UNDER THE SAME ROOF

Identifying and Evaluating WHO Collaborating Centres to Assist in Fullfilling the Mission of the World Health Emergencies Programme in the WHO European Region

SUMMARY OF MAIN FINDINGS
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Abstract
This report presents an analysis based on feedback from responsible officers working at the WHO Regional Office for Europe and WHO headquarters regarding their experiences working with WHO collaborating centres (CCs). It identifies challenges and provides solutions to improve the efficiency and effectiveness of CCs. Furthermore, it highlights the opportunities that exist with CCs to enhance their capacities and maximize their contributions towards the implementation of the WHO Global Programme of Work and the European Programme of Work. The report overall highlights the high-quality strategic and operational work that CCs deliver and how it is beneficial in achieving WHO's priorities and mandates.

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Executive Summary

Millions of people worldwide are impacted in some way or at some time by health emergencies, which can result from a number of hazards that can potentially have severe national, regional and global consequences, such as outbreaks of infectious diseases, nuclear radiation, chemical spills, armed conflict and bioterrorism. As the implementation coordinator of the International Health Regulations 2005 (IHR), the lead agency of the Inter-Agency Standing Committee Global Health Cluster and the United Nations’ authoritative body on health, WHO remains the focal point for health during times of emergency. In 2016, WHO established the WHO Health Emergencies Programme (WHE) to help countries to coordinate international action during emergencies and better address the full emergency risk management cycle, including preventing, preparing for, detecting, rapidly responding to and recovering from outbreaks and emergencies. The work of WHE helps to guarantee that WHO’s current strategic priorities as described in its Thirteenth Global Programme of Work (GPW13), are achieved in the next five years: in particular its goal to ensure one billion more people are better protected from health emergencies.

In order for this to become a reality, each of WHO’s six regional offices (for the WHO African, Eastern Mediterranean, European, American/Pan-American, South-east Asian and Western Pacific Regions) have adopted further resolutions. In September 2018, the WHE programme within the WHO Regional Office for Europe developed a Regional Action Plan (EUR/RC68/14) aimed at improving public health preparedness and response in the WHO European Region. Essential to putting this plan into action are the WHE and WHO Regional Office’s partners in health, including WHO collaborating centres (CCs). These are institutions that have been designated by WHO to form part of a collaborative interinstitutional network working to implement jointly planned activities that support WHO’s strategic priorities and programmes at all levels. In order to better coordinate the work of WHE in the WHO European Region, this report aimed to identify and evaluate CCs located in the Region relevant to the work of WHE in the Region (referred to here as WHE EURO CCs) and place them “under one roof”. The need to establish additional CCs to support each area of the emergency risk management cycle was assessed, while existing WHE EURO CC networks were examined to identify gaps and determine the potential for additional networks among these CCs.

Currently, there is no direct way to determine which CCs can assist the WHO Regional Office for Europe in fulfilling its WHE mission, mainly because WHE is a relatively new WHO programme and health emergencies were previously dealt with by several different WHO programmes. Consequently, the terms of reference (ToRs) of the CCs were searched using operational words linked to the main themes of health emergency risk management (prevention, preparedness, response and recovery) in the WHE guiding literature in order to identify those CCs that could be considered as part of the WHE EURO CC grouping.

On 17 October 2018, there were 837 CCs worldwide that were registered on the WHO CC database, with 284 in the WHO European Region. The search identified 105 CCs directly linked to the work of WHE in the Region and 67 as having expertise in specific technical areas that could support WHE tasks when needed.
Among the 53 Member States in the Region, a little over half had institutions that had been designated as CCs, and just under half had WHE EURO CCs. The 105 WHE EURO CCs were further mapped by several covariates; two thirds of CCs worked with biological hazards of various kinds (infectious diseases, general vaccinations and general laboratory diagnostics) while the remainder worked with all-other hazards (hydrometeorological, geological, technological, societal and general). There was a 36-year gap between the designation of the first WHE EURO CC for biological hazards (1950) and the designation of the first WHE EURO CC for “all-other” hazards (1986). Generally, WHE EURO CCs were found to target the emergency risk management themes of preparedness and response more than prevention and, particularly, recovery, with their main activities focusing on research; provision of technical advice, training and education; product development; collection and collation of information; and outbreaks and emergencies.

Comparing the WHE EURO CCs by whether their WHO responsible officers (ROs) were located at WHO headquarters or the WHO Regional Office for Europe illustrated that the majority of CCs had been designated by ROs at headquarters and that this was historically the case. In addition, CCs designated by WHO headquarters provided slightly more conceptual or technical activities (research) compared with those designated by the WHO Regional Office, which provided more operational activities (training and education and the implementation of programme activities at the country level). CCs designated by officers at WHO headquarters tended to mostly focus their activities on various geographical locations (90%) compared with CCs designated by the Regional Office (52%). A network analysis was performed to clarify the interconnectedness of the WHE EURO CCs; it mainly showed that many CCs were part of networks but that most networks focused on a specific hazard. How extensive the networking was for each CC differed within and between hazard type regardless of whether the CCs worked within biological hazards or the grouping of all-other hazards.

The ToRs of CCs were used as the main unit of analysis for identifying WHE EURO CCs because they provided a brief overview of the activities set out in the CC workplans; however, they may not be completely representative of everything a CC does or is capable of achieving. A number of CCs were found to work directly within WHE’s thematic competencies, and the analysis also identified areas in which these WHE EURO CCs are currently excelling or where gaps remain.

