with sufficient number of personnel to meet all requirements.<br>- Ability to sustain modified routine programs for sustained periods of time |
| | | Public health functions:<br><br>Can fulfil all requirements needed to manage a public health emergency (examples to the right) | - Epidemiology: advanced data analysis, graphic display, and geospatial mapping, common operating picture of outbreak maintained<br>- Environmental: monitoring, mapping, and analysis of environmental exposures (chemical, radiological)<br>- Laboratory: ability to coordinate lab response<br>- Health Promotion: social mobilization, community participation |
| | | Human resources | - Dedicated watchstanders 24/7 maintaining situational awareness within the PHEOC and able to perform initial actions in a potential public health emergency<br>- Additional staffing for functional roles within the PHEOC is obtained from other programmes as needed to manage the incident<br>- Funding mechanisms to be determined by the member state |

## Items in question

| How do we define basic, general, and optimal | It is essential to have a common understanding of what these levels are. Are they resource driven, function-driven, something else? |
|---|---|
| PHEOC costing | Potential to put work sheet in the framework to project start-up costs and sustainment costs of PHEOC, but this would have to address local cost estimates |

### Identified gaps

| Topic | Description | Suggested response |
|---|---|---|
| Integrated response | It is recognized that horizontally and vertically integrated responses between agencies and other partners can be valuable in an incident response. | Review existing literature from other sectors (e.g. business, military, agriculture, etc.) for translatable research on joint and unified operations. <br><br> Conduct original research in emergency management integration of operations. |
| Incident management optimization for public health | Is the traditional incident management system (IMS) the most effective way of operating a public health emergency operations centre? Can the traditional IMS be adapted to respond better to public health emergencies? For instance, are scientific/technical experts best placed at the command of an IMS, or within an existing section (such as operations), or within a specially-established separate section? | Conduct original research in implementation and effectiveness of using an IMS in public health emergencies, including in exercises and real events. |
| IMS generalisability | There is an assumption that all countries use an incident management system, but this may not be the case. <br><br> If a 'model' public health IMS or EOC is developed, will it be adaptable to all countries? | - Map commonalities and differences in command, control & coordination systems in use globally. Identify success stories and determine broader applicability to public health EOCs. <br> - Build a PHEOC framework that would be adaptable to differing countries/regional needs. |
| PHE metrics | What is the best way to measure the effectiveness of an EOC? Is it possible, useful and/or best practice to measure outputs, outcomes and impacts (e.g. output – number of vaccinators, outcome – number of people vaccinated, impact – outbreak is stopped)? <br><br> Apart from disease-related indicators, what other indicators should be measured? (e.g. environmental health measures on water quality, asbestos risk, waste management; risk communication measures on awareness of risk and behaviour change) | - Develop (or find) measures of: <br>  o EOC preparedness <br>  o EOC processes <br>  o EOC outcomes and impact <br> - Identify historical references/emergencies/outbreaks which did and did not use an IMS/EOC to respond, as benchmarks to determine the effectiveness of using an EOC. <br> - Model outbreak scenarios to be used as benchmarks against actual responses |
| Barriers | What are the barriers to complying with plans and operating procedures activated in an EOC? | - Survey of public health staff to identify their concerns with implementation of PHEOC and incident management system <br> - Literature review of barriers to complying with plans and procedures in a PHEOC <br> - Develop implementation strategies that address these concerns |
| IHR compliance | A lot of PHE preparedness literature focuses on communicable disease control. What is the role of the PHEOC in all-hazards responses that do not involve communicable disease? | - Survey existing PHEOCs and determine their roles in all-hazards public health emergencies. <br> - Review of the literature for PHEOC use in all-hazard responses not associated with communicable diseases. |

# CTI draft matrix

Professor ZHANG Hui presented the group work on the draft CTI matrix.

This matrix was developed based on the findings of the CTI review by the experts at the preparatory workshop, who tried to incorporate a practical list based on both the research findings and their own experience.

The matrix grouped the CTI core components in six categories, as laid out below, for two types of EOCs—permanent/static EOCs and portable/field EOCs. Each component was assigned a requirement level code (basic, general, optimum or specialized) and an emergency management phase code (mitigation, preparedness, response and all phases). The six components of core categories were:

1. ICT hardware and services

   ➢ office equipment, telecommunications equipment, technological infrastructure and telecommunications infrastructure including telecommunications software

2. Information management software

3. Infrastructure (facilities, security, furniture)

4. Training and exercises for ICT and infrastructure

5. Human resources needs

6. Support and maintenance.

See Table 2 for the full list.

Mr. Jered Markoff then explained WHO's approach to developing a useful CTI tool.

This list should not be seen as prescriptive; rather, it was proposed that the table should highlight basic requirements. Participants are requested to provide inputs to the matrix and the team will adjust the table accordingly. The final list will support the EOC Framework and the development of an EOC ICT guidance document.

## Table 2: CTI draft matrix

Legend: B=Basic, G=General, O=Optimal, S=Specialized, M=Mitigation, P=Preparedness, R=Response, A=Throughout all phases

| | | | Static / permanent EOC | Portable / field EOC |
|---|---|---|---|---|
| 1. ICT hardware, services and security (office equipment, telecommunications equipment, technological infrastructure, telecommunications infrastructure including telecommunications software, IT security) | 1.1 Office equipment | Printer | B | B |
| | | Copier | B | B |
| | | Fax (if applicable) | B | B |
| | | Scanner | B | B |
| | | Multi-functional printer (as alternative to the above) | B | B |
| | | Plotter | O | |
| | | Multi-line fax system (if applicable) | O | |
| | | Supplies for office equipment | B | B |
| | 1.2 Telecommunication equipment and services | Radio base station | G | G |
| | | Handheld portable radios | G | G |
| | | Satellite data communication (primary or backup) | O | O |
| | | Satellite telephones | O | G |
| | | Public Switched Telephone Network (PSTN) | B | O |
| | | Basic internet connectivity | B | B |
| | | High speed internet connectivity | G | G |
| | | Audio-visual multi-point conferencing bridge or equivalent services | G | O |
| | | Repeater / tactical communication bridge | S | S |
| | | Permanent network connections between sites and centres located outside EOCs (if applicable) | O | O |
| | | Private Automatic Branch Exchange (PABX) | G | O |
| | | Telephone / video conferencing | B | G |
| | | Web conferencing | G | G |
| | | Messaging system (telephone, instant messaging) | G | G |
| | | E-mail system / services | B | B |
| | | Voice / video over IP (VoIP) | G | O |
| | | Integrated communications control system (ICCS) (radio & telephone) | S | S |
| | 1.3 Network infrastructure | Network devices (switch, router) | B | B |
| | | Local area network (LAN) | B | O |
| | | Wireless network | G | G |
| | | Information broadcast and exchange | O | O |
| | | Network redundancy | O | O |
| | | Network virtualisation / Software-defined networks (SDN) | S | S |
| | 1.4 Technological infrastructure | Computers (desktop / laptop / tablet) | B | B |
| | | Data storage (physical / virtual) | B | B |
| | | Servers (physical / virtual) | G | G |
| | | Cable / satellite / internet television | G | G |
| | | DVD / Blu-Ray player / recorder | B | G |
| | | Large video display / video wall / projector | B | B |
| | | Video & audio matrix switch | G | O |
| | | Central (remote) control system | O | O |
| | | Media streaming | O | O |
| | | Field substance detectors | S | S |

| | | Audio system | B | B |
|---|---|---|---|---|
| | | Wireless sensor networks | S | S |
| | | Radio frequency identification (RFID) | S | S |
| | | GPS devices | S | G |
| | | Remote imaging system | S | S |
| | | Digital recorder | O | O |
| | 1.5 IT security | Firewall | B | B |
| | | Encryption | B | B |
| | | Virtual private networks (VPN) | G | G |
| | | Anti-virus / -malware | B | B |
| | | Vulnerability scanning | G | G |
| | | Local data redundancy | B | B |
| | | Network data storage / redundancy | G | O |
| | | "Cold" off-site backup strategy | B | B |
| | | "Warm" off-site backup strategy | G | G |
| | | "Hot" off-site backup strategy | O | O |
| | | Rapid service recovery | O | O |
| | | System administration security | G | G |
| 2. Information management software | 2.1 Functions | Predictive analysis & modelling | GA | GA |
| | | Surveillance (health / all hazard), analytics, and statistics | GA | GA |
| | | Alert / early warning | BP | BP |
| | | Planning | BP | BP |
| | | Emergency call-taking & dispatch | GA | GA |
| | | Emergency evacuation system | SR | SR |
| | | Risk management | GA | SA |
| | | Data / situation analytics | GR | GR |
| | | Tasking & on-scene command | BA | BA |
| | | Roster / human resource management | GA | GA |
| | | Resource management (administrative) | GA | GA |
| | | Contact management | BA | BA |
| | | Conferencing & communication scheduling system | BA | BA |
| | | Activity logging | BA | BA |
| | | Collaboration platform | GR | GR |
| | | Data management (collection / analysis / sharing) | BA | BA |
| | | Document management | BA | BA |
| | | Knowledge management | GA | GA |
| | | Training | GA | GA |
| | | Reporting / visualisation | BA | BA |
| | | Geographic information system (GIS) | GA | GA |
| | | Electronic health record (EHR) system | GA | GA |
| | | Public communication | BA | GA |
| | 2.2 Characteristics | Server-based | G | G |
| | | Cloud-based | O | O |
| | | Standalone | B | B |
| | | Real-time / dynamic | G | O |
| | | Optimised for mobile devices | G | G |

