Care of non-communicable diseases in emergencies

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Introduction

Emergencies include natural disasters such as earthquakes and severe meteorological events, but also armed conflict and its consequences, such as civil disruption and refugee crises (sometimes termed chronic emergencies).[1] The health component of the humanitarian response to emergencies has traditionally focused on management of acute conditions such as trauma and infectious illnesses.[2] However, non-communicable diseases (NCDs) such as diabetes, hypertension, cardiovascular disease, cancer, and chronic lung disease are now leading causes of disability and death in low-income and middle-income countries (LMICs)[3] and disaster-prone areas.[4]

NCDs require ongoing management for optimal outcomes, which is challenging in emergency settings because natural disasters or conflicts increase the risk of acute NCD exacerbations and decrease the ability of health systems to respond. Also, complex emergencies compromise NCD prevention and control over a prolonged period; limited access to timely treatment can lead to poor outcomes for patients and impose the high costs of managing complications on humanitarian agencies.[5,6] Therefore, a more comprehensive approach to NCD management in emergencies is an important but neglected aspect of humanitarian response.

Management of NCDs in emergencies requires inclusion of NCD care into standard operating procedures, which would facilitate horizontal and vertical integration with other aspects of relief efforts. Humanitarian response in emergencies can be divided into three phases: mitigation and preparedness, emergency response, and post-emergency phase. Existing guidance[2] for humanitarian response identifies certain NCD-relevant considerations, but these chiefly refer to the emergency response phase and are limited in scope.

Here we propose the content of a minimally adequate response to NCDs in emergencies. This Viewpoint proposes specific actions organised by phase of the humanitarian response (figure), as well as some potential indicators for assessment of progress. We selected actions for inclusion based on their potential to reduce morbidity and mortality while minimising administrative and logistical burden for humanitarian responders. Where possible, we have prioritised actions that align with existing efforts to strengthen NCD care.

Actions towards better NCD care

Mitigation and preparedness

Baseline information on local NCD burden (mortality, morbidity, and prevalence of risk factors) and on health-system structure and function is an important component of emergency preparedness. National surveys (including country health profiles available on a mobile application)[7] are a good starting point, and can be supplemented by tools such as the WHO STEPwise approach to surveillance or epidemiological surveys to estimate local medication needs.[8] National registries can aid estimation of the requirements of vulnerable NCD populations such as those with kidney failure, cancer, or type 1 diabetes—and, if accessible in the post-emergency setting, can be used to contact patients with specific needs (eg, chronic dialysis, insulin).[9,10]

Continuity of care for people with NCDs in emergencies can be enhanced by advance provision of individually written plans for self-management, emphasising the importance of an up-to-date medication list and familiarity with community emergency preparedness plans.[11] The current European refugee crisis highlights the importance of patient-held documents[12,13] for the provision of crucial and standardised medical information that can be easily shared with providers.

Recommendations and tools to facilitate preparedness among people with major NCDs are available.[14–16] The key priority is to prevent acute deteriorations or exacerbations by avoiding interruptions in treatment. Strategies include stockpiling, preparation for evacuation (personal NCD emergency kits), actions to minimise exacerbations of symptoms (eg, avoiding exposure to asthma triggers), and self-management of stress and minor symptoms. Health-care providers in countries at risk for disasters should use these recommendations (with adaption as necessary[17]) to educate their patients.[18,19]

Assessment of readiness to manage common NCDs during an emergency is a crucial component of national preparedness plans. Recent assessments of health facilities using SARA (Service Availability and Readiness Assessment)[20] in stable countries (Tanzania,[21] Vietnam[22]), those affected by conflict (Libya[23]), or those coping with a large influx of refugees (Jordan) have provided valuable insights about each system's capacity to manage NCDs in an emergency. During an emergency, these assessments can be combined with real-time data assessing the availability of health services.[24]

Tools such as the WHO Hospital emergency response checklist[25] can help health facilities to develop preparedness plans—which is especially important for national referral centres in LMICs. If local facilities are overwhelmed or unavailable, severely ill patients with NCDs or those needing specialised services might require referral. Ideally, standard operating procedures would be established in advance to guide referral of patients with NCDs from primary health facilities to secondary or tertiary centres. Appropriate referrals might require coordination between public and private providers as well

