INTRODUCTION

Dangers to public health and emergencies can result from a myriad of causes such as infectious-contagious disease epidemics, terrorist acts involving explosive substances, biological agents, toxic substances, radiological or nuclear devices; Industrial or transport accidents and natural disasters.

The growing danger of a pandemic influenza, as well as recent events such as the bombings in Bali, London and Madrid, raised concern about the healthcare system's ability to meet the demands of such events. Emergency preparedness in health has reached a degree of complexity that requires new and innovative arrangements to address the full range of dangers, risks and concerns. Unfortunately, few administrative jurisdictions have the opportunity to develop and maintain surplus capacities to deal with large-scale emergencies that occur with an unknown frequency. The complexity of emergency healthcare management can no longer be effectively resolved through traditional practices such as the rapid release of patients and the use of additional hospitals to accommodate patients.

The specific needs of the front line, the needs and resources of jurisdictions must be taken into account in order to draw up a realistic plan of a sudden influx of patients into an otherwise overcrowded health care system. Although few hospitals are capable of dealing with large amounts of traumatic victims and given that sudden demand will occur in the health care system, it will be prudent to address the deficiencies in peak capacities now in quiet times and not when the crisis is at the gates of the hospital. According to a study by the American Association of Hospitals, 62% of all hospitals and 79% of urban hospitals regularly work close to or over their accredited capacity - and a similar situation is in Canada. More than half of urban hospitals report that they act by redirect, redirecting ambulances to other facilities at certain times. Overcrowded emergency units are a clear and visible symptom of a destabilized health care environment and raise clear questions about how the situation of a wave of victims could be solved and whether the system has a real wave capability.

The underlying causes of overcrowding are well-known - an inadequate number of hospital beds, limited access to emergency care outside the hospital, unavailability of specialist doctors, and major shortages of other key clinical staff, especially nurses. In many communities, accurate and standardized bedside measurement has become an immediate need. The availability of hospital beds available is typically determined by a daily assessment of beds occupied by interned patients. Measuring bed capacity in this way fails to appreciate the flow of patients entering and leaving the hospital over a full day and often overestimating bed capacity. The United States Healthcare Research Agency has begun a study to determine useful measures that can predict the imminent start of overcrowding of Emergency Departments.

Preparing for the response to possible incidents

In order to effectively and efficiently prepare for and respond to potential incidents, the Canadian Public Health Agency (PHAC), the Emergency Response and Response Center (CEPR), in coordination with provincial and territorial partners, drew up a National Framework for Health Emergency Management (2005). Erik Auf der Heide, an internationally respected authority in the field of emergency management, has determined that disaster planning is an illusion if it is not based on valid assumptions about human behavior, incorporates an inter-organizational perspective, is resource-related and is known and accepted by the participants.

A requirement was identified for the establishment of a National Health Incident Management System (NHIMS) to allow provinces and territories to react quickly and efficiently in the event of a complex health emergency or disaster. Significant progress has been made in the area of full health management, including the development of
updating of a number of key emergency plans at both central and local levels.

Thus, one of the greatest challenges facing the Canadian health system is the ability to respond to situations that simply exceed normal capacity.

Catastrophic Health Events
A catastrophic health event [4], such as a naturally occurring pandemic, a devastating environmental or geological event, or a terrorist attack with chemical, biological or radiological weapons, can cause an unpredictable number of casualties. It is therefore imperative that the health system maintains a high level of preparedness to respond to a whole range of disasters.

Since it is not possible to prevent the occurrence of all victims in a catastrophic event, the strategic improvement of all hazard planning can prepare response organizations to provide adequate care for the greatest possible number of people and thus ease the impact on care resources. Of limited health. Equally critical is the requirement to ensure the safety and security of health care responders in the continuum of patient care. 3.

Overcrowding is not defined by the number of patients in a facility, but rather by the ability to provide care. There is a situation where demand for emergency services exceeds the capacity of an facility to ensure quality care within an acceptable time frame.

Medical wave
Despite the possibility of a flu pandemic, the Canadian Health Care System faces the likelihood of a major natural emergency or a man-made disaster or emergencies. Such an event will severely cause the capacity of health care systems to adequately care for the resulting mass victims. The system's ability to respond to patients’ needs following a disaster is generally referred to as wave capacity. 4. The wave capability is largely dependent on the system's capability to deal with victims with highly specialized or unusual medical needs.