Ultimately, WHE EURO CCs were well networked, addressed a range of hazard types and health areas, were located in many parts of the Region and provided a number of activities in support of WHO/WHE priorities in the Region. Nevertheless, few addressed the recovery phase of the emergency risk management cycle, nor cross-cutting health issues such as mental health, refugees and migrants and vulnerable populations (for example, maternal, child and adolescent health) either during or after emergencies. Also, some hazard types such as wildfires, droughts or floods that impact WHO European Member States were not addressed. The grading of CCs in the WHO European Region highlighted the need for WHE either to develop new partnerships or to expand existing partnerships with CCs in order to better address all cross-cutting health issues in emergencies. Doing so will also help to ensure that all areas of the emergency risk management cycle, in particular the recovery phase, are being addressed in the Region through targeted joint activities.
It is noteworthy that WHO’s focus has shifted to include more proactive activities, with the creation of WHE and the adoption of its strategic priorities for 2019–2023 (programme documents), and WHO as a whole has committed to improving both the efficiency and effectiveness of operational activities at country level in order to support countries in achieving the Sustainable Development Goals. In this regard, there is a need for more operational partnerships between CCs and WHO, particularly in regard to assisting WHE in the WHO European Region in strengthening and evaluating Member States’ core capacities, event management and compliance with the requirements under the IHR.

Also highlighted was a need for improved communication and coordination between WHO headquarters and the WHO Regional Office for Europe in order to strengthen collaborative efforts, prevent overlap and better utilize the expertise and resources that CCs are able to provide. Lastly, the findings demonstrated the continued need for Member States to further support and foster national institutions of expertise that meet the eligibility criteria to become a CC, particularly among WHO priority countries and Member States that are currently lacking CCs.

Overview of main recommendations

- Further develop new partnerships or expand existing partnerships with CCs to ensure all hazards, cross-cutting health issues (especially mental health, refugees and migrants and vulnerable populations in emergencies) and phases of the emergency risk management cycle (in particular recovery) are fully addressed in the WHO European Region.
- Progress partnerships to be more operational in nature by including more activities such as training and education, implementation of programme activities at country level and addressing outbreaks and emergencies in order to support more WHE operational activities in the Region.
- Use a questionnaire to assess the actual emergency risk management capacities and capabilities of WHE EURO CCs in order to more accurately identify and catalogue how precisely they can be used to further develop emergency preparedness and response in the Region.
- Invite WHE EURO CCs working with the same hazard type to join and actively participate in a CC network in order to foster further collaboration; this may include developing several cross-cutting networks and/or platforms that can connect CCs working with different areas of health and hazards.
- Conduct a sweeping overview of all CCs at regional and global levels that would include the perspectives of directors of CCs and WHO ROs in order to further harmonize the partnerships between WHO and CCs.
- Update the WHO CC database to house information regarding the networks in which CCs participate in one place. This would make it easier for those utilizing CCs to identify those that serve a specific task, address a specific hazard or health area or contribute to specific WHO programmes/regional offices.
1. Background

1.1 Public health events and health emergencies

In today’s interconnected world, threats are all are around us, leaving every individual and every country vulnerable to hazards that can impact both the lives and the health of people around the globe. Hazards can be defined as potentially damaging phenomena that may occur in a certain period of time or area; they can be considered in two main categories, natural and human-induced threats. The first includes different types of geological, hydrometeorological, biological or extraterrestrial hazards while the latter includes technological or societal hazards. In terms of natural and technological hazards, on average, over 110,000 deaths were reported annually between 2004 and 2013, while 172 million people were affected by conflict, a societal hazard, in 2013 alone. It is also well known that biological hazards can severely impact public and global health; between 2011 and 2016, WHO reported over 1000 epidemics from more than 168 countries. Within these hazard categories are many types of event that can easily develop into emergency situations, depending on their severity and the number of people affected. An emergency can be defined as “an event or threat that produces or has the potential to produce a range of consequences that require urgent, coordinated action”. Such an event is often termed a disaster and may have consequences restricted to a particular area or may have catastrophic consequences on an international level. From 2004 to 2013, 1.7 billion people were affected by disasters, while in 2018, 65 million people were reported to be forcibly displaced, 40 million internally displaced, 21 million were refugees and 3 million were asylum-seekers, likely as a consequence of hazardous events or high-impact emergencies.

On a global scale, the IHR recognizes and defines public health emergencies of international concern as extraordinary events, which threaten public health with the risk of international spread of disease and require a coordinated international response. The IHR, the Sendai Framework for Disaster Risk Reduction (2015–2030) and WHO’s Framework for Emergency and Disaster Risk Management for Health (2015) all prescribe a multi- or all-hazard approach to reduce the risk of disasters, as well as the potential impacts to health and deaths. Consequently, an emergency is better viewed as a situation that affects both the health and the lives of either a large number of people or a substantial percentage of a population and also requires extensive multisectoral assistance.
1.2 Health emergency risk management

In order to reduce the risks associated with emergencies that affect public health (or health emergencies) and to cope with their aftermath, the field of health emergency risk management has emerged. With the all-hazard approach as its guiding principle, the main objectives are to “assess vulnerabilities, reduce or mitigate risk, and build country capacities for response and recovery from emergencies and disasters caused by any hazard”. These objectives make up the four stages or phases of the emergency risk management cycle: prevention, preparedness, response and recovery.

Broadly, prevention efforts can occur before, during or after an emergency and focus on reducing the risk of a hazard occurring by reducing both vulnerability and exposure. In the context of health emergency risk management, activities under this phase can include the implementation of interventions to reduce the spread of disease or exposure to different hazards, such as vaccination or immunization programmes for humans and animals. Regarding preparedness, activities take place before an emergency or disaster situation and concentrate on improving or developing knowledge, capacities and organizational systems at governmental, community and individual levels. Activities in the response phase can differ depending on the type of hazard that causes the public health emergency but typically comprise rapid risk and situation assessments, the coordination of medical supplies and countermeasures, and multipartner response functions and emergency risk communications. The final recovery phase usually centres on building back better and the return to normal functions, as well as efforts to strengthen health systems for future events.