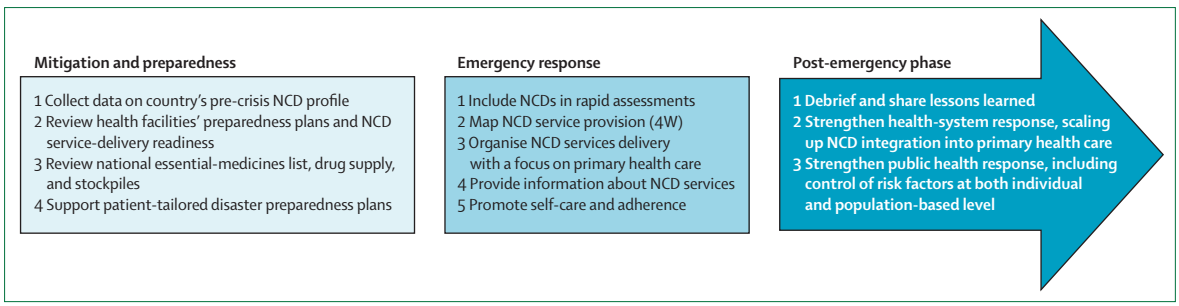

Figure: **Actions by phase of humanitarian response**
NCD=non-communicable disease. 4W=Who's Doing What, Where, and When.

Panel: Case study: managing NCDs in a fragile state

Since March, 2015, conflict in Yemen has escalated, resulting in a high number of displaced Yemenis. Half of Yemeni residents were living below the poverty line before the conflict, which has exacerbated these economic stresses. More than 1 million people have been displaced, with 2800 deaths since the beginning of the conflict.

Yemen's health system was weak even before the crisis. Following the escalation of conflict, more than 160 health facilities have closed, leaving 15·2 million people with limited access to basic health-care services. Attacks on health-care services are increasingly common, further impeding access to emergency care.

Non-communicable disease (NCD) burden in Yemen is high: pre-conflict data show that NCDs represent four out of the top ten causes of death (lower respiratory infections, ischaemic heart disease, stroke, and diabetes).

The conflict has subtantially affected the health of Yemenis with NCDs. A key problem has been the struggle to access essential NCD drugs and treatment, including procurement and supply by the remaining health facilities. With the national supply chain unable to operate and limited physical access to conflict-prone areas, the country relies on international organisations for support in providing essential NCD drugs.

WHO and partners have raised funds to supply essential NCD drugs (initially focusing on those in the WHO Package of Essential Noncommunicable Disease Interventions) to prevent life-threatening exacerbations and support maintenance of therapy. However, these measures are short term and the funds do not allow the coverage of all patients with NCDs. This situation leads to issues about how to best prioritise treatment to maximise benefit, but leaves the problem of sustainability unanswered.

as agreements with facilities abroad. For instance, the UN High Commisioner for Refugees (UNHCR) has developed operational guidance for referrals in refugee settings.[26]

Effective NCD management depends on the availability of affordable medicines and technologies, which is often limited in emergency-prone settings, even at baseline. Procurement of essential medicines from abroad can be difficult when national supply chains are disrupted—particularly in emergencies (panel). Therefore, up-to-date pharmacy disaster plans and regular reviews of the national formularies of NCD-relevant medicines, technologies, and laboratory tests are essential components of preparedness. These exercises should identify the highest priority NCD medications and technologies, and ensure effective supply and distribution mechanisms in a post-emergency setting, including national stockpiles.[27–29]

For many LMICs, the medicines and technologies in the WHO Package of Essential Noncommunicable Disease Interventions (PEN)[30] will be most appropriate for a post-emergency setting, although additional drugs will sometimes be needed (eg, for patients with cancer or transplants).

