Report on the

Expert consultation on hospital resilience in the Eastern Mediterranean Region

Amman, Jordan
16–17 May 2022

World Health Organization

REGIONAL OFFICE FOR THE **Eastern Mediterranean**

Summary report on the

Expert consultation on hospital resilience in the Eastern Mediterranean Region

Amman, Jordan
16–17 May 2022

World Health Organization

REGIONAL OFFICE FOR THE **Eastern Mediterranean**

Document WHO-EM/HCM/133/E

Contents

1. Introduction

On May 16–17 2022, the WHO Regional Office for the Eastern Mediterranean held an expert consultation on hospital resilience to obtain expert insights from within and outside the Region, validate the draft framework on hospital resilience and discuss the interventions needed for its operationalization and evaluation in resource-restrained settings in the WHO Eastern Mediterranean Region.

With more than half the countries in the Region facing emergencies, the lessons learned from hospital experiences in responding to COVID-19 have highlighted the critical need to strengthen hospital and health systems resilience to different hazards and complex emergencies. In the last decade, efforts have been made to conceptualize hospital (and health systems) resilience using varying and complex definitions. Systematic reviews and regional experiences confirm that prevention and preparedness are critical to the response and recovery. Nevertheless, there is no broad consensus on how to translate this concept into practice and limited actionable recommendations for operationalizing or evaluating hospital resilience, especially in resource-constrained and fragile settings.

Strengthening hospital resilience directly contributes to WHO's mission and the regional Vision 2023 of expanding universal health coverage, addressing health emergencies, promoting healthier populations and transforming the systems and culture of health services delivery. It requires cross-departmental work within the Regional Office, involving the departments of health systems, health emergencies and healthier populations. Opening remarks at the consultation were given by the directors of these respective departments, Dr Awad Mataria, Dr Richard Brennan and Dr Maha El-Adawy, who highlighted the importance of "Aligning as one WHO" to break silos and ensure that health issues are addressed through collective technical inputs and expertise.

The consultation brought together leading global and regional experts, including policy-makers, hospital managers, academics and others from Australia, Egypt, the Islamic Republic of Iran, Japan, Jordan, Lebanon, the occupied Palestinian territory, Oman, Pakistan, Philippines, Thailand, Tunisia, the United Kingdom and the United States, together with technical experts from four of the six WHO regions and all three levels (country, regional and headquarters) of the Organization.

The objectives of the meeting were to:

- present and validate the findings of the mixed methods study on hospitals resilience;
- review and improve the proposed conceptual framework on hospital resilience;
- share the experiences of hospitals resilience from inside and outside the Region;
- discuss and identify operationalization and evaluation strategies for hospital resilience; and
- discuss the way forward and recommendations for strengthening hospital resilience in the Region.

The concept of hospital resilience is still new within the global health literature and diverse definitions exist. It was therefore important, as a first step, to disentangle these complexities and reach a common understanding on the concept to inform its operationalization and evaluation. Moreover, there is a need for guidance on strengthening hospital resilience across the stages of prevention, preparedness, response and recovery, based on a clear action framework to guide meaningful and effective country action.

Over the two days of the consultation, the findings of an extensive study on hospital resilience conceptualization, operationalization and evaluation were presented to inform the discussions among the

participants from multiple disciplines attending. To ensure that any recommendations would be practical and applicable, the meeting centred the experiences, challenges and insights of hospital managers from the Region and beyond. Participants from Jordan, Lebanon, the occupied Palestinian territory, Oman and Pakistan shared their experiences of "resilience in action" and the lessons learned in strengthening hospital resilience. These were complemented by presentations by WHO's Pan-American Health Organization (PAHO) and the Asian Disaster Preparedness Center (ADPC) on experiences in these regions.

Grounded in these reflections from the field, the participants validated the draft framework on hospital resilience and discussed the interventions and tools needed for its operationalization and evaluation, particularly in the resource-restrained settings of the Eastern Mediterranean Region. Comments were provided on the proposed framework, an operational matrix of interventions and a list of tools for its conceptualization, operationalization and evaluation, which were shared with participants prior to the meeting. A mix of working groups and open-plenary discussions were used to facilitate knowledge sharing and debate between in-person and online participants. To guide meaningful and effective action at facility and country level, the consultation ended with a proposed way forward, actionable recommendations and a proposal for piloting in countries of the Region.