1.3 WHO and health emergency risk management

The World Health Assembly in May 2011 adopted resolution WHA64.10, which advises Member States to strengthen their national and community health emergency risk management programmes and health systems by preparing for all hazards. Today, this mandate has become one of WHO’s strategic priorities as it strives to meet one of its three overarching goals: one billion more people better protected from health emergencies. As it is the duty of WHO as the health branch of the United Nations system to serve as the authoritative body in regard to international public health, resolution WHA64.10 called upon the WHO secretariat to provide assistance and support to Member States and partner organizations in order to improve health emergency risk management at regional, national, subnational and local levels. To do so, each of WHO’s six regional offices have adopted further resolutions to achieve this mission in their unique geographical, economic and political areas. The WHO Regional Office for Europe located in Copenhagen, Denmark, serves a diverse area and encompasses a total population of more than 916 million people distributed throughout 53 Member States, each facing distinctive health challenges and health system pressures. Despite these differences, the 53 Member States within the WHO European Region work together under the revised IHR in order to prevent, detect and respond to threats of international public health security. The IHR is a comprehensive international law to ensure that, in our increasingly globalized and interconnected world, public health emergencies of international concern, infectious or not, are identified, reported and their risks managed before they can affect travel, trade, economies and the lives of millions. As the implementation coordinator of the IHR and the lead agency of the Inter-Agency Standing Committee Global Health Cluster, WHO remains the focal point for health during times of emergency Within WHO, it is the WHE, newly founded in 2016 during WHO’s organizational reform, that is now tasked with the coordination of international responses to health emergencies, as well as aiding countries and partners in developing their own preparedness and response capacities to all hazards which affect health. For the WHO European Region, this includes biological events
such as the emergence, reemergence and spread of diseases (for example, measles, West Nile virus or tuberculosis) and hydrometeorological events such as wildfires and extreme heat-waves, which are increasing in severity. Additionally, there may be both technological events, arising from industrial hazards such as the Ukrainian Chernobyl nuclear power plant accident in 1986, and societal events in the form of conflict, such as the current crisis in Ukraine. Each of these threats has considerable consequences for the health, safety and lives of many. Therefore, as threats to the health of individuals and populations continue to persist, the WHO Regional Office for Europe and its respective Member States must be prepared and ready to respond to different hazards.

In September 2018, the WHO Regional Committee for Europe approved the Action Plan to Improve Public Health Preparedness and Response in the WHO European Region. The five-year plan for the WHE, developed by the WHO Regional Office for Europe, encourages an all-hazard approach to emergency preparedness and response planning. It also aims to strengthen and support capacities when needed at the national and regional levels in order to better anticipate, prepare, respond to and recover from different threats to public health. This support, guidance and assistance to Member States will need to be provided directly by WHO (headquarters or regional offices) or from partner organizations such as CCs.

1.4 The role of CCs
CCs assist WHO with the implementation of its work, which includes supporting the achievement of planned strategic objectives at regional and global levels, enhancing the scientific validity of WHO’s global health work and developing and strengthening institutional capacity in countries and regions. CCs serve as sources of information, services and expertise that can be used to help Member States to strengthen their national capacity for training, research and collaboration for health development. The idea of CCs originates from the League of Nations, however, it was not until after the Second World Health Assembly, where the policy was decided that WHO would not establish its own research institutions but rather utilize institutions already in existence, that they were officially established as such. Doing so created an essential extension of WHO as CCs are resource institutions from around the world that have been designated, following an application process, by the WHO Director-General to support WHO activities at all levels and in some fields and that serve as WHO’s sole technical resource. Therefore, a CC’s collaboration with WHO is not just available to a specific WHO programme, division or office but rather the WHO secretariat as a whole. The majority of the institutions which become CCs are departments or units within universities, laboratories, research institutes, hospitals or government ministries. In order to be considered for designation, eligible institutions must be funded publicly, privately or a combination of the two but may not be commercially funded or of a profit-making nature. Additionally, these institutions must have:

- high scientific and technical standing at national and international levels;
- a prominent place in a country’s health, scientific or educational structures;
- high quality scientific and technical leadership, and sufficient number of staff with high-level qualifications;
- stability in terms of personnel, activity and funding;
- strong working relationships with other institutions in the country and beyond;
- clear ability, capacity and readiness to contribute, both individually and within networks, to WHO programme activities, whether in support of county programmes or through participation
in international cooperative activities;

- clear technical and geographical relevance of the institution and its activities to WHO’s programme priorities; and

- at least two years of previous collaboration with WHO in carrying out jointly planned activities (World Health Organization, 2018).

### 1.4.1 Selected activities and subject areas

CCs implement activities focused on strengthening country resources and on activities which support national health development, particularly in regard to information, services, research and training. Consequently, CCs’ area of work with WHO focuses only on activities that have been planned with WHO and directly contribute to WHO’s programmes, rather than benefiting public health in general. As such, the activities of CCs are specifically designed to support the priorities of WHO, as well as each of the WHO technical programmes that it contributes to. For this reason, these activities must follow WHO policies, have associated concrete deliverables and must contribute to a WHO programme activity.

In the beginning, institutions that became CCs focused on the prevention and control of infectious diseases, as well as disease surveillance and research. However, over time, new partnerships grew to include a wider variety of CCs focused on areas such as health policy, health economics, health systems development and health promotion. As a result, CCs now provide many different forms of support to WHO within specific health or subject areas, such as nursing, occupational health, communicable disease, nutrition, mental health, chronic disease and health technologies.