The wave capability is generally characterized by an increased need for staff (clinically and non-clinically), support functions (laboratories and radio-imaging), physical space (beds, alternative care facilities) and logistic support (clinical and non-clinical materials)

While complex emergencies are generally associated with epidemics or multi-victim events, tide is a daily reality and a challenge for health care that generally refers to situations such as overcrowding (Emergency Reception Units) and Waiting time (surgical services).

The first category of EVM includes events such as explosions and earthquakes. These events result in an immediate impact characterized by a large number of victims. In some cases, a second wave of victims may occur due to pre-hospital resources consumed or such factors as a secondary exposure to natural elements and contagious diseases.

The second category of EVM characterizes events such as an extended exposure to a biological agent used as a weapon such as anthrax or smallpox.

Dynamics of the Wave
The health care system, especially hospitals, are affected by the routine of incidents such as: unplanned presentation of a large number of patients requiring care beyond the available staff and equipment/materials; Presenting patients with special care requiring additional capacities such as caring for chemical burns in hospitals that are not normally arson care centers; And the impact of a hazard or event that compromises the hospital's ability to take care of patients, such as losing electricity or water.

It is important to recognize that incidents that have an impact on routine activities may be short-lived or prolonged for days or weeks.

A recent article in the United States [1] suggests that multiple victims (EVM) events can be categorized into two classes: 1 - those resulting in an immediate or sudden impact, and 2 - those resulting in prolonged impact. Or continuously as described as an event that generally lasts.

Another example of this category is a flu pandemic in which there will be a gradual prolonged increase in the number of affected people, increasing over time to a catastrophic number. In this type of EVM, the number of cases may decrease due to treatment and prophylactic efforts and increase due to reinfection with a different influenza strain or as a result of additional waves of illness. This type of event will require a much more sustained response because the impact will be felt over a much longer period than an immediate impact EVM.

And, on the other hand, dynamic events are the continuous ones in which new patients experience continuous or repeated episodes, causing a prolonged wave. We also have to note that the wave can be the result of a combination of peak and prolonged events where an initial peak is followed by a prolonged demand for services.

The events in Madrid and London have demonstrated the impact that explosive detonation has had on civilians in a crowded area. In a fraction of a second, an explosion is raging, producing many victims with complex, technically challenging injuries that are not usually seen in natural

3 Any natural or man-made incident, including terrorism, resulting in a number of ill or sufficiently injured persons to overcome the capabilities of the immediate local or regional emergency response to the Homeland Security Presidential Directive -21, October 2007).

4 A quantitative expression of organizational ability to cope with overloading patients.

5 An expression of an inherent ability of an organization (skills and resources) to ensure the required level of care / services;

6 Overcrowding is not defined by the number of patients in a facility, but rather by the ability to provide care.
disasters such as floods, tornadoes or hurricanes. Because many patients are self-evacuated due to a perceived or real lack of proper out-of-hospital care, hospitals near the scene of the incident can expect to receive a large influx of casualties. This rapid wave of casualties typically occurs during the first few hours, exemplified by the Madrid bombing, where the nearest hospital received 272 patients in 2½ hours [4]. On the other hand, the wave resulting from an epidemic of communicable diseases or an environmental emergency, for example the 1995 Heatwave from Chicago, may take several days to several weeks. Erik Auf der Heide [2] shows - Samples indicate that in the end the more easily injured victims tend to get to the hospital first, not warning the hospital that they will follow the more seriously injured victims. When these victims reach the hospital, the Emergency Departments are occupied. In a study of 29 disasters, most victims tended to be treated in one hospital even when many other hospitals were available to care for patients. Medical aid for critical patients is seldom used. However, although disasters can cause serious injuries, most traumatic victims of disasters have minor injuries and many of these injuries occur during post-disaster cleaning activities.

Potential influx of victims and the immediate wave of patients following a sudden event can affect and limit the capacity of emergency medical services, hospitals and other health care facilities with the violent attack of some critically injured victims. In examining the potential duration and the extension of an emergency there are two factors that need to be considered in solving the wave capability assessment. Situations that last for more than 3-4 days can severely affect the resources available in particular by health professionals and materials to meet demands. Although many victims of disasters can be treated in a non-hospital environment; However, most disaster planning is thought to be provided by major traumatology hospitals. Non-hospital facilities such as private doctors’ offices and private clinics; Emergency care centers; Ambulatory surgeries; pharmacies; Care centers for the elderly; Old people’s homes; Ambulatory dialysis centers, centers of mental and occupational medicine; And home care providers need to be integrated into disaster plans.

