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# Public health emergency operation centres: status, gaps and areas for improvement in the Eastern Mediterranean Region

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## ABSTRACT

The functionality of Public Health Emergency Operations Centres (PHEOCs) in countries is vital to their response capacity. The article assesses the status of National PHEOCs in the 22 countries of the Eastern Mediterranean Region. We designed and administered an online survey between May and June 2021. Meetings and Key Informant Interviews were also conducted with the emergency focal points in the WHO country offices and with other select partners. We also collected data on PHEOCs from the Joint External Evaluations conducted in the Region between 2016 and 2018 in 18 countries, and intra-action review mission reports conducted in 11 countries to review the response to COVID-19 during May 2020–June 2021 - and other relevant mission reports. Only 12 countries reported having PHEOC with varying levels of functionality and 10 of them reported using PHEOC for their response operations. This review formed the baseline of capacity requirements of National PHEOC in each country and will facilitate identifying benchmarks of areas of improvement for future national, WHO and partners support.

## SUMMARY BOX

⇒ WHO as a leading public health agency globally adopts the Public Health Emergency Operations Centre (PHEOC) concept and develops PHEOC guidance for public health, building on other sectors' successes and lessons learnt.[3 6]
⇒ WHO advocates for the establishment of PHEOC as a public health emergency preparedness and response mechanism.
⇒ Many countries have established PHEOCs, and some were successful in utilizing them in their COVID-19 response alongside other emergencies.
⇒ The article aims to assess the status and operational capacity of PHEOCs in countries of the Eastern Mediterranean Region.

## INTRODUCTION

The Eastern Mediterranean Region (EMR) is composed of 22 countries. The region has a long history of public health crises and has suffered from a myriad of diverse major emergencies. For example, natural and ecological disasters, human-induced catastrophes, have a high and adverse impact on human public health.[1] Many countries within the EMR have dedicated departments to manage disease outbreaks, catastrophic disasters and other types of emergencies.[2] Similarly, in other countries there are specialised departments that manage single hazards or unique diseases. Given that these are usually managed in a siloed approach, this process can lead to unintended consequences and complications for an incident management response (IMS). For example, because of the tendency of countries to use a siloed approach to single or categorical health risks, this approach may not be best suited to support informed decision-making. Informed decision-making occurs when there is an open and free flow of data and critical information that is streamed to the IMS housed within the PHEOC to inform setting appropriate objectives necessary to mitigate risks.

Consequently, most countries should adopt an integrated and holistic approach while considering their health emergency and disaster risk management profile and capabilities.[3 4] A transparent and holistic approach would be better suited to advance the prevention, preparedness, readiness, response, and recovery to risks which aligns with the intent of the International Health Regulations (IHR 2005) requirements.

The IHR (2005) serves as a legal framwork for all States Parties to level up their public health capabilities.[5] Therefore, countries' capacities to manage health risks should span the whole emergency cycle from prevention, preparedness, readiness, and response, to recovery.[6] Health emergency management

programmes within the health sector should be able to lead and coordinaterelated interventions. They must ensure that their programmes are all streamlined and address identified priority health risks. This is normally performed when a comprehensive 'Rrisk Assessment' is completed and the results implemented.

In recent years, WHO has advocated for the adoption of PHEOCs and published several guiding documents promoting the establishment of PHEOCs, elaborating the requirements to establish and operate a PHEOC at the national level.[7–11] A PHEOC as defined in the WHO PHEOC framework 2015 is '*a physical location for the coordination of information and resources to support incident management activities. Such a centre may be a temporary facility or may be established in a permanent location*'.[7] A PHEOC is a place where information and resources can be managed for all different kinds of health risks. It facilitates the engagement of various stakeholders and ensures better management of information and resources during response operations to health emergencies and disasters.[7]

Understanding the status of the PHEOCs in the EMR is crucial to identify areas of support and gaps, and better prioritise regional interventions. Such situational analysis at the regional level will help to craft priority regional interventions to support countries in the region. Countries should have functional PHEOCs able to manage all types of emergencies, from small-scale emergencies like localised foodborne outbreaks or road traffic accidents to large-scale like complex emergencies and COVID-19 pandemics.

In this review, we assessed the current structure and functionality of PHEOCs in the Region, and identified gaps and potential areas for improvements, to build an enhanced network of PHEOCs as an integral part of national emergency management systems.