### 1.4.2 Agreed areas of work: the ToR, workplan and annual report

A CC’s ToR provides concise, high-level broad indications of the area of work for the agreed collaboration between the centre and WHO without listing specific details or going beyond its functional scope. The ToRs provide a general framework to describe the future collaboration between WHO and the institution and the activities of the workplan to be developed. However, while details about specific activities should not be included in the ToRs, the ToRs should be linked to the collaborative activities of the CC and WHO. Therefore, during the designation process the CC and the WHO RO must thoroughly discuss and jointly develop the proposed CC’s ToR, activities and workplan.

The workplan of a CC should define, unambiguously, the objectives and expected results of the CC, while also connecting the centre’s agreed activities with WHO’s activities, as defined in the programme budget. The workplan clearly establishes the activities the institution has agreed to implement in collaboration with WHO during its period of CC designation. As such, the normative activities of the designated institution or the activities implemented outside of its collaboration with WHO should not be included in the workplan. Moreover, if WHO technical units have further identified specific activities from their operational plans that could necessitate external support, beyond the activities described in the ToR and workplan, those activities should be presented to the institution as possible additional activities.

The collaboration between CCs and WHO is monitored on a regular basis. Upon the completion of each 12-month period, CCs are required to document the implementation status of their WHO-related activities through the submission of an annual report.
The purpose of the annual report is not only to monitor the progress of the workplan but also to document the achievements that have been made and detail any difficulties which arose during the period or areas for future improvement.

1.4.3 Navigating the WHO and CC partnership
Several members of WHO staff take part in maintaining WHO’s partnership with a CC, including the assistant-director-general or director of programme management, the director or area manager, the technical counterpart and the WHO RO. However, it is the WHO RO who has direct contact with a CC and is responsible for managing the collaboration between WHO and the CC. Therefore, every CC upon its designation is assigned a WHO RO who will be both a WHO professional staff member and a member of a WHO technical programme at any WHO office (headquarters or a regional office). The RO should have the technical knowledge needed to adequately manage such a partnership. Once identified institutions have expressed their interest in becoming a CC, it is the responsibility of the WHO RO to verify eligibility as well as to guide institutions in preparing their CC proposal, with particular regard to the drafting of detailed ToRs and workplans that adequately reflect the joint activities of the institution and WHO. It is also important that WHO ROs maintain regular contact with CCs once they are designated in order both to monitor the quality of the work produced and to ensure that the agreed workplan is being implemented.

1.4.4 Networks of CCs
At their inception, it was intended that CCs would form an international network in order to further progress WHO’s activities at national, regional and global levels. However, at the Fiftieth World Health Assembly, WHO recognized that the utilization of CCs could be further enhanced by developing a broader network of partners in health and thus make full use of the skills and resources available at regional and country levels. Therefore, the Executive Board not only urged Member States to develop and strengthen their national institutions in order for them to become eligible as CCs but also requested the Director-General to encourage the development of new partnerships, strengthen existing partnerships with CCs and conduct a review of the existing CC networks.

A network can be described as a voluntary relationship between groups of individuals or organizations that exchange information and assume joint activities but are able to organize themselves in such a way that they maintain their own independence. It is essential for CCs to enter into such networks as this assists them in implementing their designated work by providing both mutual support and room for further cooperation and collaboration. For example, networks of CCs can prepare and disseminate letters of information, convene a meeting, organize a course, launch multicentre research, take the initiative in programmes of support and strengthening, and help emerging centres to reach a good operational standard and find their place in the network. In 2000, the Executive Board officially encouraged CCs to further develop their relationships with other CCs and national institutions in their field (recognized by WHO) by setting up or joining collaborative networks supported by WHO.

1.4.5 Summary of the CC system
In summary, CCs have been in existence for more than 70 years; they are institutions from around the world that work within diverse areas of health and have been designated by WHO to carry out jointly planned activities to support its programmes at global, regional and country levels.
Each eligible institution is granted a WHO RO who manages this partnership and assists institutions in navigating the designation process and developing the outline of their future work (ToRs and workplans) and monitors their progress over time (annual reports). Once designated, CCs come together to form an interinstitutional network of partners in health, which allows for additional support and further collaborative exchange between CCs, institutions and organizations. Both individual CCs and their networks will aid WHO in attaining its strategic priorities for 2019–2023; this includes any efforts made by WHO’s specific programmes and offices, such as that outlined in the Action Plan to Improve Public Health Preparedness and Response in the WHO European Region.

1.5 Aim of the report

The primary objective of this report was to identify and collate a list of CCs that could support the work of WHE in the WHO European Region and the implementation of the Action Plan to Improve Public Health Preparedness and Response in the WHO European Region (resolution EUR/RC68/14). Accordingly, the specific aims of the project were to:

- identify and map all CCs within the WHO European Region that could assist in fulfilling the mission of WHE in the Region;
- assess any need to establish additional CCs to support the different areas of the emergency risk management cycle in the work of WHE in the Region; and
- evaluate existing CC networks and the potential for the creation of new networks among existing CCs for WHE in the Region.
2. Methodology

2.1 Data collection
Data on CCs were collected from the open source WHO CC database (http://apps.who.int/whocc/Default.aspx), as updated on 17 October 2018. All categories of available information were collected and compiled into an Excel database. This included the CC's reference number, institution name, city, country, region, title, date of designation and expiry, WHO RO, status (active/pending), ToR, activities, subject areas and corresponding WHO outputs. Additional details on networks, WHO offices (headquarters or regional) of ROs and institutional characteristics (including type of funding) were accessed through WHO's internal CC database and added to the Excel database.