2. Summary of discussions

Proposed conceptual framework for hospital resilience

An overview of the ongoing work at the WHO Regional Office on health systems resilience and its interlinkages with community and hospital resilience was presented, followed by the presentation of a mixed methods study of how hospital resilience is conceptualized,

operationalized and evaluated, triangulating findings from a scoping review, key informant interviews and an online survey. Hospital resilience is a dynamic process within complex and dynamic systems. The conceptual framework presented synthesized the evidence in the literature and offered a starting point for discussion on strengthening hospital resilience operationalization and evaluation. In the framework, hospital resilience is defined by six components (6S), four capacities, one primary outcome and three impacts (Table 1).

Table 1. Summary of proposed conceptual framework on hospital resilience

Components (6S)	Capacities	Outcome	Impacts
1. Space 2. Staff 3. Stuff 4. Systems 5. Strategies 6. Services	1. Absorptive 2. Adaptive 3. Transformative 4. Learning	Maintain function, provide high-quality and continuous critical, life-saving and essential services, amidst the crisis, while leaving no one behind	1. Universal health coverage 2. Health security 3. Health equity
Embedded in health systems and community resilience	Utilized throughout PPRR stages		

The conceptual framework (shown in Fig. 1) consists of three concentric layers (showing the components and capacities) and an arrow showing the outcome and impacts. At the centre, the figure shows a hospital with its six components: s**pace** (including structural and non-structural elements), **stuff** (including finance, supplies and logistics) and **staff** comprise the core of a hospital, which require **systems** to translate **strategies** to **services**. The interdependence of these components affects hospital resilience. Hospital resilience is

interconnected and embedded within health systems and community resilience (white circle). The second layer (orange circle) shows that hospital resilience manifests throughout all the four stages of the disaster risk management cycle, namely prevention, preparedness, response and recovery (PPRR), led by a risk-informed and all-hazard approach. The third layer (blue circle) shows the resilience capacities that occur throughout the PPRR cycle. Ultimately, the primary outcome of resilient hospitals is to maintain their functions, which occurs when they provide high-quality (safe, effective, patient-centred, timely, efficient, equitable) and continuous critical and essential services, amidst the crisis, while leaving no one behind. As a result, resilient hospitals improve access and coverage, reduce vulnerabilities and challenge inequalities, further contributing to the advancement of universal health coverage, global health security and health equity.
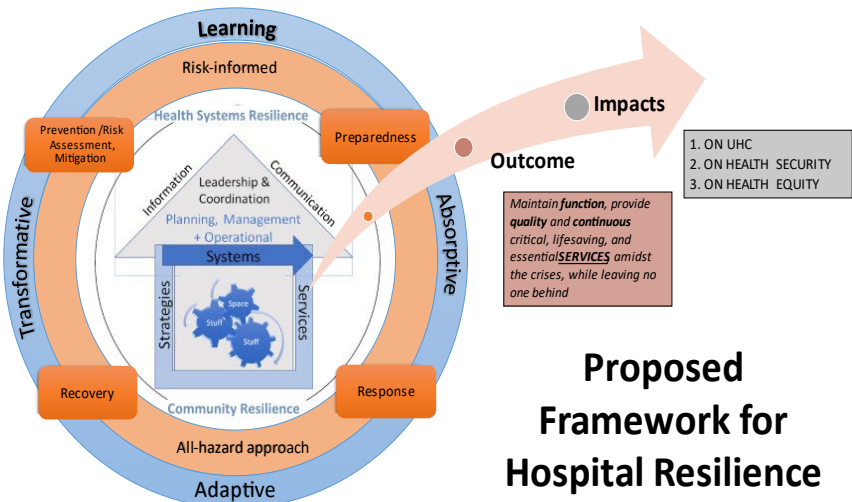
Fig. 1. Proposed conceptual framework for hospital resilience

Participants felt that while the framework was comprehensive in capturing the concepts in the literature, it should be linked to a simple and practical operational guide to enable its application at the facility level. Several key issues were raised with regards to conceptualization. Firstly, with regards to components, it was debated if the systems component should be separated into several subcomponents reflecting crisis management, starting with leadership, risk communication and community engagement (RCCE) and information systems. Participants noted that a link to monitoring and evaluation should be reflected.