## EVALUATION OF PHEOC FOR EMR

We adopted a mixed methods research design to assess the National PHEOC in each of the 22 countries of the EMR. Firstly, we utilized the results of the PHEOC data from the regional Joint External Evaluation (JEE), which was conducted in the region between 2016 and 2018 in 18 countries.[12 13] The four main indicators in the Emergency Response Operations section (R.2.1-R.2.4) of the JEE were used as a proxy to examine the overall national PHEOC status in the region. These evaluations are valid for up to five years, as per the recommendations of the JEE framework.[13 14]

eSecondly, we developed an online survey adapted from the PHEOC framework Annex-9,[7] which was completed in 2021 by official PHEOC focal points in 15 countries. The survey addressed the minimuim PHEOC requirements such as legal authority, policy group and steering committee, plans and procedures, suitable physical space and information telecommunication infrastructure, sufficient and trained human resources and relevant information bodies.

Further, we utilized the results of the intra-action review reports conducted in 11 countries to review the response to COVID-19[15] and other relevant mission reports. Moreover, data were further informed by national PHEOC status presentations during the PHEOC bi-regional meeting (EMR & AFR) held April-May 2021, with participation from all the 22 countries.

Finally, we conduced key informant interviews (KII) with emergency focal points in the WHO country offices and with other relevant partners about their PHEOC capacities. Informed consent was obtained, and we ensured that our results are regional and not country specific.

Descriptive quantitative analysis was used to analyse the survey data, mainly calculating frequencies and percentages of agreement with survey domains related to PHEOC status at the countries' level. Thematic analysis was used to analyse the KII and meetings with key stakeholders, identifying main areas of agreement, gaps, challenges and also opportunities for improvement.

Even though not all countries have a functioning PHEOC, all 22 countries have some sort of response mechanism in place. Only 12 (54.5 %) reported established national PHEOC with varying levels of functionality.

Partner organisations have proved instrumental in facilitating and augmenting the functional capacities of the PHEOC in many countries. These partner organisations vary in category and types.

A wide range of partner categories interacts with PHEOCs at the national level, for example, relevant departments within ministries of health, line ministries, UN agencies, non-governmental organisations and international non-governmental organisations and donors. Ten of the National PHEOCs (45.5%) reported multiple uses of their PHEOC during last year in the response operations mostly for infectious diseases outbreaks (11 times) for natural emergencies (6 times).

Political support and understanding were reported in the 12 countries where there is a National PHEOC. However, only 6 (27.3%) of the National PHEOCs have sufficient human & financial resources to run their response operations. The minimum requirements for routine staff are met in only 8 (36.4%) countries. Eleven of the PHEOCs can identify and contact a roster of trained personnel while only 6 PHEOCs have a dedicated training program and a comprehensive, progressive exercise program. Only 5 (22.7%) countries reported that training and exercise programs are primary components of a performance monitoring and evaluation system and their staff are routinely trained. Eight (36.4%) countries reported that their staff can activate and mount a response within 120 minutes of detecting an event and they are available to fulfill key PHEOC roles 24/7. Half of 12 National PHEOCs reported that their staff did not receive formal training in Public Health Emergency Management. Just over one-third of the countries (n=8) have an established training program with follow-up documentation supporting training activities.

Nine countries (40.9%) report having approved and enacted legal instruments for their PHEOC. PHEOC is reported to sit within the health sector organogram in 10 (45.5%) countries. PHEOCs are supported by any form of legal instrument in 11 and 9 countries for national and sub-national levels, respectively. Only 8 countries (36.4%) reported using a legal instrument to define governance structure, core functions, and scope of PHEOC authority and operations approved by their government. Eleven of the national PHEOCs did not conduct legal framework mapping of existing laws and regulations that help to avoid conflicts with other relevant authorities including any implicated for repeal, amendment, or transfer of prior authorities. Nine countries agreed upon the relationship between the Ministry of Health (MoH), PHEOC, and thea National Disaster Management Organization and/or other Ministries, agencies, and sectors before, during, and after public health emergencies.

A policy group to provide strategic / policy guidance to PHEOC was established in 10 PHEOCs (45.5%). Furthermore, a steering committee of PHEOC stakeholders to supervise the planning and development of PHEOC was established in 8 countries (36.4%) with membership comprised of key PHEOC stakeholders and users.