2.2 Methodological design and underlying considerations
Since the ToRs of the WHO CCs provide a general comprehensive summary of the areas and workplan for future collaboration between WHO and the institution, they were chosen as the main source to screen to identify WHE EURO CCs. As text was the main format for analysis, and in order to allow for methodological and replicable analysis of data and reduce any subjective biases that might arise in a more qualitative approach, a quantitative content analysis was applied. This study design was utilized during the inclusion and exclusion process when identifying WHE EURO CCs, as well as when classifying them by hazard type. The study remains on the manifest level and, therefore, countable or measurable components of the text data were analysed.

Many of the health consequences of emergencies are cross-cutting, and often actions that aid in managing the risks to health from public health events and emergencies are taken across multiple health disciplines. The work of WHO is also cross-cutting; consequently, while the work of some CCs may align more directly with the work of WHE in the WHO European Region, others may have specific technical expertise in particular health areas that could contribute to specific WHE emergency activities.
A grading of both included and excluded regional CCs was, therefore, conducted based on how directly their work could support the mission and activities of WHE in the Region (Fig. 1):

- **sphere A, emergency**: included CCs that were recognized as being directly related to the work of WHE in the Region;
- **sphere B, intermediate**: CCs that could provide expertise on specific technical areas needed to support different WHE tasks during emergencies; and
- **sphere C, non-emergency**: CCs that were peripheral to public health events or emergencies and the work of WHE in the Region.

**Fig. 1.** The spheres of relation: grading of WHO CCs in the WHO European Region by their direct relation to the work of WHE in the Region and health emergencies

As the all-hazard approach is recommended by WHO and its guiding literature, included WHE EURO CCs were classified by hazard type using the classification of hazards outlined in the WHO Emergency Response Framework (2017) in order to provide an overview of the different hazard groups involved. Once classified by hazard type, WHE EURO CCs were categorized as either working in biological hazards or all-other hazards, and within those categories broken down by specific hazard. This categorization was based on the concept that all biological hazards (with the exception of HIV and sexually transmitted infections) could be relevant to emergencies as they have been emphasized in the IHR. This was particularly rooted in the 1969 IHR’s historical focus solely on biological hazards or infectious diseases, such as cholera, plague and yellow fever. There has since been a shift to addressing all public health risks or hazards. This broadened scope can be seen in today’s IHR as it moves towards a risk-based approach that recognizes multiple hazard types (biological, chemical, foodborne, radiological, nuclear and other) that may impact public
health. Therefore, WHO maintains the distinction between biological and other potential hazards in its role as the implementation coordinator of the IHR and correspondingly the work of WHE. In the recent WHE-related Action Plan to Improve Public Health Preparedness and Response in the WHO European Region there is not only clear support of the IHR but also an emphasis on the importance of an all-hazard approach as the WHO Regional Office promises to assist Member States in developing their capacities regarding biological and all-other hazards that may affect human health. As a result, it was considered important to maintain this same distinction between biological hazards and all-other hazards when collating CCs related to the work of WHE in the WHO European Region.

2.3 Screening CCs in the WHO European Region for inclusion and exclusion

2.3.1 Inclusion

All CCs in the WHO European Region were assessed. A screening process based on the systematic criteria was then used to ensure that all CCs directly related to the work of WHE in the Region and the implementation of the Action Plan to Improve Public Health Preparedness and Response were identified and included in the sample. The screening process was performed using the following definitions: themes, major keywords and additional keywords.

- **Themes.** The development of these systematic criteria for inclusion began following a thorough review of essential WHE guiding literature, where six recurring ideas or themes were recognized as central to public health emergency risk management: public health event, emergency, prevention, preparedness, response and recovery. More importantly, these themes form the foundational elements of the work of the WHE programme in the WHO European Region and, therefore, were operationalized in order to identify all possible CCs that could be relevant to this work.

- **Major keywords.** In order to operationalize the six themes and capture all possible CCs relevant to the work of WHE in the Region, specific keywords were identified from the theme definitions (as defined in the WHE guiding literature). These keywords were chosen and highlighted as they describe the overall content of the themes and are, therefore, used in the CC's ToRs to describe the essence of their work. These major keywords were linked with the CCs' ToRs during the screening process, and CCs that included these words in their ToRs were marked as potential WHE CCs.

- **Additional keywords.** Additional keywords were used to ensure that all relevant CCs (even those whose ToRs were tailored to specific hazards or did not directly state which area of emergency risk management they would be working in) had been captured. Additional keywords were identified in the WHE guiding literature, in particular the WHO Emergency Response Framework's Classification of Hazards, which details types and groups of hazards. In order to confirm that all relevant CCs working with biological hazards were included in the sample, specific infectious disease keywords relevant to the WHO European Region were identified from the European Centre for Disease Prevention and Control's list of diseases and special health issues under surveillance in the European Union in 2018. The additional keywords were also linked with the CCs ToRs during the screening process.
2.3.2 Exclusion criteria: revising for false positives and negatives

- **False negatives.** CCs that were not captured by any of the major or additional keywords during the screening process would be excluded from further study; however the ToRs of these CCs were manually screened for areas of work related to public health events or emergencies.

- **False positives.** The ToRs of CCs captured using major or additional keywords were also manually screened to exclude any CCs where their area of work was unrelated to public health events or emergencies.

2.3.3 Process of inclusion and exclusion

CCs that were registered in the WHO CC database on 17 October 2018 and were located in the WHO European Region were identified. These were screened digitally using their ToRs as described above for the six themes using the major and additional key words for each. A manual overview process was used to avoid both false positives and false negatives. In addition, during the manual overview, some centres that were captured by the keywords were found to have technical areas unrelated or not directly related to public health emergencies or the work of WHE in the Region; these 65 CCs were also excluded. It should also be noted that more than half of these CCs were captured by the theme prevention, indicating this to be the least specific or sensitive of the six themes. Although the ToRs of CCs that were not captured by major or additional keywords were also manually reviewed, none of these could be included.