| | | | | |
|---|---|---|---|---|
| | | Interoperability | G | O |
| | | Scalability | G | O |
| | | Modularity | O | O |
| | | High availability | B | G |
| | | Multi-language interface | O | O |
| | | Open source | O | O |
| | | Proprietary | S | S |
| | | User friendly | B | B |
| | | Specialized (for experts) | O | O |
| | | Virtual EOC | O | O |
| 3. Infrastructure (facilities, security, furniture) | 3.1 Premises support | Dedicated building in proximity to decision makers | O | O |
| | | Multi-purpose space converted within reasonable time frame (e.g. one hour) | B | B |
| | | Dedicated room / suites | G | G |
| | | Emergency service call room | B | B |
| | | Separate meeting rooms for priority discussion | G | O |
| | | Conference room | G | O |
| | | Surveillance room | G | O |
| | | Operations room | G | G |
| | | Briefing space for visitors and media | G | O |
| | | Public information office/joint information centre (PIO/JIC) and media | G | G |
| | | Room to house external and non-jurisdictional entities | O | O |
| | | Communication equipment room | G | O |
| | | Separate communication centre (emergency call room) | O | O |
| | | Storage room | G | G |
| | | Cloakroom | O | O |
| | | Medical treatment space | O | O |
| | | Break and recreational Space | O | O |
| | | Staging area for transport (air or land) | O | O |
| | | Access to personal hygiene facility | B | B |
| | | Personal hygiene (shower and laundry) and related supplies | G | O |
| | | First aid | G | G |
| | | Water & food availability & storage | B | B |
| | | Standalone water supply | S | S |
| | | Lighting | B | B |
| | | Mains electricity power supply | B | B |
| | | Backup diesel generator | B | B |
| | | Uninterruptible power system (potentially with filtering capability) | B | G |
| | | Broadcasting system | G | G |
| | | General environment control (air conditioning, ventilation, lighting, etc.) | G | O |
| | | Stand-alone HVAC (heating, ventilation and air conditioning) system | O | O |
| | | Cabling system infrastructure | B | O |
| | | Acoustic treatment | O | O |
| | | Built-in levelling system | S | G |

| | | | | |
|---|---|---|---|---|
| | | Light tower / remote area lighting system | S | O |
| | | Emergency alarm system | G | G |
| | | Weather-resistant fold-out shelter system | S | B |
| | | Mobile signal blocker / booster | S | S |
| | | Dedicated space for ICT support | G | O |
| | 3.2 Furniture | Workstation with space for computer, display, keyboards, mouse, telephone, stationery, etc. Retractable arm stand for display may be considered | B | B |
| | | Chairs | B | B |
| | | Console with adjustable viewing angles and sight lines | G | G |
| | | Easily access to personal power outlets | B | B |
| | | 360 degree chair rotation | G | G |
| | | Pneumatic seat height | G | G |
| | | Backrest angle / height / depth | G | G |
| | | Ergonomic and modular design of console | O | O |
| | | Dimmable workstation task lighting | O | O |
| | | Seat angle and tension control | O | O |
| | | Seat lumbar pump | O | O |
| | | Seat armrest height / rotation / swivel / width | O | O |
| | | Seat headrest height / depth | O | O |
| | 3.3 Premises security | Surveillance / integrated video management system (IVMS) | G | G |
| | | Perimeter protection | G | G |
| | | Dangerous goods scanning | G | G |
| | | Access control | G | G |
| | | Flood prevention | G | G |
| | | Disaster protection (natural or human-incurred) | B | B |
| | | Public address system | G | G |
| | | Fire protection | B | B |
| 4. Training and exercises for ICT and infrastructure | 4.1 Improve relevant ICT skills of the EOC users | | B | G |
| | 4.2 Specialised training for ICT support staff | | G | G |
| | 4.3 Induction for EOC users on facility utilisation | | B | G |
| | 4.4 Simulation involving use of facilities and ICT infrastructure | | G | O |
| | 4.5 Evaluate readiness based on results of simulation(s) | | O | O |
| 5. Human resource needs for ICT and infrastructure | 5.1 EOC facility manager | | G | O |
| | 5.2 Information management | | G | G |
| | 5.3 ICT support | | B | B |
| | 5.4 GIS specialist | | O | O |
| 6. Support and maintenance | 6.1 Hardware support and maintenance | | B | B |
| | 6.2 Software support and maintenance | | B | B |
| | 6.3 Maintenance of premises | | B | B |

# T&E draft matrix

Ms Panagiota Manti presented the group work on the T&E matrix.

According to the research, EOC-related training and exercises should be an integral part of the EOC planning process and should follow a cycle of activities: training and exercise design; development; delivery; evaluation; and continuous improvement using evaluation results.

A training needs assessment can determine what people should know and be able to do; then, based on what they know and can do, training should be designed to fill in gaps.

To develop the draft T&E matrix of competencies, the experts at the preparatory workshop first tried to reach consensus on the functions of public health EOCs, then mapped competencies found in the literature review to these functions.

The indicative competencies fall in two broad categories: core competencies that all EOC staff should possess, and specific competencies required by public health professionals working at an EOC. These were matched with functions/roles and public health technical areas, with consideration of the level of proficiency (awareness, knowledge and advanced level) required for each. See Table 3 for a full list.

This table was intended to capture known skills and abilities of people working in an EOC, and how these can be manifested at a variety of different levels.

In a new EOC, personnel must have a basic level of competence to start with; the training programme should then advance them to a higher level of capability.

Departments of human resources can use this table to formulate job descriptions and classify jobs based on the knowledge, skills and abilities required, and develop sub-competencies for the role and function of each person in the EOC. For this reason, constant dialogue is required with the owners and sponsors of the EOC. The table is a working tool for training officers and human resource officers.

The T&E draft matrix of exercise types and areas to be tested (Table 4) is the outcome of the literature review, and needs to be trialled. The table also lists factors to be considered when selecting exercise types.

This table can provide guidance on decision making when choosing to have an exercise; and on selecting the most appropriate exercises based on capability, capacity and experience.

Building capacity—including capacity to do exercises internally—in periods between major events, or 'in peacetime,' is crucial.

## Table 3: T&E draft matrix of competencies

| 1. Indicative competencies for EOC functions: knowledge, skills and abilities | |
|---|---|
| **Functions** | **Competencies** |
| Policy | ■ Identify current health trends and gather information that can inform options for policies, programmes and services<br><br>■ Recognize the value in having an incident command structure during an emergency situation<br><br>■ Identify limits to legal knowledge, skill, and authority and identify key system resources, including legal advisors, for referring matters that exceed those limits<br><br>■ Describe the legal authorities related to the distribution and dispensation of medical supplies and the effect of a state and/or federal emergency or public health declaration on those authorities |
| Planning | ■ Contribute to the development and implementation of the organizational strategic plan and emergency plans<br><br>■ Gather appropriate information for evaluating policies, programmes and services<br><br>■ Apply strategies for continuous quality improvement<br><br>■ Verify the credibility of information sources<br><br>■ Use analytical tools to analyze information and recommend specific actions |
| Command | ■ Demonstrate an ability to set and follow priorities, and to maximize outcomes based on available resources<br><br>■ Demonstrate an ability to fulfill functional roles in response to a public health emergency<br><br>■ Develop staff by providing opportunities for professional development for individuals and teams (e.g., training, mentoring, peer advising, coaching) and encouraging use of professional development opportunities by individuals and teams<br><br>■ Manage organizational change to modify practices in consideration of changes (e.g. social, political, economic, scientific)<br><br>■ Facilitate collaboration with internal and external emergency response partners<br><br>■ Demonstrate advanced problem solving skills under emergency conditions<br><br>■ Utilize staff and technology to maintain situational awareness<br><br>■ Distinguish the roles of staff involved in collecting and disseminating information for audiences (e.g., self, coordinator, public information officer, technology/IT departments)<br><br>■ Distinguish routine from urgent management information<br><br>■ Classify information for internal and external audiences<br><br>■ Clarify the roles of team members in an incident management system<br><br>■ Summarize the roles and responsibilities of public health personnel in a variety of public health emergencies and in the incident management system<br><br>■ Demonstrate commitment to personnel safety by employing protective behaviours according to changing conditions, personal limitations and threats<br><br>■ Categorize and evaluate potential threats and emergencies<br><br>■ Describe the relationship between protective measures and behaviours, and reduction of worker risk of injury or illness<br><br>■ Employ practices to minimize exposures to agents and hazards during an emergency<br><br>■ Know and act within the scope of federal, state, tribal, and local statutory and regulatory authority during public health emergencies and through state and/or federal declarations of emergency |
| Communications | ■ Differentiate between risk communication and emergency crisis communication<br><br>■ Prepare and deliver messages using the principles and guidelines for crisis and risk communication<br><br>■ Demonstrate cultural sensitivity as essential to communicating with diverse populations<br><br>■ Convey information to professionals, personnel and the public using a variety of approaches (e.g., reports, presentations, press releases, emails, social media, etc.)<br><br>■ Communicate effectively in writing and orally, in person and through electronic means, with linguistic and cultural proficiency<br><br>■ Maintain relationships with diverse community partners to assist with communicating preparedness planning and population-specific messages<br><br>■ Verify the credibility of information and sources |