An all-hazards national public health emergency response plan including the concept of operations, and addressing priority risks, has been developed and approved in 7 countries (31.8%). Plan defining roles of engagements of various stakeholders from outside MoH is reported in 9 countries (40.9%). Only five (22.7%) of the PHOEC reported the presence of business continuity plans. Seven (31.8%) PHEOCs have existing notification, reporting, engagement, and coordination requirements and coordinate with Law Enforcement National Security Agencies when needed. PHEOC manuals or handbooks for management and operations were developed in 8 countries (36.4%) with integrated procedures and protocols that align with existing MoH or overarching agency. Half of the countries (n=11) reported having a clear operational structure comprising management, operations, planning, logistics, finance, and administration, or a similar organization chart in place.

Nine (40.9%) of established PHEOCs rely on electronic soultions to support at least one aspect of PHEOC information management and in 5 (22.7%) of those national PHEOCs, solutions are government owned. Eleven countries have a dedicated PHEOC facility with adequate space for management, operations, planning, logistics and finance to support routine and response activities. In terms of Information Communication Technology (ICT), 10 countries (45.5%) have appropriate teleconferencing, 11 countries (50%) have sufficient computer workstations, 7 countries (31.8%) have anti-virus and cyber security protocols, 8 countries (36.4%) have audiovisual functionality, 9 countries (40.9%) have sufficient electricity, and 7 countries (31.8%) have sufficiently tested telephonic and/or interoperable radio communications. Sufficient internet access and capacity were reported in 11 PHEOCs, but only 5 PHEOCs had interoperability of their communication means, e.g. radio, telephoe, and fax. A hotline for receiving emergency calls and alerts is also present in 11 countries (50.0%). Not all PHEOC have sufficient office equipment like printers, copiers, fax machines, and scanners or digital senders that are maintained and functional; only 9 PHEOCs reported having sufficient office equipment. Appropriate security and identification protocols were also only implemented in 9 PHEOCs.

Half of countries (n=11) do not have a direct link to the national surveillance systems where essential data systematically flows to the PHEOC from relevant sectors while the other 11 countries can collect and manage operational information.Access to essential contextual information such as road network, demography (GIS data) is available in 6 (27.3%) countries. Only 7 countries (31.8%) reported the availability of visual data dashboards to convey a concise picture of the situation or response activities.

JEE reports indicate that three countries have developed or demonstrated capacities to activate emergency response as described in the JEE tool. Only two countries have the required plans and procedures to run a fully functioning PHEOC. Similarly, three countries reported "*demonstrated capacities*" for emergency operations programs as well as case management procedures and implementation of IHR relevant hazards, as stated in the JEE scores.

PHEOC is still in the infancy stage in this region. However, it seems PHEOC is slowly gaining traction as almost half of the countries now have active PHEOC. Moreover, the ease of activating PHEOC for response operations for various types of emergencies is also gaining more recognition. PHEOC needs to be positioned at the heart of response operations.[7 11] PHEOCs as a multisectoral coordination platform expanded their stakeholders base to include all major response players at the national level.

A legal framework is a prerequisite to establishing PHEOC and ensuring its functionality as stated in the WHO PHEOC framework.[7 8] Developing such a legal framework is a demanding process and requires strong political support. It should start with defining the purpose, scope, the concept of operations and roles and responsibilities of the PHEOC.[7 8] Mapping of the already existing public health-related legal instruments within and outside the health sector is mandatory to avoid any conflict with authorities.[7 8] Our analysis shows that such endeavours were not fully met in the current PHEOCs and may represent a challenge for establishing a new PHEOC.

Many of the PHEOCs do have some sort of an overarching body that provides strategic direction for PHEOC response operations.[7 11] However, such body members need to have a sound understanding of the PHEOCs legal framework and its concept of operation to ensure better PHEOC guidance. Also, there is a big gap in overseeing

PHEOC functions during peacetime as almost half of the PHEOC do not have active steering committees. The steering committee will ensure PHEOC capacity matches the health risks on the ground and facilitates resource mobilisation to build PHEOC capacity. The absence of the steering committee could be due to the lack of involvement of MoH leaders in establishing the PHEOC and positioning it as a siloed programme within the MoH.[3 7 11] PHEOC may be looked at as a threat to many departments working in response and could lead to a power struggle and competition over resources. Therefore, a steering committee involving all relevant stakeholders will ensure the right positioning of the PHEOC and increase its acceptance within the MoH and the health sector.