The Interagency Emergency Health Kit (IEHK) aims to meet the primary care needs of 10 000 people for approximately 3 months in post-emergency settings—after which these needs can be met by local procurement efforts.[31,32] However, the IEHK was not designed to manage NCDs, and does not contain the medicines and medical devices needed to achieve this objective. The composition of the IEHK is reviewed every 5 years; NCD-related medicines are being considered for inclusion in the 2016 revision, perhaps as a supplementary module that complements the existing kit.

Emergency response

At the beginning of an emergency, pre-emergency data and rapidly available data from the field are used to estimate the number of people affected, likely impact on health and health services, expected evolution of the situation, and external assistance needed.[33,34] The next step is to do rapid health assessments according to a standardised approach.[35] These secondary assessments focus on acute events[36] and do not fully address the needs of patients with NCDs. Although the development of NCD-specific tools could be considered, the most important measures would be to include NCD-specific questions in rapid assessment tools, and people with expertise in NCD management in the assessment and development of response plans.

The response to major emergencies by humanitarian actors is articulated in a strategic response plan, which is based on a structured needs assessment to determine key interventions for each sector and allocate funds accordingly. Therefore, people with NCDs need to be considered in the assessment of health needs and the preparation of response strategies so that appropriate funding is available. Procurement of essential medicines and technologies is a key challenge in emergencies (panel), and emergency funds are essential for addressing this need. Improved preparedness for NCD management in emergencies (eg, availability of high-quality data on

	Key prerequisites
Essential drugs and technologies	
Medicines	According to WHO PEN, primary health-care facilities should have the following minimum drugs available: aspirin, a statin, an angiotensin-converting-enzyme inhibitor, thiazide diuretic, a long-acting calcium channel blocker, metformin, insulin, a bronchodilator, and a steroid inhalant
Technologies	According to WHO PEN, primary health-care facilities should have the following minimum technologies available: a blood-pressure measurement device, a weighing scale, blood-glucose measurement devices with strips, and urine strips for albumin assay
Health personnel, with appropriate training on NCD-relevant guidelines	
Providers	Personnel ranging in scope from a single nurse to a multidisciplinary team (with identified roles and responsibilities)
Training and guidelines	Although training cannot be envisaged during early phases of an emergency, staff can be briefly oriented to priority NCD-management issues, using training material adapted for emergency settings and based on the WHO PEN or nationally approved guidelines
Health information tools for primary health care	
Clinical management	At a minimum, patients should be provided with cards containing the details of their medical history and treatments
Service management	Facilities should report the proportion of all consultations that are NCD related, as well as some measure of NCD-relevant medication use
Service delivery design to ensure continuity of care	The type of emergency will determine the service delivery model (emergency medical assistance *vs* more traditional primary health-care model) and provisions for continuity of care. Factors to be considered include: operating hours, pathways, and frequency of follow-ups and refill prescriptions; criteria for referral to specialised services and identification of referral centres; and self-care and community outreach activities adapted to emergency circumstances (eg, camp or non-camp setting)

PEN=Package of Essential Noncommunicable Disease Interventions. NCD=non-communicable disease.

Table: **Key prerequisites for delivery of core non-communicable disease interventions in primary health care in emergency settings**

pre-emergency disease burden) would help to guide production of strategic response plans.

After initial assessments are complete, country authorities and humanitarian agencies map the activities of the various actors by sector and location. The concept of Who's Doing What, Where, and When (4W)[37] is useful for identification of potential overlaps or gaps in response, and can be visualised using mapping software. According to the type, stage, and impact of an emergency and the population of concern (eg, non-displaced nationals, refugees, internally displaced people), NCD care might be provided through public facilities or directly by aid agencies. These mapping exercises need to account for the often severely reduced capacity of local providers in emergency settings.

Organisation of NCD service delivery and integration with primary health care is especially important in emergency settings. PEN[30] is a good starting point to integrate NCD management into primary care in affected regions. Clinical protocols have been developed to support evidence-based and cost-effective interventions addressing major NCDs such as cardiovascular disease, diabetes, cancer, and chronic respiratory diseases, and organisations such as the UNHCR have developed field guidelines and training modules based on PEN. NCD service delivery based on PEN (or local protocols, if available) during the emergency phase might help to ensure that NCD management is integrated into the post-emergency health system.

