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Policy Implications for Managing Disasters for Better Protection of People with Non-communicable Diseases in Hong Kong

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Introduction

Between 2005 and 2014, disasters have caused total damage of US\$1.4 trillion worldwide, with 1.7 billion people affected and 0.7 million killed [1]. With climate change, urbanization, environmental degradation and poverty, the world has been experiencing disasters at a higher frequency and intensity. To be effective, disaster management strategy must be able to meet the health needs of the affected population. With non-communicable diseases (NCDs) now being the major disease burden and leading causes of death worldwide, the traditional health focus of humanitarian response on acute conditions is no longer sufficient to address population health needs in disaster and emergency context. The significance of NCDs management and planning for potential humanitarian context must be recognized.

This paper discusses disaster-related health risks associated with people who have underlying NCDs in Asian urban communities. With reference to NCD situation in Hong Kong, key policy recommendations for better protection and preparedness of this vulnerable group.

People with NCDs and Disasters

Non-communicable diseases (NCDs) are a major disease burden in this century. NCDs are diseases that will not be passed from person to person, and are usually presented in chronic diseases and have long duration and slow progression for people who might be affected by the conditions [2]. A number of NCDs are now the leading causes of death worldwide, killing 38 million people annually, i.e. over 65% of global deaths, including 16 million premature deaths and the total annual number of NCD deaths is projected to increase to 52 million by 2030. Globally, cardiovascular diseases account for the most NCD deaths, followed by cancers, respiratory diseases and diabetes, contributing to over 80% of all NCD deaths [5]. NCDs are largely preventable and major behavioural risk factors that increase the risk of NCDs are tobacco use, physical inactivity, unhealthy diet and harmful use of alcohol [2]. Globalization of these risk factors, together with an aging global population, NCDs are presenting an ever bigger challenge to public health. NCDs affect not only the health of individuals but are of significant socioeconomic impacts. NCDs are “key barriers to poverty alleviation and sustainable development” [5] due to the high healthcare costs and the reduced earning capacities and productivity of the affected population; and pose major burden on the healthcare system.

Although Hong Kong’s health indices rank among the best in the world, it faces an increasing disease burden from NCDs due to its aging population and certain unhealthy behaviours of the people; and more people are expected to suffer from NCDs in

Key Messages

- Non-communicable diseases (NCDs) contribute to over 65% of global deaths, with cardiovascular diseases, cancers, respiratory diseases and diabetes accounting for over 80% of all NCD deaths. As of 2016, 20% of population in Hong Kong suffers from chronic diseases, and over 55% of deaths are caused by major chronic diseases.
- While the health implications and service burden of NCDs is now well-recognized, NCD management in disaster and emergency settings is yet to be integrated as part of the emergency preparedness plans or response in many parts of the world.
- Major factors leading to worsening of chronic conditions during disasters include physical injuries, degradation of living conditions and interruption of care. The single most important health need of people with NCDs in a disaster setting is to **ensure uninterrupted access to the medication and care required**.
- The health needs of people with NCDs in disaster setting are recognized neither in the disaster planning and response strategy nor NCD control framework in Hong Kong. Policy actions to **promote self-management** by people with NCDs and **resilience of public health infrastructure** are recommended.

future [6]. Like many other countries, the leading cause of death in Hong Kong has changed from communicable diseases to NCDs. Major NCDs, namely cancers, diseases of heart, cerebrovascular diseases, chronic lower respiratory diseases and diabetes mellitus, contributed to over 55% of the registered deaths in Hong Kong in 2015 [7]. Of note, diseases with high mortality may not be the most prevalent health problems which burden the health care system in a community. According to a survey conducted by the Hong Kong Government [8], which defined “persons with chronic diseases” as “those who required long-term (i.e. lasting at least 6 months) medical treatment, consultation or medication for certain type(s) of diseases at the time of enumeration, irrespective of the type and severity of diseases as well as frequency of the medical treatment, consultation or medication required”, there were about 1 375 200 persons with chronic diseases in Hong Kong in 2013, equivalent to about 19% of the total population. Among those with chronic diseases, the most commonly cited diseases were hypertension (9.9%), diabetes mellitus (4.4%) and heart diseases (2%), and 51.5% of persons with chronic diseases aged 65 and above. This should be noted that such survey likely has underestimated the prevalence as some people with NCDs are not aware of their conditions.