The final sample consisted of 105 CCs that were identified as being relevant to public health emergencies and designated as WHE EURO CCs (Fig. 2). The theme public health event captured 80 of the 105 CCs, while the theme emergency captured 37 of the 105 CCs but only added an additional 15 CCs to the final sample. The themes prevention, preparedness and response were similar in that many of the 105 CCs were captured by them, but again they only added a small number of CCs to the final sample. Recovery was the theme that captured the fewest CCs, only four out of 105 and this added no CCs to the final sample. Additionally, it was most prevalent for either two or four themes to be captured in the ToRs of the CCs, while it was least common for CCs to have all five themes present in their ToRs.
Fig. 2. Categorization of included WHE EURO CCs by hazard type, with a focus on the all-other hazards group

Notes: aCCs Includes CCs working with PHEIC (public health emergencies of international concern), points of entry and medical teams (one also works with mass casualty events); b one also also works with biological hazards; c three CCs working with multiple hazards; d the CC also works with mass casualty events.
3. Results

3.1 Spheres of relation: grading of CCs in the WHO European Region
Fig. 1 graded the 284 CCs in the WHO European Region by their relation to public health emergencies and the work of the WHE in the Region. Both the outer and the intermediate spheres comprise CCs that were not captured by keywords as well as those that were captured by keywords but were excluded during the manual overview. It is important to note that although all CCs working with infectious diseases were included in the final sample of WHE EURO CCs, it was decided to move CCs working solely with HIV/sexually transmitted infections into the intermediate sphere as they are important to consider during emergencies but in the context of the WHO European Region are less likely to lead to an emergency situation. The emergency sphere also contains the WHE EURO CCs or the WHO CCs that were included in the final sample, as they were identified as being directly related to public health emergencies and the work of WHE in the Region. Fig. 1 also shows that there were several CCs whose technical areas were listed in the intermediate and outer spheres but were captured by major and additional keywords and found to work directly with public health events and/or emergencies. For example, eight CCs in the WHO European Region were found to work with migrant/Roma health; as this area of work may or may not relate to the work of WHE, those which were not captured by keywords were placed in the intermediate sphere and those which were captured were placed in the emergency sphere.

3.2 Classification of WHE EURO CCs by hazard type
Once the final sample was determined, analysis began by categorizing the CCs by hazard type. It was found that 72 of the 105 WHE EURO CCs were within the generic group of natural hazards; of those, 70 were within the biological hazard group with only one in the hydrometeorological group and one in the geological group (Fig. 2). While the hydrometeorological hazard group could be considered as hydrological, meteorological and climatological subgroups, only the meteorological subgroup was identified in the ToRs of a WHE EURO CC: the WHO Collaborating Centre in Global Change, Environment and Public Health at the University of Oulu (FIN-36). Similarly, the geological hazard group included subgroups of earthquake, mass movement, liquefaction and volcanic
activity, as well as several further subgroupings. However, only one WHE EURO CC was identified as working with earthquakes: the WHO Collaborating Centre for Disaster and Emergency Medicine Management & Research at the Tel-Aviv University, Sackler Faculty of Medicine (ISR-31).

Additionally, only 28 WHE EURO CCs were found to be working with human-induced hazards: 20 with technological hazards and eight with societal hazards (Fig. 2). Within the technological hazard group, five hazard types were identified in the ToRs of WHE EURO CCs: radionuclear including radiation, nuclear and radionuclear events \(n = 11\); chemical incidents \(n = 2\); air pollution \(n = 1\); contaminated sites \(n = 1\); and water contamination \(n = 5\). Within the societal hazard group, six hazard types were identified in the ToRs of WHE EURO CCs: armed conflict \(n = 1\), deliberate events \(n = 1\), mass arrival \(n = 1\), mass gatherings \(n = 1\), mass casualty events \(n = 3\) and financial crisis \(n = 1\).

When categorizing the WHE EURO CCs by their hazard type, eight did not fit within specific hazard groups and were, therefore, placed under a general hazard group, including CCs working with unspecified public health emergencies of international concern \(n = 2\), points of entry \(n = 1\) and medical teams \(n = 5\) (Fig. 2). It is important to note that three WHE EURO CCs were found to be working with multiple hazard types (the WHO Collaborating Centre for Disaster and Emergency Medicine Management & Research at the Tel-Aviv University, Sackler Faculty of Medicine (ISR-31), the WHO Collaborating Centre for Clinical Care, Diagnosis, Response and Training on Highly Infectious Diseases (ITA-89) and the WHO Collaborative Centre for Conflict Analysis and Programming (UNK-272)) and were accounted for multiple times during the classification process.