| Operations | ■ Interpret and communicate procedures in emergency operations plans related to information management |
| --- | --- |
| | ■ Recognize and report information potentially relevant to the identification and control of an emergency through the chain of command |
| | ■ Know and manage or apply decontamination or disinfection procedures as necessary |
| | ■ Use information technology in accessing, collecting, analysing, using, maintaining, and disseminating data and information |
| | ■ Use informatics standards |
| | ■ Apply ethical principles in accessing, collecting, analysing, using, maintaining, and disseminating data and information |
| | ■ Determine quantitative and qualitative data and information |
| | ■ Collect, analyse and interpret data to determine validity and reliability |
| | ■ Practice process improvement |
| Logistics | ■ Support information system development |
| | ■ Administer procurement procedures and protocols, particularly those most relevant to public health |
| | ■ Perform IT systems operations and maintenance |
| | ■ Use inventory management systems |
| | ■ Plan and implement distribution systems |
| | ■ Know hazardous materials regulations |
| | ■ Practice supply chain management |
| | ■ Know human resource policy, procedures, recruitment and rostering practices |
| | ■ Provide or administer facilities maintenance services |
| Finance and administration | ■ Develop and maintain database of contact persons, experts, facilities, logistics, etc. |
| | ■ Utilize records management systems for important documents and financial records that satisfy agency's standards |
| | ■ Distinguish among different types of electronic information and sources |
| | ■ Describe and utilize the financial planning, budgetary and cashflow processes of the agency |
| | ■ Design and implement financial plans for assigned operational projects |
| | ■ Prepare proposals for funding (e.g., foundations, government agencies, corporations) |
| | ■ Negotiate contracts and other agreements for programmes and services |
| | ■ Process compensation claims (incentives, insurance, expenses) |

## 2. Indicative competencies for public health personnel in a PHEOC

| Applied epidemiology | ■ Identify public health problems pertinent to the event |
| --- | --- |
| | ■ Determine surveillance data needs |
| | ■ Select and implement investigative processes |
| | ■ Synthesize key findings from the surveillance system |
| | ■ Recommend evidence-based interventions and control measures in response to epidemiological findings |
| | ■ Appropriately utilize laboratory testing |
| Biostatistics | ■ Describe preferred methodological alternatives to commonly used statistical methods when assumptions are not met |
| | ■ Apply descriptive techniques commonly used to summarize public health data |
| | ■ Apply descriptive and inferential methodologies |
| | ■ Interpret results of statistical analyses |
| Environmental health | ■ Describe national and other government levels' regulatory programmes, guidelines and authorities that control environmental health issues |
| | ■ Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety |
| | ■ Explain the general mechanisms of toxicity in eliciting a toxic response to various environmental exposures |

| Communicable disease and bioterrorism | ■ Exhibit personal hygiene practices that minimize exposure to communicable disease and chemical, biological, or radiological agents that may be present during emergencies and disasters |
| | ■ Demonstrate proper use and maintenance of assigned personal protective equipment (PPE) in an emergency. |
| | ■ Demonstrate correct donning of communicable disease and chemical protective clothing, respiratory protection, protective eyewear, protective footwear, hearing protection, gloves, and any other assigned PPE |

## Table 4: T&E draft matrix of exercise types and areas to be tested

| Type of exercises | Areas to be practiced, tested, evaluated, improved | Factors to be considered |
|---|---|---|
| Orientation seminar | Familiarise staff with roles, plans, procedures, standard operating procedures (SOPs) of the organisation. It can also be used to resolve questions of coordination and assignment of responsibilities. | A guided informal discussion, taking place in a meeting or conference room, with no time constraints, using different instructional techniques. |
| Table-top exercise (TTX) | Validate plans and procedures with a trigger scenario/narrative; provide an opportunity for key agencies and stakeholders to become acquainted with one another, their interrelated roles, and their respective responsibilities. | Designed to achieve a specific objective, and to be as realistic as possible while remaining logistically feasible. Designed around issue areas, rather than scenarios. While many TTXs require relatively little planning and coordination, a large-scale and rigorous TTX requires dedicated planning resources, skilled facilitation and trained evaluators to be effective. |
| Drill | Normally used to test a single specific operation or function. May test notification and communication systems, command post and evacuation, response time, equipment capabilities, EOC call down procedures or staff call back and telephone trees. | A drill can be led by a manager, supervisor, department head, or exercise designer and can be conducted within a facility, in the field, or at the EOC or other operating centre. |
| Functional exercises | Validate policies, roles and responsibilities, capabilities and procedures of single or multiple EM functions or agencies. Main focus on the coordination, integration, & interaction of an organization's policies, procedures, roles & responsibilities before, during, or after the simulated event. May include such activities as activating command centres, documenting actions & decisions, completing real forms, issuing real communications & responding to simulated media or other questions. | They involve creating a situation and facilitating a 'real' response and are fully simulated at significant levels of detail, usually covering multiple functions. Requires extensive planning and preparation. Staff members need considerable experience with the functions being tested. A functional exercise is always a prerequisite to a full-scale exercise. |
| Full scale exercises | Test and evaluate a major part of emergency operations in an interactive manner over an extended period. Areas to be tested include information analysis, interagency corporation, negotiation procedures, resource and personnel allocation, equipment locations and capabilities. | Costly and time consuming. All levels of personnel should take part. The EOC or other operating centre is activated, and field command posts may be established. Simulated is information conveyed on paper, by phone or through pseudo media and victims etc. simulated by role-players. Requires extensive planning and preparation. |

# MDSS draft matrix

Dr Ramesh Krishnamurthy outlined the concept and process of developing a minimum data set from the perspective of WHO. He emphasized that minimum datasets should correspond to essential functions of a public health EOC. The process of developing a minimum dataset for EOCs should take the following steps in sequence:

1. Determine the minimum (essential) functions of a public health EOC

2. Identify the essential activities/tasks in each function

3. Identify the information products needed for each activity/task

4. Identify the data elements needed to derive the each information product

5. Consolidate the various data elements, group appropriately, and publish an EOC minimum dataset that will allow the functions to be carried out.

As a principle, a dataset is generally composed of one or more data element/s. In order to make the data element interoperable between information systems, these elements need to be represented in a standardized form.

A standardized minimum dataset improves interoperability and real-time data exchange, and can avoid repeated collection of the same data.

## Figure 1: Representation of minimum dataset for public health EOCs
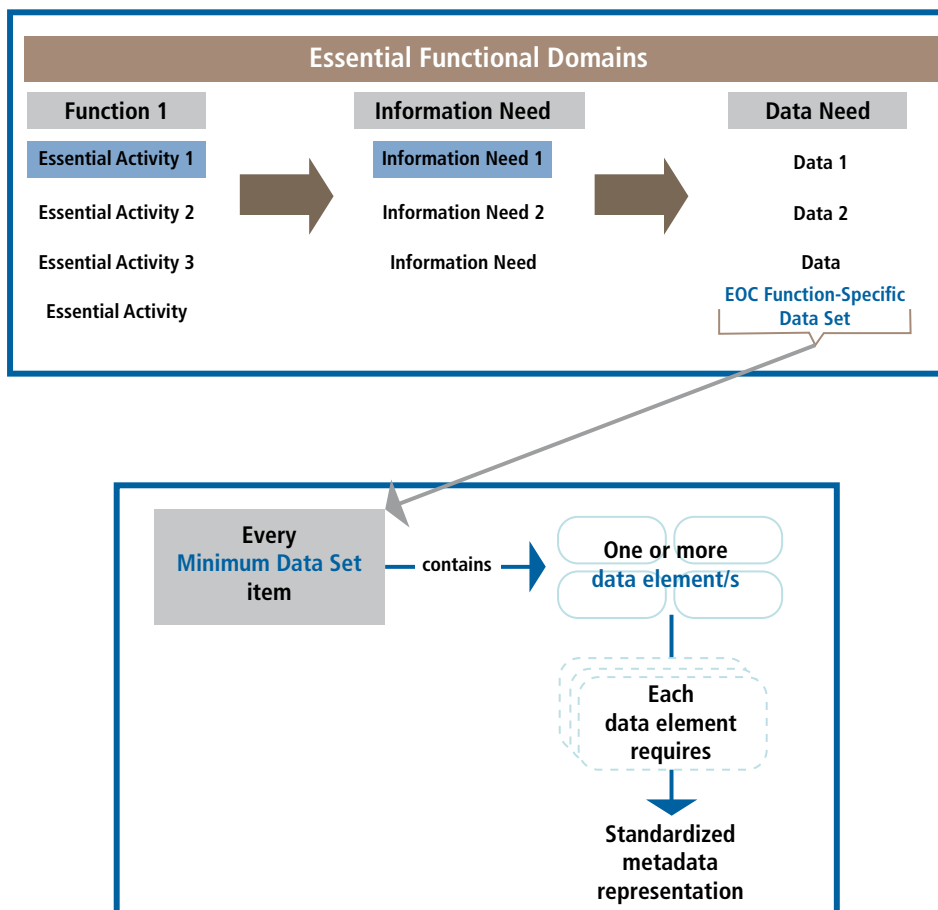
## Figure 2: Example of minimum dataset and corresponding data elements needed for an EOC