People with NCDs generally require long-term medical treatment, consultation or medication. The requirement of ongoing management is particularly challenging in an emergency setting. While the threat from NCDs is now very well-recognized globally, in terms of its impact on both health and development (e.g. NCDs is recognized as an obstacle to development under Sustainable Development Goal 3), there is very limited scientific research assessing the health needs of people during disasters and the short-term and long-term impacts of NCDs, e.g. the morbidity and mortality patterns due to NCDs during and following disasters. There is also a lack of technical guidelines on the clinical management of NCDs in emergencies [3], and evidence-based or scientifically validated recommendations for minimizing the health impacts of disasters for people with NCDs [4].

While detailed scientific research on the impact of disasters on people with NCDs are scarce, there is some evidence that people with NCDs are negatively affected by disasters [9] and that a significant number of post-disaster deaths is now caused by insufficient care of pre-existing conditions [10]. With a bigger population with NCDs and their vulnerabilities in the face of disasters, there is an urgent need to address the health needs of people with NCDs. Unfortunately, a study on the Kashmir earthquake in 2005 found that “the greatest gap in health services at all sites was that non-communicable disease management was inadequate” [11]. Major barriers to NCD interventions could be due to the costs involved, absence of medical expertise, low level of awareness and sensitivity of the relief workers and planners of NCD needs, absence of affordable technologies and medicine, competing priorities, etc.

International Developments

NCD emergency preparedness and care in disaster context is not yet an integral part of the NCD management discourse, and explicit discussion on the relationship between NCDs and disaster is uncommon. For example, there is no mention of NCD management in emergencies in the 2011 Political Declaration on NCDs, WHO’s Global Action Plan for the Prevention and Control of NCDs 2013-2020 and the NCD Progress Monitor issued in 2015; WHO has issued a field manual on communicable disease control in emergencies but not on NCDs, the Inter-Agency Steering Committee has no guidelines for NCD care in disaster management, The Sphere Minimum Standards, having highlighted the issue of NCD in emergencies, provide no guidelines in terms of which NCD conditions to manage and how, and no indicators for monitoring. Two major international documents calling for integration of NCD care and disaster management are listed below. It is worth noting that these two documents came to life only in the past two years, indicating a recent global recognition of the challenge of tackling NDCs in disaster context.

Sendai Framework for Disaster Risk Reduction 2015- 2030

The Sendai Framework was adopted at the Third United Nations World Conference on Disaster Risk Reduction on 18 March 2015, charting out the global road map for disaster risk reduction in the coming 15 years. The expected outcome of the Sendai Framework over the next 15 years is “the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, business, communities and countries”. The importance of addressing the needs of people with NCDs is explicitly recognized in the Sendai Framework which provides that “People with life-threatening and chronic disease, due to their particular needs, should be included in the design of policies and plans to manage their risks before, during and after disasters, including having access to life-saving services...”

United Nations Inter-Agency Task Force on the Prevention and Control of Non-communicable Diseases (UNIATF on NCDs)

UNIATF on NCDs, established by the UN Secretary-General in July 2014, coordinates the activities of relevant UN organizations and other inter-governmental organizations to support governments to meet commitments made in the 2011 Political Declaration on NCDs [12] to respond to NCD epidemics worldwide. In 2016, UNIATF on NCDs issued a brief covering the impact of emergencies on people with NCDs, and set out the minimal standards and priority actions for providing NCD care in emergency setting, including preparedness, initial response, and continuing response. The document emphasized that “people with NCDs may be more vulnerable to the health impact of emergencies... and emergencies can directly compromise the health of people with NCDs” [13].

Health Risks and Vulnerabilities

The increase in disease burden from NCDs will be a critical factor in determining the effectiveness of any disaster management system to protect the well-being of its citizens. NCD management ranges from prevention, treatment, rehabilitation and palliative care, and at its minimum, it is important for people with NCDs to continue to have access to necessary medication and treatment during and after disasters. A study conducted after the 2008 Sichuan Earthquake in China found that 77% of the patients received at an emergency triage clinic had at least one underlying chronic medical condition, dominated by hypertension and diabetes mellitus; and 54% of these patients had clinical complications due to either disease exacerbation or lack of medication following the disaster [14]. Another study on the Sichuan Earthquake found that up to 38% of the survivors needed to have their pre-existing conditions clinically managed before surgeries could be performed for their physical trauma [15].