Secondly, regarding capacities, participants discussed the need to link capacities to interventions for operationalization and evaluation. The framework should further highlight learning capacity and ensure there are mechanisms to streamline and sustain continuous improvement and innovation as part of strengthening hospital resilience.

Thirdly, with regards to the outcome of hospital resilience, participants extensively discussed the various functions of hospitals and how they should be prioritized. They agreed that the most important function of a resilient hospital was to maintain the critical and essential health services needed to save lives. In addition, they highlighted the secondary functions of hospitals, including contributing to: 1) expanding health coverage and access; 2) risk reduction activities, including reducing damage and disruptions to society, and working collaboratively with ministries of health and partners in the health, social and other sectors; 3) essential public health functions through maintaining their operations; 4) social and economic development of local communities, through conducting community needs assessment and maintaining financial sustainability; and 5) research and knowledge generation. The interlinkages with other health systems actors (primary health care, private sector, national incident management systems, etc.) should also be reflected. Finally, at the impact level, participants noted

the issue of sustainability, advising that the framework should more explicitly emphasize "smart" and "green" hospitals and their role in climate change. Further to this, participants highlighted the importance of linking health equity and hospital resilience and including inclusivity-policies (related to migration, gender and disability) to ensure no one is left behind.

Operationalization of hospital resilience

Hospital resilience occurs throughout each of the disaster risk management stages (PPRR), utilizing the six components and four capacities. Strengthening hospital resilience requires both hard and soft resilience. Hard resilience usually encompasses the structural (or constructive) and non-structural (infrastructural) resilience of hospitals, generally related to the "space" component. Strengthening hospital's soft resilience requires resilient staff, finance, logistics and supply chains (stuff), strategies and systems. This ultimately results in hospitals maintaining their function and providing quality and continuous critical, life-saving and essential services. Resilient hospitals must maintain their function amidst multi-hazard crises, while leaving no one behind, through their absorptive, adaptive, transformative and learning capacities.

Operationalizing resilience is one of the most difficult challenges in strengthening hospital resilience. The major challenges include: 1) limited operational guidance specific to hospitals and hospital managers (management tools); 2) failure to integrate health system nuances and the dynamic nature of resilience into operationalization; and 3) lack of practical guidance, especially for resource-restrained settings. Notably, while the literature on hospital and health systems resilience in low- and middle-income countries (LMICs), especially hospitals in emergency settings and humanitarian conflicts, is very limited, hospitals in these

settings offer key insights due to their chronic and frequent exposures to shocks/emergencies and ability to continue providing essential and emergency health services during crises. While much is still disputed in the literature with regards to operationalizing resilience, strengthening resilience involves a two-pronged approach of reducing risks and vulnerabilities and developing capacities.

Given these challenges, and in an attempt to capture the various components, capacities and outcomes of hospital resilience within an all-hazard disaster resilience framework, the Resilience in Healthcare (RiH) operational framework of Wiig et al. was selected and adapted due to its simplicity, organization and flexibility to accommodate the application of diverse concepts and methods. The adapted operational framework used four core questions to guide operationalizing hospital resilience: a) For what? b) To what? c) Of what? and d) Through what? (Fig. 2).

For what?	• **Primary goal:** Maintain function, deliver high-quality of care, continuity of essential and critical **services** to vulnerable populations (leave no one behind)
To what?	• **Multi- and all-hazard approaches to disaster risk management** Context-specific, risk-informed, 80% same most hazards • Technological innovations and changing contexts
Of what?	• **Hard resilience (space)** • Constructive and infrastructural resilience AND agility in space reorganization • **Soft resilience:** • **Systems and strategies**, utilizing *adaptive* leadership, management and planning, • **Staff**, and • **Stuff**: finance, logistics and supply chain mechanisms
Through what?	• Reducing vulnerabilities and overall risk and developing capacities • PPRR (prevention, preparedness, response and recovery)

Fig. 2. Operationalizing hospital resilience, adapting the RiH framework

Following extensive discussions and feedback from participants, several issues were identified related to the operationalization of hospital resilience. Firstly, participants agreed that the operational guidance needed to be simple and practical, adding value to hospital managers. The operational matrix contained some redundancies and would benefit from revision and condensation, and key interventions and recommendations should be linked with the appropriate tools and resources to guide stakeholders on implementation.