| Minimum Data set | Data elements |
|---|---|
| Identification Number | *Unique Identification Number, Date of Issue, Date of Expiration, Place of Issue* |
| Full Name | First name, last name, middle name, maiden name, other names |
| Birth History | *Date of Birth, Sex, Place of Birth, Etc.* |
| Address | Physical address |
| Contact Information | *Telephone number, email address,* emergency contact name |
| Employment Status | *Employment Status, employment title and occupational category* |
| Data Submission Institution | Name of the institution submitting data; date and time of submission |

**EOC Function-Specific Data Set**

**Data Elements that correspond to Data Set**

Mr. Daniel Tuten then reported on the group work on the MDSS matrix.

The experts at the preparatory workshop agreed on the five functional domains of public health EOCs. Following the above process, a template matrix of EOC information needs and corresponding minimum datasets set was developed (Table 5).

The five functional domains are: management/command; operations; intelligence/planning; logistics; finance/administration. Examples of minimum activities and tasks are listed under each function domain, as are the related information needs and sample data requirements. The same data can be used for different tasks/functions.

Table 5 is a template providing some examples of data needs. It is subject to change based on the content of final EOC Framework. The next step will be to develop the table further and determine the minimum terms and data requirements. The minimum data set should be adapted to specific countries, regions, or EOCs based on local needs.

## Table 5: MDSS draft matrix

This matrix is a quick product of several days of discussion—a working table containing some examples to guide further development of the MDSS matrix and guidance. It should not be perceived as a comprehensive minimum data set and corresponding specifications.

| EOC functions | Minimum activities[1] | Information need[1] | Sample Data needs[1] |
|---|---|---|---|
| **Management / command** | Decisions and approvals | Activate decision | Event ID |
| | | | Event description |
| | | | Event scope |
| | | | Trigger description |
| | | | Threshhold |
| | | Deactivation decision | Event description |
| | | | Event scope |
| | | | Event status |
| | | Plan approval | Plan detail |
| | | | Resource availability |
| | Coordination (Liaison) | Partner list | Contact information |
| | | | Capabilities |
| | | Partner tasking | Assigned task |
| | | | Due date |
| | | | |
| | External communication | Public communications | Situation report |
| | | | Public communication templates |
| | | Intra-agency | Situation report |
| | | | Private communication templates |
| | | | |
| | | | |
| | Leadership assigned | Incident commander | Name |
| | | | Professional background |
| | | | Contact phone |
| | | | Contact email |
| | | Response section | Responsibility |
| | | | Section chief |
| | | | Section contact phone |
| | | | Section contact email |
| | | Response plan | Issue/updated date |
| | | | Content of plan |
| | | EOC daily schedule | Time |
| | | | Place |

| | | | Content |
|---|---|---|---|
| | | | Participants |
| **Operations** | Task assignment/ tracking | Task information | Task ID |
| | | | Task description |
| | | | Assigned to |
| | | | Assignment date |
| | | | Due date |
| | | | % Complete |
| | | | |
| | Event investigation | Event status | Date |
| | | | Location |
| | | | Type of event |
| | | | Cases in past |
| | | | Daily new cases |
| | | | Cumulative cases |
| | | | |
| | | | Epidemiological investigation |
| | | | Etiology analysis |
| | | | Symptoms |
| | | Case information | ID |
| | | | Name |
| | | | Sex |
| | | | Age |
| | | | Detailed address |
| | | | Onset date |
| | | | Date of death |
| | | | Diagnosed date |
| | | | Type of disease |
| | | | Confirmed/suspected |
| | | | Lab test result |
| | | | Exposure |
| | | Laboratory report | Reporting laboratory identifier |
| | | | Report date/time |
| | | | Report status |
| | | | Specimen collection date/time |
| | | | Specimen origin |
| | | | Specimen type |
| | | | Diagnostic test performed |
| | | | Test result date/time |

| | | | Test result status |
| --- | --- | --- | --- |
| | | | Test result |
| | | | Test result interpretation |
| **Intelligence/planning** | Situation analysis | Patient information | ID |
| | | | Name |
| | | | Sex |
| | | | Age |
| | | | Detailed address |
| | | | Onset date |
| | | | Diagnosed date |
| | | | Date of death |
| | | | Type of disease |
| | | | Confirmed or suspected |
| | | Event information | Date |
| | | | Location |
| | | | |
| | | | Casualties |
| | | | Event type |
| | | | Event level |
| | | Daily watch-keeping record (reception of report/instructions) | Time of reception |
| | | | Approach of reception |
| | | | Content |
| | | | Informer name |
| | | | Contact details of informer |
| | | | Result of processing |
| | | Risk assessment report | Date of assessment |
| | | | Participants |
| | | | Content |
| | | | Whether to trigger alert |
| | | | Result |
| | | Alerts | Name/title of alert |
| | | | Notified target (organization or individual) |
| | | | Name of disease/incident |
| | | | Content of alert (document) |
| | | | Alert level |
| | Information management | Deployment information | Person information |
| | | | Location |
| | | List of data sources | Method of access |

| | | | Data source description |
|---|---|---|---|
| | Plan development | Authority to plan | Activation decision |
| | | | Planning period |
| | | Situation report | Overview |
| | | | Key issues to resolve |
| | | Plan components | Objectives |
| | | | Target outcomes |
| | | Resource need assessment | Resource availability |
| | | | Resource shortfalls |
| | Exercise | | |
| | Training - organizational | | |
| | After action reviews | | |
| **Logistics** | Resource management | Facility (agency) | Staffing quantity |
| | | | Staffing specialty |
| | | | Equipment and quantity |
| | | | Hospital beds quantity (general/special) |
| | | | Expansible beds |
| | | | Laboratory test items |
| | | | Contact information |
| | | | Agency type (PHO, hospital, lab, etc.) |
| | | Emergency response individual | Category (staff, volunteer, etc.) |
| | | | Name |
| | | | Age |
| | | | Sex |
| | | | Skill |
| | | | Organization |
| | | | Education (certificate/training) |
| | | | Professional title |
| | | | Email |
| | | | Mobile phone |
| | | | Health emergency experience |
| | | Rapid response team | Name/title |
| | | | Category |
| | | | Responsibility |
| | | | Team member |
| | | | Equipment |
| | | | Team leader |
| | | | Competent organization |
| | | Medical materials | Items |

| | | | |
|---|---|---|---|
| | | | Category |
| | | | Organization |
| | | | Storage location |
| | | | Expired date |
| | | | Suppliers |
| | | Shelter | Name |
| | | | Location |
| | | | Area |
| | | | Infrastructure |
| | | | Responsible organization |
| | | Other supplies | Item description |
| | | | Item quantity |
| | ICT support | Technology assessment | Technology list |
| | | | Software list |
| | Security | Physical security assessment | Threats |
| | | | Access control |
| **Finance/administration** | Budget | Budget | Amount |
| | | | Source |
| | | | Activity |
| | | | Implementing unit |
| | Purchase | Expenditures | Amount |
| | | | Activity |
| | | | Implementing unit |
| | Donor management | Donation information | Donor contact |
| | | | Resource available |
| | Human resources | Personnel acquisition | Category (staff, volunteer, etc.) |
| | | | Name |
| | | | Age |
| | | | Sex |
| | | | Skill |
| | | | Organization |
| | | | Education (certificate/training) |
| | | | Professional title |
| | | | Email |
| | | | Mobile phone |
| | | | Health emergency experience |
| | | Individual training | Required skills |
| | | | Schedule |
| | | | |

# Development of EOC-NET

Dr Jian LI outlined the current status of the EOC-NET community, and current thoughts and challenges related to its development.

The growth of EOC-NET is guided by the principles of networking for excellence. The current structure is quite flat, and consists of a secretariat (WHO HQ and ROs); members; and working groups. As the community expanded, the secretariat considered creating a steering/advisory group to guide the development and activities of EOC-NET. Further discussion within WHO and with EOC-NET members will follow.