Since the biological hazard group included such a wide array of infectious diseases, the classification differed from the other hazard groups with an initial grouping into those working with specific infectious diseases \(n = 62\), those worked more generally with vaccines/vaccinations \(n = 6\) and those working in laboratory diagnostics \(n = 2\) (Fig. 3). Those working with specific infectious diseases were then classified based on disease category: vaccine-preventable diseases \(n = 16\), tuberculosis \(n = 10\), antimicrobial resistance \(n = 11\), neglected tropical diseases \(n = 9\), vectorborne diseases \(n = 6\), waterborne diseases \(n = 2\), foodborne diseases \(n = 5\), zoonoses \(n = 8\), viral haemorrhagic fevers \(n = 4\) and general outbreaks \(n = 2\) (Fig. 3).
WHE EURO CCs in five of these disease categories were further categorized based on specific infectious diseases: vaccine-preventable diseases included CCs working with general vaccine-preventable diseases \((n = 1)\), poliomyelitis \((n = 4)\), smallpox \((n = 3)\), meningitis \((n = 1)\), Haemophilus influenzae \((n = 1)\), influenza \((n = 3)\), diphtheria \((n = 1)\), measles and rubella \((n = 1)\), and Streptococcus pneumoniae \((n = 2)\); neglected tropical diseases included CCs working with soil-transmitted helminths \((n = 1)\), schistosomes/schistosomiasis \((n = 3)\), echinococcosis \((n = 2)\), leishmaniasis \((n = 1)\), African trypanosomiasis \((n = 1)\), human fasioliasis \((n = 1)\) and and strongyloidiasis \((n = 1)\); foodborne diseases included CCs working with general foodborne diseases \((n = 3)\), listeria \((n = 1)\) and campylobacteriosis \((n = 1)\); and zoonoses included CCs working with general zoonoses \((n = 2)\), brucellosis \((n = 1)\), anthrax/Bacillus anthracis \((n = 1)\), plague/Yersinia pestis \((n = 3)\), tularaemia/ Francisella tularenensis \((n = 1)\) and rabies \((n = 3)\). The six CCs in the vectorborne disease group mainly working with malaria (Fig. 3).

It is also important to note here that a number of WHE EURO CCs in the biological hazard group worked with more than one infectious disease and would, therefore, be counted multiple times during the classification process.

### 3.3 Description of WHE EURO CCs by selected covariates

#### 3.3.1 Distribution of WHE CCs in WHO European Member States

Only 21 of the 53 Member States in the WHO European Region contained a WHE EURO CC: 18 covering biological hazards and 13 all-other hazards. The United Kingdom had the largest number of CCs \((n = 20)\) with 11 in Germany and 11 in the Russian Federation; nine Member States had only one CC each (Fig. 4).
3.3.2 Activities and subject areas of WHE EURO CCs

The four leading activities among CCs in both the biological and all-other hazards groups were research, providing technical advice to WHO, training and education, and product development (Fig. 5). The fifth leading activity was collecting and collating information (10%) in the biological hazard group and working with outbreaks and emergencies (11%) in the all-other hazards group. While CCs in the biological hazards group provided somewhat more training and education (19%), those in the all-other hazard groups provided slightly more product development (16%) and technical advice (17%) to WHO.

Fig. 5. WHE EURO CCs working with biological hazards and all-other hazards by their selected activities
CCs covered a wide range of subject areas within each hazard type. However, the distribution by subject areas actually reflects the number of CCs in each topic. For example, among biological hazard CCs, subject areas were selected that related to specific infectious diseases (communicable diseases ($n = 12$), vaccines ($n = 11$) and zoonoses ($n = 11$)).

### 3.4 Comparison of the WHO designation origin for CCs: WHO headquarters and WHO/Europe

Fig. 6 compares the selected activities of WHE EURO CCs depending on whether they were designated by WHO headquarters or the WHO Regional Office for Europe. Two CCs were excluded from the analysis as they were designated by the WHO Regional Office for the Americas/Pan American Health Organization and the WHO Regional Office for Africa. Among the remaining 103 CCs, all activities with the exception of all-other hazards (0%) had been selected by one or more CCs regardless of where the designation originated. Also, CCs designated by both WHO offices had undertaken, for the most part, similar main activities such as research, providing technical advice to WHO, training and education, and product development. CCs designated by the WHO Regional Office for Europe had selected training and education activities to a much larger extent (25%) than those designated by WHO headquarters (13%). In addition, WHE EURO CCs designated by the WHO Regional Office for Europe had one additional main activity: implementation of WHO country level programme activities (12%).

Fig. 6. Comparison of the selected activities of WHE EURO CCs designated by WHO headquarters and the WHO Regional Office for Europe

[Diagram showing comparison of activities]
4. Discussion

4.1 General concepts
A CC is an institution that has been designated by WHO to support WHO’s strategic priorities and programmes at all levels, acting as part of a collaborative interinstitutional network and implementing jointly planned activities. In the period covered by GPW13 (2019–2023), their work will focus on achieving WHO’s three overarching goals (one billion more people benefiting from universal health coverage; one billion more people better protected from health emergencies and one billion more people enjoying better health and well-being).

Each WHO programme and regional office has begun to implement initiatives to reach these goals. The WHO Regional Office for Europe developed the Regional Action Plan in September 2018 to improve public health preparedness and response in the WHO European Region as part of moves to support WHE. Partners in health (CCs) will be called upon to assist in strengthening Member States’ emergency risk management capacities and capabilities. This report identified and collated all WHE EURO CCs in order to evaluate existing CC networks and the need for new networks among existing WHE EURO CCs in the Region and to assess any need to establish additional CCs to support the different areas of the emergency risk management cycle. CCs that contributed to WHE in the Region were identified from their ToRs using the main themes of health emergency risk management (prevention, preparedness, response and recovery) and keywords capturing the essence of the themes. This methodological process was chosen because there was currently no direct way to determine which CCs can assist WHE, a relatively new WHO programme created at the end of 2016 in the wake of the 2014–2016 Ebola outbreak in West Africa. Previously health emergencies had been dealt with by several different WHO programmes. Therefore, CCs with the potential to be relevant to the work of WHE would have been designated by many different WHO programmes over time (for example, 8% were designated by headquarters and 12% by the WHO Regional Office for Europe with the remainder designated by specific programmes). Consequently, this analysis was carried out to assemble “under one roof” a list of CCs that can assist WHE in the WHO European Region.
4.2 Summary of the main findings