Due to their pre-existing conditions and weaker immune systems, people with NCDs are more vulnerable to the stresses and disruptions brought about by disasters, which can lead to acute exacerbation of their pre-existing conditions which were previously under control, new conditions, inability to perform basic activities for daily living, disabilities, or even life-threatening complications [16]. Major factors triggering the worsening of their conditions include [13] –

- Physical: physical injuries, change of nutritional status can exacerbate underlying NCDs, e.g. triggering of heart attack, diabetic control instability;
- Mental health implications: The traumatic events and shocks might exacerbate people with underlying psychological conditions such as people with depression;
- Degradation of living conditions: inadequate nutrition or unavailability of special diet (e.g. low sugar low sodium diet for people with diabetes), limited clean water, unhygienic shelter, polluted air, exposure to infectious diseases;

- Interruption of care: limited access to medication required (e.g. oxygen supplies for people with respiratory diseases, insulin for people with diabetes), destruction of life-sustaining health infrastructure (e.g. hospitals and clinics, dialysis equipment for people with renal diseases, interrupted surveillance system, communication network [17]), disruption of medical supplies, reduced number of healthcare providers; and
- Treatment and Medication: Potential contraindication of underlying medications/treatment for NCDs (e.g. the use of Warfin/heparin) with life-saving procedures etc.

With the significant and lasting effects of NCDs on patients, the impacts of disasters on people with NCDs clearly do not limit to health effects in the narrow sense, but loss of livelihood, security, social capital and network, reduced capacity to work, and eventually poverty are commonly seen. Moreover, as NCDs in disasters can “entrench, exacerbate and cause further health disparities”, reducing the health impact of disasters on people with NCDs “can improve the long-term economic outlook for both the individual and community” [4].

Policy Recommendations

There is currently no well-recognized and scientifically validated approach in the caring of people with NCDs in emergency. The single most important health need of people with NCDs in a disaster setting is to **ensure uninterrupted access to the life-sustaining medication and treatment required**. While much has to be done at the different stages of the disaster cycle, promotion of **self-management by people with NCDs and resilience of public health infrastructure** are particularly effective and relevant. These policy recommendations will be detailed below with reference to the situation in Hong Kong, among other recommendations.

One of the best ways to ensure uninterrupted access to required medication is to “nurture the ability of patients with chronic diseases to cope with and recover from disasters independently” [18] and to facilitate preparedness among people with NCDs. **Self-management** can be promoted through the following ways [4, 18-19] -

- Knowledge of medications: People with NCDs should keep an up-to-date medication list setting out their prescriptions and have knowledge on how to use them (e.g. type of insulin used, insulin self-injection kit with instructions). For people with poly-drug prescription’s, it will be important ensure the patient understand which might be the essential medication which maintain health and well-being. In addition, people with NCD should be good awareness of key contraindications of their regular medication.
- Advance prescriptions: People with NCDs should have stockpile of preferably 1 week supply of medications; and if possible, keep at least some of the essential medications on hand at all times rather than leaving them at home. For people requiring multiple prescriptions, they should consult their doctors on the few most critical medications to keep in hand.
- Medical records: People with NCDs should have with them their medical records which will be useful for assessing their health needs during and after disasters by healthcare professionals, and they should provide copies of the medical record to trusted family members or care agencies.
- Self-monitoring of conditions (examination): People with NCDs should use checklists developed for self-monitoring of physical conditions to detect deterioration of chronic conditions during or after a disaster (e.g. headache, dizziness or ringing in ears may mean rising blood pressure), and the

checklist should include health advice on nutrition, prevention of infectious diseases in disaster setting to promote self-care (e.g. avoid triggers).

- Personal emergency kits: People with NCDs should have their own personal emergency kits which they should keep with them at all times, or at least have the kits easily accessible at home, and the kits should include all the above self-management tools, namely medication list, prescriptions, medical records, portable medical equipment (e.g. blood sugar measuring device), self-monitoring checklist, important contacts (e.g. family members, doctors, medication suppliers), etc.

It should also be noted that in Hong Kong, more than half of the population with chronic diseases aged 65 and above, and over 30% of those aged 65 and above have no schooling or only pre-primary education [20], which could be a major barrier for them to understand their own health situation, prescriptions, and how to use the prescriptions. As such, family members and carers of people with NCDs must play a part in building up their preparedness. In terms of economic status, 71.4% of those with chronic diseases aged 15 and over are economically inactive [8], which means they may not have the resources to stockpile the required medication or purchase them during disasters when public access is suspended or limited. The Government or relevant NGOs may need to consider providing subsidies or funds to facilitate the preparation efforts of people with NCDs.