Working groups have been formed on four priority technical areas, and on specific projects; currently, only the groups working on CTI and the EOC review are activated. The technical area working groups need to be redesigned.

A roster of EOC experts needs to be established, following a process and mechanism yet to be developed.

## Membership

Over the last three years, most members have been recruited through the EOC-NET public webpage membership application form. There are three types of membership: EOC members; institutional members (such as universities and research institutes); and individual members. As of 26 April 2015, 55 members had filled the membership form, covering all WHO regions: 35% are from the Americas region; 24% from the western Pacific region; and 20% from the European region. Of those who joined the CTI working group in 2013, few have filled the membership form.

The membership database shows that the membership body contains diverse backgrounds and experience, including senior emergency managers; experts; researchers; EOC representatives; trainers; students and members from the private sector. Effective methods are required to engage members with different interests; for example, asking student representatives to run a sub-site of the member SharePoint and interact with student members. Membership categories need to be adjusted to fit developing purposes.

## Communication platforms

The EOC-NET public site started operations in 2013, and has not been updated since then. It has been an important channel of advocacy and recruitment.

The EOC-NET SharePoint was created for members to share information within the network. New research, projects and activities have been announced via the medium of the SharePoint. Members can use the site to apply for/participate in activities, and share documents and other resources. Useful links are listed on the site, and members are encouraged to share new ones. A reference databases is accessible for all members, and over 600 reference materials collected during the process of the five systematic reviews are kept in an EndNote library. Currently the EOC-NET secretariat is working on how to make these materials useful and easy for members to access.

The SharePoint sub-site for EOC reviews has been used frequently by the review teams to share the latest working documents, standards procured and other materials.

In general, with the exception of the review team and WHO staff, only a few EOC-NET members have logged in the SharePoint. One reason for this is the difficulty experienced by members attempting to get and use a WHO ADS account, which is required in order to sign in. Using an ADS account to access the SharePoint is compulsory under WHO IT policy.

An improved WHO-based platform, secure but easier to access then the current offering, is required in order to support information sharing, engage members and conduct EOC-NET activities. One solution to this could be to develop software that enables members to use a universal email address to sign in. Another addition that could be useful would be an interactive discussion board on which members could post questions and provide proposals and solutions.

## Discussion summary

Throughout the consultation, participants engaged in active discussion, sharing their thoughts and proposing recommendations on the essential functions/roles of public health EOCs, associated challenges and needs, and areas for improvement.

Country experiences were shared by representatives from Afghanistan; Burkina Faso; Cameroon; Cote d'Ivoire; Ghana; Guinea Bissau; Indonesia; Kenya; Lao PDR; Mali; Mexico; Moldova; Nepal; Nigeria; Peru; Senegal; Sierra Leone; South Africa; Thailand; Togo; and Uganda.

Experts from Australia, China, Greece, Kenya, Saudi Arabia, United Kingdom, the United States and Vietnam also shared their opinions and expertise in a personal capacity.

International experiences were shared by representatives from the European Commission's Directorate General for Health and Consumer Protection (DG SANCO); the European Centre for Disease Control and Prevention (ECDC); the Food and Agriculture Organization of the United Nations (FAO); the Global Health Security Agenda (GHSA); the International Organization for Migration (IOM); the US Centre for Disease Control and Prevention (CDC); and the World Food Programme (WFP).

WHO perspectives were shared by staff from three HQ clusters—Health Security (HSE), Health Systems and Innovation (HIS), and Polio and Emergencies (PEC)—and Regional Offices for Africa (AFRO), the Americas (AMRO), the Eastern Mediterranean (EMRO), South-East Asia (SEARO). The Lao PDR Country Office represented the Regional Office for the Western Pacific (WPRO). .

Ten key themes emerged, as below:

### 1. Current status of the establishment of public health EOCs

Many countries have well-established, fully-operational EOCs for public health emergencies. Some countries have an EOC established, but require guidance and support for improvement. Several countries have built EOCs recently, but do not yet have terms of reference and related procedures.

Many EOCs were established in Africa for coordinating response/preparedness during the 2014-15 Ebola virus disease (EVD) outbreak. EVD also presented opportunities for a number of countries to build their EOCs; some of these were supported by WHO (AFRO), the US CDC, the IOM and other international partners. These countries require the EOC Framework to define core components for public health EOCs.

Various terms have been used to refer to EOCs dealing with public health emergencies. Examples include public health emergency operations centre; strategic health operations centre; emergency operations centre; centre for command and control; health crisis disaster centre; health emergencies operations facility; national Ebola response centre; national health operations centre; public health emergency centre; health emergencies operations facility; virtual operations centre for emergencies and disaster; and public health emergency management centre.

Three countries have proposed the use of the term "health emergency operations centre" instead of 'public health emergency operations centre': as more countries are taking an all-hazards approach, public health should not act alone.

One country proposed that the acronym 'EOC' should not appear in the Framework, and that the terminology should always be 'Public Health Emergency Operations Centre'.

Political will and governance are the most important enabling factors for EOCs. Others include availability of fully dedicated and trained staff; real-time information flows from every part of the country or even the world; the capability to support an all-hazards emergency approach; upgraded ICT structures; the capability to provide teleconference/audioconference/videoconference services; and satellite communication during emergencies when other means of communication are not functioning.

Sustaining the operation of an EOC requires a lot of resources and is a significant challenge. Resource challenges include the need for 24/7 staff working beyond the working hours to which they may be accustomed; finance; technical capacity and required numbers of staff; training and exercises; maintaining ICT equipment; upgrading information systems; etc.

Other challenges mentioned by many participants included funding; maintenance; staffing; networking and interoperability for information sharing between all national and international partners; and exercise and training procedures.

Experts also raised concerns about how public health EOCs operate with existing systems such as routine surveillance and IHR National Focal Points.

The EU is also trying to identify minimum standards for a crisis room for EU Member States; it was suggested that the memorandum of understanding between crisis rooms, WHO SHOC Europe and other international agencies for real-time information exchange in emergencies could be extended for this purpose.

## 2.  EOC functions/roles and benefits mentioned

A public health operations centre is a necessary and effective tool for response to health emergencies of all kinds. Common sense suggests that when a country has an EOC with appropriate staff and resources, health outcomes will improve.

Existence of an EOC allows a central coordination structure and provides information for preparedness and response; strategic decision-making; central planning and management of issues, especially field team operations; logistics; and mobilization of resources. EOCs enable command, control & coordination, interoperability and interchangeability between agencies in the health sector. Some of the functions of public health EOCs that were discussed included information management; coordination; communication; collaboration and information sharing; and monitoring public health events.

A clear structure and command and control system enables an EOC to manage expectations and the various collaborations of response teams. The EOC keeps track of all contacts and supports coordination of different teams. The EOC is and should be a problem solving centre in which teams and individuals get support from each other.

Core components for the functionality of EOCs include a common data set, communication with partners, trainings, and exercises. Having a single channel for outgoing information can avoid confusion and the release of conflicting information into the public sphere.

A great deal of qualitative evidence exists from past responses, but unfortunately this is not well documented. Core EOC functions may, however, be decided on the base of evidence presented and common understanding.

An EOC should be flexible when activated for an emergency; and it must be able to deal with a second emergency added after the first in a manner other than building a different EOC when one is already functioning.

Meeting participants proposed some research questions on EOC functions:

■ What are the EOC functions during a long-lasting response, and how can an EOC continue to function properly?

■ How to prevent duplication in data collection?

■ Where is the best place to add data analysis?

■ How to split responses to maximize efficiencies?

■ How to engage the science world in a strategic operations centre that often gets involved in tactical operations?

## 3.  Governance of public health EOCs

It is crucial to place an EOC under the right leadership, obtain support from the country's political leaders, and have relevant agencies and partners working together. Legal authority for public health EOCs varies from country to country.

Most public health EOCs are under the authority of their country's Ministry of Health, or that of national disease control and prevention agencies. In some countries, the public health response function is covered by national all-hazard EOCs that are under Ministries of Emergencies or other similar ministries, while Ministries of Health are members of emergency committees. Many countries build higher-level committees to support multiministerial coordination during public health emergencies, such as national committees for disaster control, disaster committees, general directorates for civil protection, or national committees for epidemiology and/ or catastrophe.  Some countries have established many EOCs at sub-national, provincial, and district levels.

WHO can generalize the issues regarding ownership of EOCs and recommend best practice in a non-prescriptive manner. Each country should decide the appropriate authoritative structures for their own EOC(s) taking into consideration the country structure and which organization might have the best authority for the proper functioning of an EOC. In countries with two parallel EOCs, one for all-hazards and one for public health, guidance is needed to address the conflict between public health and national EOCs.

Ministries of health and other ministries must work together in response to health emergencies; there should be common understandings and agreements in place on how to do this before the emergencies occur. Interministerial task forces should established: public health emergencies raise issues pertaining to the environment, economics, sociology, religion, animal issues, zoonoses and other matters.