On 17 October 2018, there were 284 CCs in the WHO European Region among which 105 were identified as being WHE EURO CCs. Only 21 of the 53 Member States in the Region possessed institutions that could be considered to be WHE EURO CCs. Grading all CCs in the WHO European Region by their direct, intermediate and peripheral relevance to health emergencies and the work of WHE highlighted that 114 centres focused on health areas which support WHO's efforts to ensure that more people enjoy better health and well-being but few CCs addressed cross-cutting issues such as mental health, noncommunicable diseases, refugees and migrants and the health of vulnerable populations (such as maternal, child adolescent health) during or after emergency situations. The work of WHE EURO CCs in the emergency sphere generally targeted the themes preparedness and response, much more than prevention and, particularly, recovery, with their main activities covering research, provision of technical advice, training and education, product development, collection and collation of information, and outbreaks and emergencies. About half of the WHE EURO CCs did not specify several of their institutional characteristics; however, the available data indicated that majority of CCs had been in operation for more than 10 years, were public institutions and served as either research institutes or universities.

In classifying WHE EURO CCs by the hazard types described in their ToRs, it was found that two thirds of the CCs worked with biological hazards of various kinds while the remainder was split between all-other hazard types (hydrometeorological, geological, technological, societal and general hazards). The majority of CCs had been designated by officers at WHO headquarters, and this was historically the case. In addition, CCs designated by WHO headquarters provided slightly more conceptual or technical activities (research) with a more global focus, whereas those designated by the WHO Regional Office for Europe tended to provide more operational activities (training and education and the implementation of programme activities at the country level) at both global and regional levels.

The second objective of this analysis was to evaluate CC networks in order to determine the potential for the creation of new networks. The number of networks focused on addressing particular hazards varied with the hazard type. How networked each WHE EURO CC was differed within and between hazard types for both WHE EURO CCs working with biological hazards and for those working in all-other hazards.
5. Conclusions and recommendations

In conclusion, the collaborative partnerships which WHO has developed with its CCs and their networks are essential to achieving the strategic priorities set out in GPW13. These partnerships will help to strengthen Member States’ capacities and capabilities to prevent, detect, prepare for, respond to and recover from the diverse health needs presented by health emergencies; aiding in fulfilling the mission of WHE and the implementation of the Action Plan to Improve Public Health Preparedness and Response in the WHO European Region. This report identifies and evaluates CCs in the WHO European Region that are relevant to the work of WHE in the Region so that they can be considered as a group.

Overall, 105 WHE EURO CCs were found, and areas in which they are currently excelling and areas where gaps remain were identified. In order to close these gaps, either new partnerships or the expansion of existing partnerships with CCs needs to occur if all hazards, cross-cutting health issues and phases of the emergency risk management cycle, in particular recovery, are to be addressed in the WHO European Region. These partnerships should also move to be more operational in nature and include more activities such as training and education, the implementation of programme activities at country level and addressing outbreaks and emergencies if they are to assist in strengthening and evaluating Member States’ core capacities to prevent, detect, prepare for, respond to and recover from the diverse health needs presented by health emergencies. Therefore, a questionnaire focused on assessing the actual emergency risk-management capacities and capabilities of the WHE EURO CCs is also suggested to accurately identify and catalogue how precisely the CCs can be used to further developing emergency preparedness and response in the Region. There is also room to develop better pathways of communication and coordination between WHO headquarters and the WHO Regional Office for Europe in order to strengthen collaborative efforts, prevent overlap and better utilize the expertise and resources CCs are able
to provide. Each CC working in a hazard type should be invited to participate in a CC network. This may include developing several cross-cutting networks and/or platforms that can connect WHE EURO CCs working within different areas of health and hazard groups in order to foster further active collaboration and communication between the CCs.

A funding barrier was also identified that prevents institutions in lower-income countries from participating in the collaborative work of WHO, and more specifically WHE, thus perpetuating a cycle of inequities. To address this issue, it is recommended that a sweeping overview is conducted of all CCs at regional and global levels, including the perspectives of directors of CCs and WHO ROs, to further harmonize the partnerships between WHO and CCs. This is particularly relevant because such a review was last conducted 21 years ago in 1998; this review resulted in the way CCs are currently designated and what information is collected from them during the designation process. Since then, WHO has restructured and technology has advanced immensely; consequently, it is time to update and revise application forms in order to ensure that all required details have been disclosed by prospective institutions. This could include adding questions on precisely how and specifically which of WHO's three pillars the CCs can contribute to.

Lastly, an update to the CC database is also needed in order to improve the way in which CCs can be identified for a specific task, a specific hazard and health area, or a contribution to a specific WHO programme or regional office need. Information regarding the networks in which CCs participate also needs to be collected into one database. Such a platform or database would assist those utilizing CCs and their networks in order to ensure that they reach their full potential as WHO's partners in health.
The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

Member States

Albania  Andorra  Armenia  Austria  Azerbaijan  Belarus  Belgium  Bosnia and Herzegovina  Bulgaria  Croatia  Cyprus  Czechia  Denmark  Estonia  Finland  France  Georgia  Germany  Greece  Hungary  Iceland  Ireland  Israel  Italy  Kazakhstan  Kyrgyzstan  Latvia  Lithuania  Luxembourg  Malta  Monaco  Montenegro  Netherlands  North Macedonia  Norway  Poland  Portugal  Republic of Moldova  Romania  Russian Federation  San Marino  Serbia  Slovakia  Slovenia  Spain  Sweden  Switzerland  Tajikistan  Turkey  Turkmenistan  Ukraine  United Kingdom  Uzbekistan