Strong preparedness on the patient-side must be supported (complemented) by **a resilient public health care system** for people with NCDs to have uninterrupted access to medications and treatments required during disasters or emergencies. Since some treatments must be received from clinics or hospitals, it is doubtful if self-management could be possible when a person suffers from multiple chronic illnesses or complications. A resilient public health infrastructure therefore should aim to maximize treatment for people with NCDs during and after a disaster, and the following measures should be adopted [4,10,17]–

- Surveillance System with Register: A public health surveillance system should be established to record essential (critical-age, underlying life-maintaining medication, drug and food allergy) information on the health needs of the vulnerable group, i.e. people with NCDs in this case. The information should include the size of the targeted population, where they live, their health conditions, capacities and medication needs. The system should also record mortality and morbidity information in the post-disaster stage. Such information can assist in determining disease patterns, prevalence rates, and stockpiling drugs and supplies to build preparedness; in conducting needs assessment and reaching out to the vulnerable people during the disasters; and be used as baseline for comparison and enable monitoring of long-term health effects of the disaster on people with NCDs and effectiveness of the response post-disaster. The system can be used as a register that can generate age and sex disaggregated data that is accurate and easily accessible.
- Continuous risk assessment: Risk assessment, preferably based on information from the public health surveillance system should be conducted regularly for up-to-date knowledge on the disease patterns and prevalence of NCDs, which will allow effective emergency preparedness action, including stockpiling of drugs, special manpower plans for surge capacity.
- Safe health facilities: Hospitals and health facilities must continue to operate during disasters to take care of the needs of people with NCDs. To ensure the physical and functional integrity of the public health infrastructure during and after a disaster, attention should be paid to the Safe Hospital Framework issued by the WHO [21].
- Healthcare workforce preparation: healthcare personnel may not be able to provide professional services to people with NCDs if they are affected by the disaster. Health workers who might have underlying NCDs would need to be prepared for their own medical needs during crisis.

People in Hong Kong generally enjoy good health, as reflected by the major health indicators which are among the best in the world, e.g. life expectancy, infant mortality rate. Its healthcare system is sophisticated and provides a very wide range of services at a relatively low cost to the patients. Hong Kong therefore already has a good foundation to further improve the resilience of its healthcare system for better protection of people with NCDs in disasters. With chronic diseases being a growing burden and accounting for the highest hospital bed utilization (over 50%) in Hong Kong, the Government has set down three strategic direction at the hospital level to better manage the situation, i.e. (1) to increase capacity, (2) to keep people healthy by focusing more on prevention and early detection, and (3) to divert demand to appropriate care partners [22]. Measures addressing situation of people with NCDs during disasters unfortunately are not covered by these strategies. Apart from introducing the policy recommendations listed above, the Government should integrate the resilience strategies into its system-wide policies, plans and budgets to make the changes to the healthcare system sustainable and well-supported.

Disaster Risk Reduction and Preparedness Phase

- Integrate NCD management in disaster setting into policies that promote healthy lifestyles and control NCDs [10]. There is currently no mention of NCD care in disaster in the Government's strategic framework for prevention and control of NCDs in Hong Kong [6].
- Sensitize policy-makers and humanitarians to the health impact of disasters on people with NCDs. These personnel must be aware of (sensitive to) the needs of people with NCDs as their work involves determining the most appropriate health interventions to perform, and inappropriate interventions may complicate the conditions of people with NCDs, e.g. adverse drug interactions, unsuitable diets for people with diabetes [9].
- Review the existing epidemiological and demographic pattern of people with NCD in the potential disasters/crisis affected area.

Disaster Response Phase

- Examine the epidemiological pattern of the underlying people with NCD in the disasters/ crisis affected area.
- Include NCD-specific questions in rapid needs assessment to ensure that needs are addressed. Some key questions include: Drug and regular treatment that might be related life and health maintaining, any contraindications of underlying health conditions, drug/food allergy that might exacerbate the underlying NCD. Data should be drawn from the public health surveillance system and register of people with NCDs in conducting the needs assessment.
- Integrate NCD management into primary care during emergency with reference to the Package of Essential Non-communicable Disease Interventions (PEN) [23-24].

Recovery and Rehabilitation

- Provide sufficient and appropriate follow-up healthcare services to the people with NCDs and continue to evaluate the effectiveness of such services.
- Include NCDs in post-disaster health outcome assessment.

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