Coordination and communication are always a challenge; higher-level national committees are required for control and coordination as well as for resource mobilization.

Delegation and clearly-defined responsibilities and authority structures are key to handling a crisis or an operation.

## 4.  EOC Framework document

Some EOCs are not functioning properly: there is an urgent need for WHO guidance and support on how to establish and operate public health EOCs, which must be met as soon as possible. The EOC Framework is therefore extremely important, especially for countries that do not know what an EOC is. There is enormous global interest in this area and the opportunity should be taken to accelerate work towards the rapid release of an interim guidance document.

Such a document should be simple and easy to read, and should cover the core EOC requirements; it should include an executive summary for senior leadership, and a simplified main body emphasizing principles and

presenting the document such that readers and especially politicians need read only what is needed for them to understand the importance of having an EOC in country.

The EOC Framework should answer key questions: why have an EOC? What is a public health EOC? How should such an EOC be built, maintained and assessed? It should also be clear that an EOC does not replace the underlying structure of the health system.

The framework should focus on the basic EOC necessities, allowing countries to establish the fundamentals before later moving to an optimal situation. This framework should offer guidance on how to organize an EOC at lower and higher levels, and provide model structures or templates of appropriate hierarchies or structures, sticking to five EOC functions. Different layers of response and multi-sectional involvement should be considered. WHO should also describe the necessary links between IHR national focal points and EOCs.

The framework should, for example, address issues of sustainability and staffing an EOC; it should also assist countries in implementing the framework depending on each country's geographic characteristics, needs, possibilities, capabilities and available resources.

The framework should address the role EOCs can play in helping coordinate responses to various emergencies and mass casualty incidents such as chemical accidents, and not only those issues relevant to epidemics.

It was suggested that the framework should not be an assessment instrument; separate tools should be developed for this purpose, such as checklists; these can be adapted from existing ones. An evaluation working group is needed to work on this.

One participant proposed that the document should cover two key issues: surveillance and monitoring; and communication (i.e. how to communicate emergencies to the public).

For managing international support, countries' EOCs should have similar models, tools, and applications to support interoperability; but the process for establishing EOCs differs from country to country. Context-specific guidance is needed.

The WHO/HQ EVD Preparedness Strengthening Team (PST) provided operational support to 15 priority countries in the affected region in 2014 and 2015. Several specific needs for EOCs were identified in this process, and participants consistently commented that the following are required:

- High-level (i.e. national level) political buy-in (not imposed)

- The need for EOCs to fit into existing public health systems

- Policies/agreements to facilitate EOC activation, scale up and scale down based on need

- Linkages/alignment with existing national disaster management structures

- A basic checklist that helps understand what to do at the start of the process

- A series of practical guidance tools on how to set up and run an EOC

- Experts providing authoritative on-site guidance on establishing and maintaining EOCs

- Process indicators to monitor the running and working of EOCs

- Generic training packages

- Support (technical support and resources) for training, simulations, equipment etc.

- Process indicators to assess whether and how well EOCs work

- Information sharing between countries prone to disasters, through EOC-NET

- Regional networks to share best practice

- Advocacy plans and materials for public health EOCs, from WHO and from countries.


## 5. Core components and practical guidance

### Plans and procedures

Plans, protocols and clearly designated roles enable multi-sector partners to work together effectively.

Activation of an EOC generally tends to be triggered by small sets of events. The nature and sensitivity of activation triggers need to be addressed, including whether activation happens when normal public health processes are affected, or when daily routine response activities are overwhelmed.

It is important that after an action plan has run its course, there should also be a demobilization plan that allows an activated EOC to go back into 'business as usual' mode.

WHO's Emergency Response Framework (ERF)[5] provides an all-hazards approach to WHO's response to emergencies and systems for provision of support to member states. A task force was formed to revise the ERF in 2014, comprised of WHO country representatives, regional experts and HQ staff. The outcome of the EOC Framework meeting will be helpful to the ERF review task force, since the new version of the ERF needs to follow best practice in critical functions.

### CTI

A computing platform with telecommunication tools provides real-time communication, coordination and decision-making support, and allows standardized responses. An Open Data Kit enables real-time exchange of data between field teams and EOCs.

In order to work together, basic CTI standards need to be agreed upon. It is important to understand the need for, and the function of, an EOC. CTI requirements should match EOC functions with appropriate technologies; technology should be practical, easy to use and applicable to countries where technological support is limited. Swift progress is requested from scientific analysis to the development of practical guidance.

At the beginning of EOC-NET, an initial list of equipment was generated that was used, in the absence of other guidance/standards, in various US CDC capacity development efforts; this resource has been useful to provide guidance and recommendations. Developing similar documents and other products and activities designed to provide guidance will be tremendously useful in furthering the cause of standardization and interoperability.

It is very important to have a central mechanism for storing data for EOCs. Where the data should be archived depends on privacy and confidentiality requirements; the nature and amount of data to be collected; the data source; and how data is managed. WHO can provide guidance on all of this.

Some fundamental questions need to be addressed: what are the actual data processing requirements of a given EOC? What computer platform should be used? What skills are required for the use of such a platform?

### MDSS

The minimum data set approach provided by WHO intends guide the establishment of functional EOCs at national and sub-national levels. In EOCs the same data are often required by different functions—for example, location, time, date, etc. In such instances, standardized minimum data set will allow exchange of data between and within information systems among participating response partners in the context of a public health emergency.

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5    http://www.who.int/hac/about/erf/en/

Effective and well-coordinated responses require timely exchange of information among partners and EOC. As large amount of information is exchanged during an emergency management, interoperability becomes essential—which can only be achieved through standardization of data.

To enhance EOC system performance, in addition to MDSS, other factors should also be considered and planned. These include but not limited to data integrity; data security, privacy and confidentiality; data and information quality assurance; and guidelines on the minimum amounts of data to be exchanged/transferred during emergencies in order to be effective and efficient. To facilitate seamless exchange of data, interagency agreements on minimum amounts of transferable data, jurisdictional boundaries, and privacy, security and confidentiality are all required.

Countries need a simple document outlining the minimum data set. The document should describe what data should be collected and how to represent it. It should also consider the inter-relationships between EOCs and health information systems; data exchange between EOCs and routine information systems; and where these intersections normally fail.

## 6.  Training and exercises

Training plans should be in place. EOC staff should have appropriate competencies. For example, different competencies are required when public health emergency management is a separate function of a public health EOC and when public health function is integrated within a multi-sectoral EOC. Trainers should also have the required competence; it is very important to 'train the trainers.'

Training and exercises should focus on EOC staff and on activities around EOCs, rather than public health event management. Training should be provided to staff of all categories working or planning to work in EOCs.

Selection of EOC staff to be trained should be based on training needs assessments. As many countries have no experience in EOCs, the selection criteria for the personnel to be trained should be clearly recommended.

Necessary resources for training present sustainability concerns. It is proposed that WHO should work with partners experienced in EOC operations, such as US CDC, to provide standardized recommendations and standard documents on training, infrastructure etc. to countries lacking such experience. The UK and US CDC have together developed one such training package that can be shared with EOC-NET members; and the Greece National Health Operations Centre has proposed working with WHO and US CDC to develop another training package in the context of the EOC Framework.

WHO should create opportunities for EOCs to learn from other countries, such as an EOC visiting programme through which EOC staff visit other EOCs to learn, and/or regional meetings at which countries share experiences.

## 7.  Glossary

It is crucial that all stakeholders use common terminology and common approaches in response coordination. WHO should produce a standardized glossary with simplified definitions for different terminologies, easily understood and implementable for field operations. The process of developing the glossary/terminology is dynamic; versions should be tracked.

For applications in countries where English is a second language, the glossary should ensure definitions are easily understood. Countries may rewrite or translate the glossary into other suitable languages.

The glossary could contain two categories: one for terms commonly used during any public health event, and another for terms used during an epidemic/outbreak.

Public health emergency response always involves actors from different sectors. Understanding is needed of how the health sector uses EOC-related terms, and how the health sector interacts with inter-sectoral and multi-sectoral communities. As several parallel glossary projects exist, all stakeholders now need to be aligned with one another. It is suggested that the efforts of other parallel glossary projects be incorporated: WHO should survey what is happening in this field to explore where links can be made. The following glossary and terminology development projects were mentioned with which the EOC-NET Secretariat is keen to link or collaborate:

- UN International Strategy for Disaster Reduction (ISDR) terminology for risk reduction. The current ISDR has much stronger public health components and contains more than 33 public health references. An ISDR terminology for risk reduction is being developed and will be signed off at the end of 2016. The development process includes an inter-government working group.

- EU Joint Research Centre in Italy, which is using computer programmes to investigate a broad range of definitions including 300 glossaries and thousands of other records on how terms are used. Although not much is done for EOC terms, the same approach can be tried.

- WHO is developing the framework on emergency and disaster risk management, and needs a requisite glossary.