Secondly, while hospital emergency and disaster risk management is a crucial part of strengthening hospital resilience, there is a need to shift towards a risk-based approach instead of an event-based approach to capture hospital resilience to acute emergencies or shocks as compared to everyday (day-to-day) resilience during non-crisis times. This is especially important for fragile health systems, which face chronic stressors and multiple types of hazards simultaneously.

Thirdly, hospital resilience is often affected by numerous external factors and operationalization must be embedded within broader health systems strengthening initiatives and national incident management systems and preparedness and response programmes. Fourth, guidance on operationalizing hospital resilience must be contextualized to accommodate the various challenges of resource-restrained, fragile and conflict-affected settings. Moreover, operational guidance should not be based solely on large, tertiary, well-resourced urban hospitals, but rather must reflect the different types of hospital and their contextual challenges.

Finally, participants further highlighted the need to capture the dynamic nature of resilience, including the ever-evolving absorptive, adaptive, transformative and learning capacities, and integrate measures to strengthen these capacities, citing the continuous capacity development and improvement cycle to improve efficiency and quality as a guiding

framework. The themes of innovation, particularly in resource-restrained settings, adaptive leadership and continuous learning were extensively highlighted throughout the discussions.

An operational matrix was proposed to practically guide hospital managers, especially in resource-restrained settings, with actionable interventions for each of the six components (horizontal axis) across each of the PPRR stages (vertical axis). Through group work, the following feedback was presented on the operational matrix.

Prevention rooted in risk assessment and planning

The participants highlighted that one of the main roles of a resilient hospital is managing risk, noting that risk and resilience-mindsets go hand-in-hand. They agreed that a risk-informed and all-hazard approach must remain core to strengthening hospital resilience. Risk assessment and risk prioritization should be the starting point for strengthening hospital resilience. Risk-informed strategic planning empowers hospital managers to: 1) prioritize identified risks and related interventions; 2) maintain essential and critical services; and 3) achieve sustainability in services delivery, while ensuring adequate resources (including financial) and operational management. Moreover, hospitals should factor in different types of hazard, as well as both internal (mitigated within the hospital) and external (residual and unforeseen) risks. A discussion around multi- versus all-hazard approaches revealed that ideally hospitals should be prepared for all types of hazard but pragmatically, a multi-hazard approach should guide operations and should be linked with national risk assessments.

Different risk assessment strategies were proposed to inform planning for services continuity, including strategic multi-hazard risk assessments, event-risk assessments and also emerging risk assessment (e.g. climate

change-related emergencies). This should be done through monitoring, identification and analysis of risks, hazards, vulnerabilities and exposures. Further to this, the participants highlighted the need to strengthen facility-based surveillance systems and scale up the capacities of emergency and disaster risk management, quality and infection control teams. One hospital manager highlighted the successful use of risk-registers at the facility-level and linking these to those at the national-level.

With regards to prevention, participants noted that "protection" is a form of prevention, whether this may be protecting patients and saving lives, protecting the physical and mental well-being of staff, or protecting hospital infrastructure through risk-reduction activities, or in the retrofitting and reconstruction phases of recovery. Furthermore, risk assessment and prevention are proactive, dynamic and continuous processes throughout the disaster risk management cycle.

Preparedness

Participants noted the importance of preparedness to hospital resilience, with historically the two terms being used interchangeably. Nevertheless, the COVID-19 pandemic highlighted that even in contexts where hospitals were not adequately prepared, they needed to absorb the shock of the pandemic, adapt and transform their space and operations accordingly, and learn from the failures and experiences of other health facilities. This confirmed the need to strengthen emergency preparedness and response programmes at both national and facility levels and simultaneously empower and equip hospital managers and frontline workers to innovatively manage crises. The need for continuous improvement and adaptation of preparedness measures was highlighted as a crucial part of preparedness. Standardization and alignment with national emergency preparedness and response programmes would also be beneficial.

The participants suggested a catchment approach under the coordination of national incident management systems as one example which may improve preparedness and response. Further to this, they highlighted the need to update and re-align facility and national preparedness and response plans based on priority risks, various risk-profiles or types of hazard.