Key prerequisites for delivery of PEN interventions include availability of essential medicines and technologies, trained health personnel, health information tools, and referral systems (table). However, the scope of feasible interventions will depend on the type of emergency, its duration, and baseline health-system capacity.

As in non-emergency settings, the main barriers to NCD care following emergencies are direct and indirect costs of care, low income, and competing priorities,[38] especially for displaced populations who might not be entitled to local health services. Two key strategies to mitigate these barriers are to integrate these services into primary care and to inform people about the availability of affordable or subsidised NCD care. In addition, pre-emergency efforts to promote self-care among patients with NCDs should be linked to complementary initiatives in post-emergency settings.

Post-emergency phase

The post-emergency phase should include a comprehensive debriefing of all stakeholders, aiming to share lessons learned and increase preparedness for future emergencies.[39] The post-emergency phase could also offer opportunities to improve NCD care from baseline, including deliberate integration of NCD management into the primary health-care system, education and training, and a concerted public health response to control NCD risk factors at the population level. Unfortunately, continuing instability often precludes meaningful reconstruction and therefore NCD care might decline over time.

Potential indicators of progress

Existing indicators for monitoring of humanitarian response are divided into three phases that describe the situation, characterise the response, and evaluate impact (figure). Indicators relevant to health are usually divided into five subdomains.[40] Metrics relevant to health are duly articulated in this list of indicators. Although in theory

NCDs are reflected in the health indicator list, in practice this subdomain does not include any specific indicators relevant to NCD care.

Development of NCD-relevant indicators of all three types (situation, response, impact) will be crucial, alongside linking of these indicators to processes for needs assessment and response monitoring. Development of such indicators would require input from multiple stakeholders to ensure that they are specific, measurable, achievable, relevant, and time-bound. Once developed, the indicators should help to focus sustained attention on NCD care in emergencies, and to hold governments and humanitarian organisations to account. Below, we discuss some candidate indicators that might warrant further consideration.

First, a situation-phase indicator could be added to report the number of functional health facilities that can provide NCD care during the post-emergency phase, considering local facilities as well as any humanitarian response. This indicator could also be used during the response phase to monitor short-term effects of humanitarian assistance. Second, a response-phase indicator could be added to measure the number or proportion of primary health facilities with written guidelines governing treatment of NCDs in primary care and referral of patients with NCDs to secondary and tertiary facilities. Third, a response-phase indicator could be added to capture the number or proportion of primary health facilities with adequate uninterrupted medication supplies to continue pre-emergency treatment of at least 80% of patients with NCDs, including pain relief. Fourth, a response-phase indicator could be added to capture guideline-concordant treatment of acute NCD presentations. Fifth, diabetes and hypertension could be added as specific conditions to be captured in indicators for monitoring of humanitarian response.

Of additional value would be the collection and tracking of NCD-related indicators covering the various dimensions of quality of care at facility level: structure (eg, NCD registries), processes (eg, proportion of patients registered with hypertension or diabetes with blood pressure recorded at last follow-up visit), and outcomes (eg, proportion of patients registered with hypertension achieving target blood pressure at last follow-up).

Conclusion

A comprehensive response to management of non-communicable diseases in emergencies is an important but neglected aspect of non-communicable-disease control and humanitarian response, offering tremendous potential to reduce morbidity and mortality. We have outlined some considerations for addressing this issue and described a preliminary framework for assessment of progress. A sustained effort will be required to improve the health of the increasing number of people worldwide who suffer the dual burden of emergencies and non-communicable diseases.

Contributors

MT had the idea for the manuscript. All authors contributed to outlining the proposed content. SS and MT wrote the first draft of the manuscript, which was edited and critically revised for important intellectual content by all authors. All authors gave final approval for the version to be published and are accountable for all aspects of the work.

Declaration of interests

H-JK, GR, CV, and SS are employed by WHO. PB is employed by Médecins Sans Frontières. HH is employed by the UN High Commission for Refugees. The authors alone are responsible for the views expressed in this article and they do not necessarily represent the views, decisions, or policies of the institutions with which they are affiliated. SR and MT declare no competing interests.

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