The glossary should provide clear reference to ISDR's glossary work in particular, and links to all specific reference sources, examples of which include FAO/OIE animal health terminology under the FAO-OIE-WHO tripartite collaboration agreement. Date of access references should be provided.

The EOC-NET Secretariat will look at mechanisms for bringing these groups together. It is requested that all participants in the consultation, and particularly internal WHO colleagues, inform the secretariat of any ongoing additional glossary work that should be considered.

It is proposed that a small group of experts be formed to merge multiple similar terms and consolidate the list of terms.

## 8.  Piloting EOC Framework

The piloting process should include more than one country, encouraging others to participate in that process.

Representatives from Mali, Sierra Leone and Moldova expressed interest in being part of the piloting process for the EOC Framework; WHO requests further volunteer EOCs, including those from resourced and experienced countries, to pilot these tools. To facilitate this process, WHO should send a letter or other kind of communication to the governments in question asking them to volunteer for the pilot tests.

## 9.  Advocacy

Development of an advocacy strategy and key messages were repeatedly requested.

The EOC idea should be promoted to countries as the centre of management for significant events. Continuous collaboration, communication and advocacy are very important to make any such initiative successful.

Establishing and operating public health EOCs and having them accepted as necessary infrastructure for a country are political issues in many contexts. Public health EOCs need to be more integrated into countries' health systems.

An official meeting was proposed to which governments could be invited so that EOC advocacy information could be shared with them for their political approval. Organizations like AFRO, WHO, CDC and other key partners are well respected in the developing world; if these organizations were to send official documents to

governments, leaders and decision makers could be informed ahead of time, and the chances would increase that the EOC Framework would be considered and accepted. One good operational approach to gaining acceptance is to test the framework at lower level, before attempting to bring success at national level.

WHO should also make a formal recommendation regarding the EOC framework aimed to persuade governments to agree on establishing EOCs and provide the necessary financing. A regional committee resolution on public health EOCs was proposed, followed by an attempt to present it at the World Health Assembly.

Advocacy should take place at different levels, not just for decision-makers or Ministries of Health or Directors General, but also for colleagues who run disease control. Such advocacy should demonstrate the added value of an EOC when responding to public health risks and emergencies.

## 10. EOC-NET

As good practice, an external evaluation of the EOC-NET should be encouraged to provide guidance for its further development.

Understanding how governments wish to be part of the EOC-NET network is important; appropriate mechanisms are needed to encourage government participation.  It is also important to have EOCs, rather than just individuals, as official members, as focal points can change due to staff moving.

All members should complete a conflict of interests disclaimer.

It was proposed that an evaluation working group be established and an assessment instrument developed based on existing tools.

EOC-NET can help identify other venues and hosts for technical meetings—for example US CDC.

EOC-NET may develop projects with partners to arrange EOC staff rotations to other facilities and other countries' EOCs in order to learn different practices/procedures and bring home good experiences. Such efforts will help build a global culture of EOC management.

Two countries have proposed that WHO set up a world-wide EOC and network through which stakeholders can work together and train EOC staff at regional and international level.

GHSA Action Package 1 is aimed at strengthening EOC capability. There is 95% concordance between the efforts of GHSA and EOC-NET, and WHO's international credibility will be critical to setting a global pattern for the years to come. GHSA welcomes thoughts about how the GHSA and the EOC-NET groups can collaborate.

## Next steps

The EOC-NET master work plan will be adjusted for the next five years based on the discussion at this consultation. All participants agreed to accelerate the process to publish an 'interim' EOC Framework and further practical guidance and tools.

Proposed immediate and mid-term actions are listed below, as are some of the collaboration opportunities mentioned.

Immediate actions after the meeting include:

- Produce and distribute meeting report

- Revise the EOC Framework following this consultation

- Develop draft checklists for the EOC Framework as piloting and assessment tools

- Develop field test plan and conduct field tests (inviting more volunteer countries)

- Publish summary report of the four reviews

- Accelerate development of the glossary of public health EOC terminology; this may be included in field tests (it was proposed that a select group of experts should work on the EOC glossary document and reach out to other relevant glossary projects)

- Publish interim EOC Framework

- Develop a resource depository of training & exercise materials, for practical use and for further harmonization and standardization of EOC training and exercise materials

- Further collaboration with GHSA

- Develop advocacy plan and messages

- Update EOC-NET SharePoint with reference materials from this meeting.

## Medium-term activities proposed are:

- Develop practical guidance regarding specific technical areas; guidance on CTI and MDSS, for which practical guidance is urgently needed by countries and international partners supporting them to build/improve their EOCs, should be the priority

- Publish interim guidance on CTI and MDSS

- Developing standard public health EOC training packages in line with the EOC Framework

- Build working groups and rosters of experts

- Organize EOC conference for advocacy and information sharing

- Revise EOC-NET structure and TORs to reflect needs and changes

- Recruit more EOC members (develop proper mechanisms)

- Further develop online collaboration mechanisms and platforms

- Develop visiting/observation projects to enable key EOC staff to learn from other EOCs and build networks between EOCs

- Develop and conduct standard training for EOC management and staff

- Participate in global public health emergency exercises.

## Collaboration opportunities:

- To countries on the US GHSA priority list prepared to share information about priorities and areas of focus for emergency management, US CDC can develop appropriate workplans and mobilize technical assistance; the sooner the better

- The US is developing competency requirements for public health emergency management; Mr. Peter Rzeszotarski will share relevant documents with the T&E group

- The Emergency Management Fellowship Programme at US CDC welcomes applications from all, and especially applicants from GHSA priority countries

- When visiting the US CDC EOC in Atlanta, advance notice of two weeks is required for security purposes

- The UK has developed a training package for Cote d'Ivoire and can share this with EOC-NET partners

- The Saudi Arabian CDC has offered to accept visiting EOC staff from other countries.

# Annex 1: Agenda

## EOC-NET First meeting of the
## Framework for Public Health Emergency Operations Centres

### 27-29 April 2015, Geneva, Switzerland

| Day 1 – 27 April 2015 | |
|---|---|
| **08:30–09:00** | **Registration** |
| **09:00–09:40** | **Session 1: Plenary Opening Remarks** |
| | Welcome Remarks |
| | Introduction of Participants, Review of Agenda |
| | Introduction of EOC-NET |
| **09:40–10:45** | **Session 2: Round table discussion around key questions** |
| | What are the Essential functions of EOCs for public health emergencies? |
| | What are the challenges, needs and opportunities in building/maintaining functioning EOCs for public health emergencies? |
| | **2.1 Experience from countries** (resource limited, fair, and sufficient) |
| | **2.2. WHO perspectives (**WHO HQ and RO SHOC/EOCs, ERF) |
| **10:45-11:00** | **Break** |
| **11:00–12:30** | **2.3 Plenary discussion** |
| **12:30–14:00** | **Lunch** |
| **14:00–15:30** | **Session 3: EOC reviews: methodology, process and findings** |
| | **3.1   Process and Research teams** |
| | **3.2   Research reports** |
| | a.    EOC related plans and procedures (P&P) |
| | b.    EOC communication technology and infrastructure (CTI) |
| **15:30–15:45** | **Break** |
| **15:45-17:15** | c.    EOC related training and exercises (T&E) |
| | d.    EOC operational minimum datasets and standards (MDSS) |
| | MDSS Logical flow |
| | Research findings |
| **17:15-17:30** | **Summary of the day** |
| **17:30-18:00** | **EOC NET Secretariat  Meeting (HQ and ROs)** |

**EOC-NET First meeting of the
Framework for Public Health Emergency Operations Centres**

| Day 2 – 28 April 2015 | |
|---|---|
| 09:00–10:30 | 3.3   Summary of EOC Reviews and Glossary |
| 10:30–10:45 | Break |
| 10:45–12:30 | Session 4 - EOC Framework<br><br>4.1 Introduction of Draft Framework document<br><br>4.2 Plenary discussion |
| 12:30–14:00 | Lunch |
| 14:00–15:15 | Session 5 - Stakeholder and Partner Engagement<br><br>1.1   Perspectives of UN and other partners<br><br>1.2   Plenary discussion |
| 15:15–15.30 | Break |
| 15.30–16:30 | Session 6: EOC Core components<br><br>6.1 Draft matrix of CTI, P&P, MDSS. T&E<br><br>6.2 Plenary discussion |
| 16:30 -17:00 | Day 2 Wrap up |
| 17:30-19:00 | EOC NET Secretariat  Meeting |
| 19:00 | Reception |
| Day 3 – 29 April 2015 | |
| 09:00–10:30 | Session 7: Action points for EOC Framework<br><br>&#9633;   What is next<br><br>&#9633;   Plenary discussion |
| 10:30–10:45 | Break |
| 10:45–12:15 | Session 8: Further Developing EOC-NET<br><br>8.1  EOC-NET development current status<br><br>&#9633;   Membership, communication platforms, procedures and mechanisms, challenges and proposed solutions<br><br>8.2 Plenary discussion |
| 12:15–12:30 | Summary and close of the meeting |
| 12:30–14:00 | Lunch |
| 14:00–16:00 | EOC-NET Secretariat and working group meeting |