With regards to space/hard resilience, participants noted the need to scale up the capacities of field hospitals and improve the agility of physical hospital space, through repurposing wards or buildings or designated infectious disease units. Guidance is also needed on management of morgues and mass casualties/mortality in the case of emergencies.

With regards to soft resilience components, participants highlighted the need to prioritize the hospital workforce; this is especially critical for the Region where critical staffing shortages, maldistribution and burnout are widespread across LMICs. Some of the interventions listed included:

- having a robust staffing plan that accounts for augmentation/surge staffing/recruitment of volunteers and (emergency) specialties;
- training and frequent simulation exercises;
- adequate support and consideration of staff burnout and mental health;
- incentives and renumeration (especially in resource-restrained and fragile settings); and
- empowering front-line workers and middle management staff and delegating technical authority (with appropriate legal mechanisms for accountability) to respond to shortages.

The role of public-private partnerships was highlighted as a key enabling factor for hospital resilience in the preparedness stage, with opportunities to scale-up referral mechanisms, create alterative transportation plans and secure alternative resources, supplies, food, buffer stocks, etc. The

participants also highlighted the importance of alterative communication plans countering interruptions in cellular or internet coverage.

Finally, with regards to services, they highlighted the importance of delineating optimal standards of care during emergencies as compared to routine non-crisis times, with consideration for quality assurance and ethical mechanisms. The need to identify and discuss ethical dilemmas regarding optimal care given limited resources was also highlighted.

Response

The first 72 hours of the response are critical, and hospital managers must be equipped to assess capacities and risks in responding to an emergency. Moreover, the line between preparedness, response and recovery are usually blurred. The participants reflected on the need for continuous evaluation and improvement of preparedness plans in the face of evolving emergencies, and the need to monitor response activities to enable early recovery. Early recovery is one of the first goals of the response phase.

With regards to hard resilience, a rapid health facility assessment was proposed to evaluate the safety of the hospital, available beds, staff and resources, to enable planning for the immediate response and recovery over time.

With regards to soft resilience, the theme of "agility" was reflected by participants across the various components. For instance, participants proposed the timely activation of an incident management system, updating job action sheets to clearly define the roles and responsibilities of users and parties, revision of contingency plans, risk-based allocation of supplies, mapping of resources (human, financial and material) and

flexibility in their reallocation based on needs, clarifying patients' navigation within the new system and managing uncertainty.

They also highlighted the importance of communication, both internally and externally. Internal communication must be clear, transparent, define alternative hierarchies/command and consider alternatives in case of network disruption/traditional communication modalities. Hospital information management systems must be strengthened and streamlined to enable an effective response and contribute to reinforcing essential public health functions. External (risk) communication with the public and community engagement are necessary interventions. Effective communication and adaptive leadership are cornerstones of resilient hospitals. Moreover, the participants highlighted the need to empower staff and engage them as active participants and leaders in the response; the theme of emotional resilience was highlighted as requiring further attention throughout hospital emergency preparedness and response. Finally, interventions related to the monitoring and evaluation of incident management teams and their planned actions were proposed to strengthen response.

Recovery

This stage is defined by the critical functions within the early recovery, leading to short-, medium- and long-term rehabilitation, and finally reconstruction, which eventually closes the cycle back to prevention. Hospital managers may benefit from re-organizing interventions accordingly during the recovery stage to delineate urgency and prioritization.

With regards to hard resilience, participants proposed utilizing a post-disaster needs assessment to assess structural and non-structural safety and functionality. UNDP's methodology for post-disaster risk

assessment is comprehensive but is not suited for the facility-level. WHO's Hospital Safety Index, smart hospital checklists, or Damage Assessment and Needs Analysis (DANA), could also be used or adapted. Participants highlighted the need to arrange for the repair and reconstruction of damaged hospital facilities, and beyond cleaning areas used in the response, to reassess any alterations made during the response stage to return to original or improved function.

With regards to soft resilience, participants highlighted the critical need for data for informed strategic planning when scaling down the response in the recovery stage. This may include inventories of health workforce, beds, equipment and supplies. Coordination and communication within hospital networks, with other health sector actors and at the national level is crucial to guide the recovery, increase hospital capacities and transfer or reduce risks, ultimately strengthening the resilience of the hospital sector. In accord with participants in other working groups/stages, the participants advised that planning for staff mental health and psychosocial support must be more prominent during the recovery stage.