Erik Auf der Heide [3] concludes that the old paradigm of disaster planning focuses on the hospital, critical trauma, pre-hospital medical teams, victim gathering points and evacuation points. The new paradigm focuses on reducing risks (protecting against dangers of medical items such as doctors’ offices and pharmacies), making full use of local and non-hospital medical care, mass care of minor injuries and the high number of non-injury.

Daily wave to the disaster

The daily capacity of the Emergency Department, measured by available staff and clinical space, is a problem for almost all hospitals, many of them acting to their full capacity normally. The reality in Canada shows that the highest occupancy rate for acute care hospitals is 87% in G7 countries; And is at the second level of the 21 OECD countries; As well as 25% fewer acute care beds per 1,000 people than in the OECD average (13th out of 25); And 25% fewer doctors per 100 inhabitants with the OECD average (23 out of 29) [4].

The majority of emergency units receiving more patients than they can process will choose to redirect and redistribute less serious cases to other hospitals [5]. Moreover, in a recent study, 24% of hospitals report that they have never used redirect because they are the only caregivers or the only traumatology hospital in the area [6]. In this light, the overcrowding of the Emergency Receiving Unit resulting from a redirect of ambulances is something that can be argued in a community disaster that can trigger the activation of the community / regional health emergency plan.

Surge ability

Surge capability is generally defined as the ability to expand care capabilities in response to sudden or prolonged demand and is probably the most fundamental challenge for a health emergency preparedness program. Val ability includes potential hospital beds; The available space in which patients can be screened, processed, vaccinated, decontaminated or can simply stay; Available staff of all kinds; Necessary drugs, materials and equipment; And even the legal authority to provide health care in circumstances beyond the authorized capacity.

Capability of surge

Surge capability is the ability to rapidly expand the capacity of hospitalization of the existing health care system (long-term care facilities, community health agencies, acute care facilities, alternative care facilities, and Public health departments) in order to ensure triage and follow-up medical care. This includes ensuring the necessary level of clinical care within a time horizon sufficient to achieve recovery and minimize medical complications [1].

Emergency planners must recognize that medical resources are normally at or near the capacity level at all times. The ability to manage the routine workload of the wave will directly affect the way hospitals will process waves of patients during a complex emergency or disaster.

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1Organization for Economic Cooperation and Development (OECD).

The wave capacity is both framed in time and in longitudinal dimensions. Thus, Wave capability can be mobilized for a limited time to address the needs arising from an acute disaster, and will solve patients presenting routine care requirements such as those requiring surgical procedures, anti-cancer chemotherapy, or birth. Otherwise, the capacity will have to solve long-term situations such as an epidemic or be in direct competition with ongoing community care. It is important that this wavelength, both in terms of its timeframe and its longitudinal dimension, is determined prospectively as part of the emergency planning process. It is also a basic need to define wave capacity at local and central level by defining a set of agreed units or wave capacity measures. Such an agreement is essential for communicating needs within and between communities.
Because both the routine and the disaster need to coordinate multiple elements, the latter will require solving these problems on a much larger scale.

Dr. Daniel Kollek [7], an emergency physician and Canadian educator, describes two types of waves that can occur in the environment of an Emergency Receiving Unit: a sudden or peak wave resulting from a sudden influx of patients into Following a time-limited, unrepeatable event such as a major road accident or an accident involving dangerous substances; And a prolonged wave where the coming of patients is prolonged over time, and it is difficult but not impossible to predict when demand will fall or fall. A prolonged wave is characteristic of an epidemic or pandemic event or seasonal problems such as heat waves.

Kollek also suggests that disasters can be classified either as static or dynamic events. Static events are those in which the causes of illness or injury end after a defined period of time and the number of patients is finite.

Capability mobilization requires the rapid expansion of existing capacities to meet the specific care needs of an event and may include increased staff (clinically and non-clinically), support functions (laboratories and radio-imaging), physical space (beds, Care) and logistic support (clinical and non-clinical equipment and materials). The desired result is that the patients and wounds that occur after the event are treated promptly and appropriately, and continuity of care is maintained for non-event illnesses or injuries.

References
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