## Annex 2: List of participants

| Last name | First name | Country/UN or regional agency |
|---|---|---|
| Albarrak | Ali Mansour | Saudi Arabia |
| Allen | Tammy | Australia |
| Amornpetsathaporn | Anurak | Thailand |
| Anami | Vincent Lee | Kenya |
| Apostol | Ion | Moldova |
| Boutta | Nao | Lao PDR |
| Bousso | Abdoulaye | Senegal |
| Cacioppo | Ben | United States |
| Chen | Tao | China |
| Cirri | Giancarlo | WFP |
| Coulibaly | Daouda | Cote d'Ivoire |
| Cruz Vega | Felipe | Mexico |
| Dac Phu | Tran | Vietnam |
| D'Amour | Jeffery | United States |
| Dafae | Foday | Sierra Leone |
| Douglas | William | Canada |
| Du | Peng | China |
| Efstathiou | Panagiotis | Greece |
| Elkhobby | Ahmed Yacoub | Egypt |
| Etoundi | Mballa Alain | Cameroon |
| Gomes Ferreira | Isis Julieta | Guinea Bissau |
| Hassas | Mohd Nadir | Afghanistan |
| Ikekweazu | Chikwe | South Africa |
| Jarrar | Bassam | United States |
| Khenniche | Hakim | European CDC |
| Langat | Daniel | Kenya |
| Liakoura | Eleni | Greece |
| Lim | Matthew | United States |
| Lipskiy | Nikolay | United States |
| Lohani | Guna Raj | Nepal |
| Manti | Panagiota | Greece |
| Medah | Isaie | Burkina Faso |
| Montes Rueda | Percy | Peru |
| Mottioli | Raffaele | FAO |
| Mukumbi | Issa | Uganda |
| Newman | Carl | United States |
| Oyemakinde | Akinlawon Emmanuel | Nigeria |
| Riley | Paul | United Kingdom |
| Rzeszotarski | Peter | United States |
| Sergienko | Eric | United States |
| Abdurrahman | Abdurrahman | Indonesia |
| Spencer | Rosalie | Australia |
| Sow | Samba Ousmana | Mali |
| Sun | Hui | China |
| Talal Tayeb | Tamara | Saudi Arabia |
| Thinus | Germain | European Commission |
| Tuten | Daniel | United States |
| Niu | Yan | China |
| Zakaria | Teresa | IOM |
| Zhang | Hui | China |

**WHO secretariat**

| | | |
|---|---|---|
| Abrahams | Jonathan | HQ/PEC |
| Bayugo | Yolanda | HQ/HSE |
| Bradt | David | HQ/PEC |
| Castilla-Echenique | Jorge | HQ/PEC |
| Cheremukhina | Liudmilla | HQ/PEC |
| Chungong | Stella | HQ/HSE |
| Clark | Ian | HQ/HSE |
| Cox | Paul Michael | HQ/HSE |
| Fukuda | Keiji | HQ/HSE |
| Isla | Nicolas | HQ/HSE |
| Kenney | Erin Maura | HQ/PEC |
| Krishnamurthy | Ramesh | HQ/HSI |
| Li | Jian | HQ/HSE |
| Markoff | Jered | HQ/HSE |
| Marschang | Adelheid | HQ/PEC |
| Santhana Gopala Krishnan | Ravi Shankar | HQ/PEC |
| Schnitzler | Johannes Christof | HQ/HSE |
| Val | Elena | HQ/HSE |
| Wang | Ninglan | HQ/HSE |
| Wojnarowski | Nicolas | HQ/GMG |
| Xing | Jun | HQ/DGO |
| Fekadu | Senait Tekeste | AFRO |
| Nguessan | Bla Francois | AFRO |
| Almiron | Maria | AMRO |
| Galindo Hernandez | Leonardo | AMRO |
| Shaikh | Irshad | EMRO |
| Shamseldin | Khaled | EMRO |
| Jakovlievic | Dejan | EURO |
| Pukkila | Jukka Tapani | EURO |
| Kashyap | Sanjeev | SEARO |
| Pinyowiwat | Vason | SEARO |
| Luo | Dapeng | WPRO/CO/LAO Republic |

**Administrative assistance**

| | | |
|---|---|---|
| Gahigi | Hazan | HQ/HSE |
| Swaray | Marie | HQ/HSE |

# Annex 3: Preparatory workshop

## First Meeting of The Framework for Public Health Emergency Operations

### Preparatory workshop

**22-26 April 2015**

**Objectives**

1.  To review the EOC research findings in four technical areas

2.  To review the draft summary report of the four reviews

3.  To produce matrices for key findings to be discussed at the EOC meeting

4.  To review the draft Framework

5.  To plan discussions for the EOC meeting (agenda, discussion questions, facilitators, deliverables)

**Deliverables**

1.  Four draft matrices on core CTI/ P&P/MDSS/T&E core components of functioning EOCs

2.  Agreed format and content of summary report of the four EOC reviews

3.  List of terms to be included in the glossary document

4.  Modified agenda, deliverables, list of discussion questions for each session, and list of facilitators for the EOC meeting

**Participants**

EOC Review team representatives; Temporary advisors; working group experts; EOC-NET secretariat (representatives from WHO ROs and HQ): Ms Rosalie Spencer; Ms Tammy Allen; Professor Hui Zhang; Mr Peng Du; Mr Daniel Tuten; Dr Nikolay Lipskiy; Dr Hui Sun; Ms Yan Niu; Mr Panagiotis Efstathiou; Ms Panagiota Manti; Mr Vincent Lee Anami; Mr Peter Rzeszotarski; Dr Eric Sergienko; Dr Maria Almiron; Ms Senait Teskeste Fekadu; Mr Dejan Jakovlevic; Mr Sanjeev Kashyap; Mr Khaled Shamseldin; Mr William Douglas; Paul Michael Cox; Dr Jian Li; Mr Jered Markoff; Dr Ramesh Krishnamurthy; Mr Nicolas Wojnarowski.

**First Meeting of The Framework for Public Health Emergency Operations**

**Preparatory workshop**

## Agenda

| Day 1 – 22 April 2015 | |
|---|---|
| 08:30–09:30 | Registration |
| 09:30–09:45 | Introductions |
| | ☐ Welcome |
| | ☐ Participants |
| | ☐ Review of Agenda |
| | ☐ Logistics |
| | ☐ Working groups |
| | ☐ Social activity |
| 09:45–10:30 | Briefings on technical work conducted and questions |
| | ☐ EOC review of plans and procedures |
| | ☐ EOC review of communication technology and infrastructure |
| | ☐ EOC review of training and exercises |
| 10:30-11:00 | Break |
| 11:00–12:30 | ☐ Summary report of the four reviews |
| | ☐ EOC Glossary |
| | ☐ Briefing on EOC Framework |
| 12:30–14:00 | Lunch |
| 14:00–15:30 | Round table discussion: What are the challenges in building, improving, using EOC for public health emergencies |
| | ☐ EVD response |
| | ☐ Establish EOCs in countries |
| 15:30–15:45 | Break |
| 15:45–16:45 | Round table discussion: How to achieve objectives and deliver outcomes in 3-4 days |
| 16:45 -18:00 | Review documents, set up work space for Day 2 |
| | ☐ Plan for deliverables (who, what, how) |
| | ☐ Review technical documents |
| 18:00 | Social activities (TBD) |

**First Meeting of The Framework for Public Health Emergency Operations**

**Preparatory workshop**

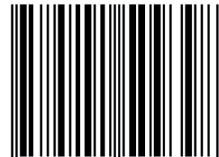| | |
|---|---|
| **Day 2 – 23 April 2015 (Room 219, 218)** | |
| 09:00– 16:30 | EOC review of Minimum Datasets and Standards |
| | Draft Matrix of CTI, MDSS, P&P, T&E core components |
| | Four Working Groups to produce four discussion tables respectively |
| | Questions: what are the core components identified (basic, general, optimum), items in questions, items missing, other concerns |
| | Break and lunch |
| | 10:30-11:00 |
| | 12:30–14:00 |
| | 15:15–15.30 |
| 17:00–18:00 | Wrap-up the day |
| **Day 3 – 24 April 2015** | |
| 09:00–16:30 | Four Working Groups ( CTI, MDSS, P&P, T&E)  to produce |
| | Updated EOC framework draft and topic list to bring to the EOC meeting for inputs |
| | Updated format and content of Summary Report of the four EOC reviews |
| | List of terms to be included in the Glossary document. |
| | Break and lunch |
| | 10:30-11:00 |
| | 12:30–14:00 |
| | 15:15–15.30 |
| 16:30–18:00 | Plenary discussion: |
| | Report on deliverables of each team |
| | Modified agenda, deliverables, list of discussion questions, and list of facilitators for the EOC meeting |
| **Day 4 – 25 April 2015** | |
| 09:00–12:00 | Finish uncompleted work |