Finally, the rapidity of the response and recovery were noted as essential to hospital resilience. It was agreed that saving lives was the most critical outcome, but that speed in stabilizing hospitals following an emergency was essential to maintain its function and fulfil its primary goal.

Tools for implementation

Throughout the discussions, participants agreed on the need for an inventory of tools instead of creating new ones or reinventing the wheel. Due to the overwhelming nature of emergencies and the wealth of available tools, the second major point raised was the need to equip

hospital managers with practical and easy-to-use guidance (a roadmap) for maintaining hospital functionality amidst crises. Establishing a disaster risk management focal point or unit to advise hospital managers was a key recommendation. Additionally, participants highlighted that beyond providing stakeholders with tools, there is a critical need to close the learning loop and ensure sustainable and continuous improvement, and to improve learning from previous experiences and overall capacity development. Collective sharing and learning from the wealth of local and regional expertise, documenting country experiences, especially from resource-restrained and fragile settings, is necessary. The issue of the institutionalization of learning was highlighted in the presentation by ADPC, with nine recommendations across three areas: 1) integration and sustainability, 2) capacity-building; and 3) South-South learning.

A presentation by PAHO listed the numerous tools that hospital managers can utilize to strengthen resilience at different stages, including but not limited to the following:

- Hospital Safety Index;
- Smart Hospitals Toolkit (HIS, green checklist, baseline audit tool, cost-effectiveness analysis, sustainability construction guide);
- STAR-H strategic risk assessment tool for hospitals, a keystone assessment tool for evaluating both internal and external risks;
- INGRID-H tool for disability inclusion in hospital disaster risk management;
- ICS hospital incident command systems;
- SURGE expansion of hospital surge capacity training;
- EVAC evaluation of health facilities and their critical areas;
- Rapid Health Facility Assessment (RHFA);
- Violence Rapid Preparedness Assessment (VRPA) in health facilities; and
- health emergency training standards.

In addition to some of the tools created by WHO for health emergencies and disaster risk management and guidance at the facility level in terms of emergency response, services continuity and risk assessment, participants also proposed various strategic planning and management tools to equip hospital executives. These included: failure mode and effect analysis (FMEA), root cause analysis (RCA), the LEAN tool for strategic planning and organizational management and business continuity planning, among others.

While reflecting on what hospital managers would add to their toolkits, many noted that they were not familiar with some of the guidance created by WHO, indicating a need for further dissemination. They further noted the need for specific tools on strategic risk and capacity assessment, training and simulation exercises, and additional resources related to recovery. Recovery is the least researched of the four stages and requires additional practical tools to guide implementors. Specific resources are needed for facility-level implementation. Participants suggested creating and updating resources such as for: post-disaster needs assessment and facilities assessment, staff mental health, using resource inventories for scaling down the response towards recovery, and facility-level after action reviews (AARs) and corrective action plans.

Participants agreed that while many resources are available for strengthening and evaluating a hospital's hard resilience, practical and organized guidance on strengthening hospitals soft resilience and learning capacities needs to be adapted. Lessons and resources can be extracted and adapted from initiatives on strengthening organizational resilience beyond the health sector.

Evaluation of hospital resilience

As with research on health systems resilience, there are few measurement tools available to assess or evaluate hospital resilience. There are numerous challenges to evaluating hospital resilience, which can be broadly summarized as: 1) the lack of validated and standardized measurement tools; 2) widespread use of different qualitative measures due to a paucity of measurable and validated indices; and 3) the lack of comprehensive linkage between theoretical frameworks and evaluation models. The lack of measurable hospital resilience indices is a critical evidence gap that requires prompt and further research.

Following a presentation of the findings, discussions among participants reflected the complexity of the concept and the absence of pragmatic, comprehensive and validated measures to evaluate hospital resilience. Hospital resilience evaluation should utilize both qualitative and quantitative measures and the available tools require validation and standardization. Moreover, evaluation and measurement systems should span the Donabedian categories of 1) structure (or components), 2) process (or capacities), and 3) outcome. Notably, across the literature, there are few assessment tools encompassing all three Donabedian categories, while in some cases, depending on the conceptualization of hospital resilience, some indicators or evaluation measures may fit under multiple Donabedian categories.

