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Healthcare system leadership and climate change: Five Lessons for improving health systems resiliency

Jeffrey Tochkin, MA[1] John Richmond, PhD[2] Attila J. Hertelendy, PhD[3] [4]

[1] Co-investigator, Canadian Healthcare Emergency Management Study, School of Health and Related Research , University of Sheffield, UK

[2] Principle Investigator, Canadian Healthcare Emergency Management Study, School of Health and Related Research, The University of Sheffield, UK

[3] Department of Information Systems and Business Analytics, College of Business, Florida International University, Miami, Florida, USA

[4] Fellowship in Disaster Medicine, Department of Emergency Medicine, Beth Israel Deaconess Medical Centre, Boston, Massachusetts, USA

Corresponding Author, Jeffrey Tochkin (tochkinjeff@gmail.com**)**

Abstract:

This article highlights challenges brought forth by climate change and provides practical lessons for how healthcare system leaders can better prepare their organisations to manage more intense, frequent and costly climate emergencies. This includes consideration for how health systems must adapt to more sustainable care models, which include reducing the emission of greenhouse gases and therefore the carbon production of institutions. Simply put healthcare systems are inefficient and major contributors to global carbon footprint. Given the paucity of research on how healthcare systems are preparing for increasing demands brought forth by climate change and adapting to lower emission models, further analysis is required. Efforts which contribute to more a resilient healthcare systems require thoughtful planning and a reduction of overall emissions for the industry

Key Terms: Healthcare system leadership, climate change, health system preparedness, health carbon footprint

Introduction:

Global climate emergencies have increased in frequency, and complexity[1, 2] leading to greater disruption and increasing economic consequences[3, 4]. Climate change is responsible for driving this increasing exposure to extreme events, impacting infectious disease transmission, and undermining peoples' mental health and livelihoods[5]. Highlighted in the IPCC[6] climate change report, *"climate change is already affecting every inhabited region across the globe with human influence contributing to many observed changes in weather and climate extremes (p.13)."* Meteorological events such as heat and cold waves, drought and floodingare on a steep incline[7] and have directly or indirectly affected over 2 billion people across the globe[8]. Human health and the health of the environment are inextricably linked[7]. The increase of disasters caused by climate change have a myriad of impacts on human health which causes further strain on global health systems [5]). To date a 'climate emergency' has been declared in over 2000 jurisdictions around the world covering over one billion people[9].

Given this, it is quite concerning and important to highlight that health services themselves are large contributors to climate change[10] accounting for 4.4% of the world's net greenhouse gas emissions. Moreover, health services in Australia, Japan, Canada, and the United Kingdom[11-13] are all far above those averages. The upward trajectory is also of concern. In the United States alone[13]healthcare emissions rose by 6% from 2010 to 2018.

This highlights the need for a call to action for leaders of healthcare systems to not only consider emissions generated by their own operations, but also put pressure on policy makers to take action, including highlighting the link to health and implications of continued use of fossil fuels.

Environment, Social and Governance (ESG) measures are crucial for moving towards more sustainable practices[14]. Climate change, however, is upon us. Climate emergencies will continue to impact human health and disrupt health services. There is a greater need for building community resiliency and upstream planning initiatives designed to mitigate or prevent harm to health systems and those serviced by it.

Herein, we propose five lessons for health system leaders to adapt organisations to increasing climate change induced risk and disruptions. The lessons, if taken up by the health leaders of today, can help mitigate the pending climate crisis by enhancing planning activities, building robust surveillance and monitoring capabilities, and ultimately enhancing health system resilience.

Health System Leadership

Health systems are complex and continuously evolving. Health system leaders will need to be intimately aware of climate change and its effects on the provision of healthcare. Moreover, integrating environmental and social measures into their business strategy requires awareness of how their organisations are contributing to climate change and how to decrease their carbon footprint.

Successfully leading this change will require a shift towards a crisis leadership model, wherein leaders must consider their approaches, styles, and reflect upon underpinning values that are most likely to engender positive environmental and social results. Crisis leadership has risen in prominence as a model in health management due to the COVID-19 pandemic response, and as such can be further extended and embedded to aid climate change response[15]. This model goes beyond traditional leadership competencies of motivating people and enabling task completion,

and rather integrates adaptive capabilities from contingency leadership theory, where leaders maintain a system perspective while also having an awareness of local issues. Leadership behaviours and skills relevant to this model include emergency planning, establishing collaborative communities of practice, and conducting crisis communication. In addition to being both people and adaptive-oriented, leadership must consider underlying structural, political, and cultural contexts. We argue that crisis leadership approaches and styles must be underpinned by values and ethics, which add to the legitimacy and impact of health emergency planning, and overcome past shortcomings in this field which has traditionally been separated from ethical frameworks[16].

Within the context of climate change, such leadership values might include equity, trust, reciprocity, and stewardship, meanwhile approaches to ethical decision making and actions should include inclusiveness, accountability, transparency, and responsiveness. These value and ethical attributes, in particular building trust and ensuring transparency, will be key as leaders undertake the difficult task of engaging and inspiring others in their industry and organisation. This includes a call for collective action to the climate crisis and working to develop community resiliency. Further, health system stakeholders must be considerate of the need for crisis leadership development and training. Because the impacts and antecedents of climate change will be less known to some stakeholders, educational interventions are required to level up knowledge of their roles in mitigating the impacts of climate change. This could involve formalised training or simulations, including inclusive discussions, and project work.