It is apparent from the analysis that there is a big gap regarding plans and operational documents for the PHEOCs. The added value of the PHEOCs is to have a more structured, organised and predictable response.[3 7 11] This will only be achieved if the PHEOC has enough strategic and operational documents to lead its operations. PHEOC plans and procedures should have a clear concept of operation and detailed operational documents such as response plans, Standard Operation Procedures (SOPs), protocols, etc that are regularly tested, reviewed, updated and well communicated with all stakeholders.[7 9 11] Further, developing such documents entails vast technical experience and is time-consuming.[11] Many of the PHEOC staff reported either a lack of technical expertise to develop such documents or they do not have the time to develop them or both. In addition, these documents should reflect the engagement of all stakeholders; their participation in the approval process is crucial.[11] Their approval will facilitate engagement and ensure the PHEOC is the right platform to coordinate the efforts of all stakeholders.

Although PHEOC infrastructure is expensive, it is the most common investment made to establish a national PHEOC. PHEOC's dedicated buildings with fancy ICT infrastructure deluded policy-makers and even technical staff that the building alone represents a functioning PHEOC. Such misconceptions need to be rectified to ensure that the physical structure is not undermining the importance of the rest of the PHEOC.[7] The massive one off investment of building or renting a dedicated building and infrastructure prevents many countries from establishing a functioning PHEOC.[3] The use of already existing multipurpose rooms or even the adoption of virtual PHEOC could help countries overcome such investment challenges.[3 7] In the era of IT advancement, many solutions are emerging to cut the cost of physical and infrastructure investment. COVID-19 also played a catalyst role in accelerating such IT advancement and its acceptance by users as the new norm. Countries should include such solutions to help them overcome the relatively high investment cost of PHEOC's physical infrastructure.

Information management is one of the main gaps facing PHEOC in the region. Access to surveillance and contextual data is severely limited diminishing the PHEOC's ability to portray an accurate response picture and produce the right recommendations for decision-makers.[3 7 11] This could be linked to poor PHEOC positioning within the health sector as mentioned above and/or weak governance (legal framework and steering committee).[7 8] On the other side, the vast amount of data influx during response makes it extremely difficult to analyse and produce meaningful information in a timely fashion. Therefore, this increases the need for automated information systems to be able to timely collect, analyse and report dynamic real-time information.[7] Such investments will make it easier for decision-makers within the PHEOC to make timely informed decisions. Further, an automated information system will facilitate documentation and provide quality data for system intra-action/after-action reviews and staff accountability.[7]

Generally, human resources are one of the most precious and scarce resources in the region in terms of numbers and skill mix.[16] The situation is even worse regarding staff working in emergencies due to the increasing demand for such cadre in the region and the poor remuneration and working conditions at the national level due to the economic hardship of those countries.[16] PHEOC is a complex unit of work and requires staff to have a wide range of competencies due to the dynamic nature of emergencies.[3 7 10 11] Staff is required to have a combination of competencies to address multiple functions and tasks.[7 10 11] Moreover, it is a very stressful working environment, which is physically and mentally demanding on staff. Staff working in PHEOC need well-defined Terms of References (ToRs) and clear works SOPs and a regular training programme that equips them with the right competencies to perform their duties.[7 10 11] This should also be completed by a transparent accountability mechanism creating and maintaining a conducive environment.[7 10 11]

## CONCLUSION

PHEOC establishment and operationalisation have prerequisites.[7] PHEOC need to have strong governance in place in terms of a legal framework and governing bodies (steering committee and policy group).[7 8 11] Weak governance is found to be one of the biggest challenges for countries that want to develop or operate a PHEOC.[7 8] Countries need to invest more in advocating for PHEOC and construct effective governance and a sound legal framework. PHEOC positioning within the health sector should involve all relevant stakeholders from the inception phase to guarantee a better understanding of its benefits and use and ensure acceptability and involvement.[7 11] Investment priorities should also be reviewed, as most are skewed towards physical infrastructure at the expense of the other key elements.

In summary, PHEOC has been proven globally as a smart solution to manage emergencies in regions like EMR.[3 7 11] PHEOC have proved to help many countries achieve a robust response mechanism for all types of hazards. EMR countries need support to ensure they do have enough enablers to establish and operate PHEOC. At the same time, this support must be balanced across all PHEOC elements. WHO invested in its capacities to have the required technical expertise to support countries establish and operate their PHEOCs. It is high time for countries to tap into such support and leverage the momentum to establish and operate their PHEOC.

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