Across both qualitative and literature findings, and throughout the expert consultation, outcome indicators were the most widely reported in evaluating hospital resilience. Two themes were prominent for evaluating hospital resilience at the outcome-level: hospital performance (or functionality) and quality. Loss and/or reduction in critical and life-saving services was considered a critical indicator to evaluate hospital functionality and ultimately resilience, confirmed

across both literature and qualitative findings. Other measures included: overall bed capacity, length of stay, ICU beds available per catchment population, number of deaths and hospital admissions. On the other hand, quality was evaluated through both patient and provider satisfaction. Despite an extensive debate regarding the functions of hospitals, participants reflected that hospital performance (in terms of lives saved) could be the primary indicator of resilient hospitals, while access, quality, cost-effectiveness, etc. could be intermediate indicators.

Hospital managers also proposed various indicators and measures to evaluate their hospitals' resilience, most commonly citing service delivery indicators, human resources indicators and financial indicators. The most common evaluations among hospital managers were related to the disruption of critical and emergency services and the rapidity in resuming them. Moreover, one approach was to consider the opposite of resilience to evaluate it; in this case, a hospital is not resilient if it experiences a functional collapse (cannot meet its primary goal of continuity of emergency, critical and essential services). A debate was held around the primary goal or outcome of private versus public hospitals. Additionally, participants expressed the need for developing and linking facility- and system-level resilience indicators.

3. Recommendations

The expert consultation brought together hospital managers, academics, policy-makers and technical advisers on health emergencies and disaster risk reduction, integrated service delivery, health systems recovery and resilience, hospital care management, emergency care systems and climate sustainability, among others, for extensive debates and discussions on strengthening hospital resilience. Due to the newness of the subject, diversity of its conceptualization and ambiguity in its operationalization and evaluation, the multidisciplinary perspectives of participants enriched the discussions, leading to the following practical recommendations.

1. Contribute to the evidence base, particularly operational research and practical guidance, through publication and dissemination of findings.

2. Consolidate the operational definition of hospital resilience to enable its application and evaluation.

   This definition should encompass the dynamic nature of resilience, including the everyday/day-to-day resilience of hospitals, resilience to chronic health system shocks or fragility (especially the case in prolonged and complex humanitarian emergencies), resilience to emergencies, different types of hazard and evolving/emerging risks. Further to this, a concrete definition will enable the setting of various indicators to evaluate hospital resilience. Additional study is needed on developing a comprehensive evaluation framework or resource for hospital managers.

3. Simplify operational guidance to enable practical use by hospital managers.

   The guidance should maintain a risk-based and all-hazard approach, propose a roadmap for the end-user and link to the various available tools. Participants suggested that the guidance must be concise yet comprehensive and allow for contextualization, especially for hospitals in resource-restrained and fragile settings. Some suggested that the first steps of strengthening hospital resilience should be the same for all actors to set a baseline and obtain a national or regional overview of the situation of hospitals in the Region. The first step in strengthening resilience must be risk-assessment and risk-identification/prioritization as well as a mapping of capacities. Additional focus is needed on equipping hospital managers in strengthening the soft resilience of their hospitals, particularly related to staff resilience, adaptive management and sustainable financing.

4. Pilot operational guidance in select hospitals in the Region, following discussions and agreement regarding criteria for selection of pilot countries.

5. Ensure collaboration and synergetic approaches within WHO related to all work on resilience.

The consultation uniquely brought together participants across the three levels of the WHO, from different technical areas and departments, across most regions. Participants proposed the need to align and link hospital resilience to ongoing work on health systems resilience, community resilience and health emergencies. This may be achieved by utilizing multisectoral approaches to integrate services continuity planning in disaster risk reduction and health emergencies; empowering communities and frontline workers to participate and create innovative solutions to health care problems; and building the capacities of emergency units and systems as the primary points of contact in emergencies. There is a need to streamline work on hospital resilience to avoid duplication and fragmentation. It was proposed that WHO headquarters should resume its working group on hospitals and invite relevant teams and regional offices.

World Health Organization
Regional Office for the Eastern Mediterranean
Monazamet El Seha El Alamia Street,
Extension of Abdel Razak El Sanhouri Street
P.O. Box 7608, Nasr City
Cairo 11371, Egypt
www.emro.who.int