Leaders must react quickly to upstream impacts to care and innovate in designing appropriate interventions. Moral distress (MD) is affecting both leaders and clinical provider's mental health. MD is defined as "when one knows the right thing to do, but institutional constraints

make it nearly impossible to pursue the right course of action" [17] MD has been exacerbated recently by COVID-19. Leadership interventions targeted at improving organizational culture, e.g., via team-based communication, debriefing, facilitating ethics discussionshelp employees understand that moral distress is an organizational concern, rather than a phenomenon that individual providers need to manage themselves. Leadership actions such as managing by walking around and getting to know one's staff help create a culture where leaders become increasingly aware of issues facing staff and are therefore better equipped to advocate on their behalf.

Leaders in health, especially given the uncertainty and fatigue that goes with a changing climate, must not overlook personal resiliency. Approaching crisis with energy and the ability to 'bounce back' allows leaders to cope with disruptive changes and[18]. Evidence suggests that tools such as the Web-based Implementation of the Science of Enhancing Resilience[19]) tool developed by the Duke Center for Healthcare Safety and Quality are effective in health leaders[20]. Leaders can stay connected to their local community and consider current and potential impacts on their people. Those in the health system need to feel connected with leaders and empowered to bring issues forward for resolution or debate.

As climate emergencies become more complex it's vital that systems plan for more disruptive events, causing wider spread impacts that are lengthier in nature. Widespread population displacement through calamities such as environmental degradation and conflict is projected to increase over the next 50 years[6]which will have a cascading effect on refugee populations and immigration. Those accessing care will likely have greater immediate health needs with additional social and mental health supports. Training of executive leadership in crisis and disaster response and the role of business continuity cannot be overstated. Research from the COVID-19 emergency response supports this need, finding that when incident commanders of health organisations were

trained in the principles of ‘incident management’, health systems had a more effective response to COVID-19[21]. With more than a quarter of incident commanders in health organisations having received no training, a competency gap exists in the understanding of emergency management by health system leaders[1]. The focus is weighted too heavily on response activities and does not consider how to effectively recover from events. Health system leadership must consider how to better mitigate and prevent impacts from climate emergencies, plan for disruptions, and health system recovery following these impacts.

It is also vital that lessons learned are imparted following climate related extreme events. Repeated mistakes can lead to a less resilient healthcare system and one which is unable to adapt to ongoing events. During long duration events, like the COVID-19 Pandemic, having an interim action review which enables ‘adaptations under fire’, is helpful to make adjustments mid response and enhances recovery efforts.

Adapting to change

Figure 1: Adaptation and Disaster Risk Management Approaches for a Changing Climate (Adapted from IPCC, 2012)

In the face of climate change, healthcare organisations will need to adapt quickly and take new approaches to preparing for disasters and managing risk- as shown in Figure 1. Adaptive capacity is the ability of an organisation to absorb disruptions and reorganize while undergoing change, retaining its essential functions and structures while bouncing back to a state of normalcy following an extreme event. Historically, the development of adaptive capacity and traditional

cycles of disaster management have not been coterminous, yet the need for an adaptive system is called for in building resilient publicly funded[21,22].

Managing risk is dependent on the susceptibility of an organisation to certain hazards, based on vulnerabilities. The conventional practice in healthcare to prepare for disasters has been to use the 'all hazards' approach, meaning, to have a common framework to response that can be applied to any type of hazards[23]. Peleg et al.[23], further point out that the application of this planning approach is not as effective for lengthy, complex and politically sensitive crises, such as COVID-19. Coincidently, disasters caused by climate change are more complex than what health systems have faced to date, leading to a multitude of impacts that challenge the 'all hazards' planning framework. Usually disaster plans and procedures are reviewed based on a cycle as opposed to when change is required. Administratively this allows for intervals that are more predictable and assist with project planning efforts; however, this approach can become a barrier to effective course corrections, not to mention effective upstream planning initiatives. As such, we argue for greater flexibility and more dynamism by health systems in the utilization of traditional disaster management cycle of preparation, mitigation and prevention, response, and recovery. As the evidence from the prolonged COVID-19 response builds, with more need for adaptive learning following successive waves[21], traditional annual planning cycles may be left behind in favor of in situ and real-time learning.

Additional consideration for an adaptive system which shares risks with entities outside of the realm of healthcare will also demand enhanced inter-agency planning efforts to ensure coordinated response and recovery. Healthcare systems will also need to work more closely with different levels of government to better align system transformation. These efforts are essential for building greater resiliency to community and health hazards. Risks that are environmentally based have a

high probability to impact human health, and sharing information is crucial to integrated planning improving resiliency. The COVID-19 pandemic highlights the need for this integrated planning as its impacts are felt at a societal level.

Resiliency and engaging local communities

Resilience is built not only in hospital capacity, but also through robust linkages within the community. How a healthcare facility is able to maintain 'business as usual' with minimal disruptions while responding to events, and the transition to recovery following an event, is a good indicator of how resilient healthcare organisations are. In other words, the more prepared an organisation is, the more resilient. Moreover, healthcare resiliency is linked to the resilience of the community in which the system resides.

Now more than ever healthcare systems need to work with their communities to build local resiliency as communities face greater threats from climate emergencies. It is the role of healthcare systems to treat illness, including mental health[24]and relieve harm during such events. Thus, it is imperative that healthcare organisations work with community partners and take an active role in building local resiliency. Working with community networks and designing tailored communications to direct these groups, including marginalized and vulnerable populations, is essential in servicing these populations.

Integrated early warning systems and effective notifications systems are necessary for a timely response. This is true for future emerging epidemics before they become global experiences. This global information sharing and cooperation is also critical for events on the rise such as drought and flooding that affect food security and can lead to local and widespread famine. Sharing

situational awareness within communities helps with decision-making and in appropriate resource utilization. Without having reliable, timely, and predictable intelligence clinical decision making is hampered and staff response becomes less effective, and staff are less resilient and adaptable to unpredictable conditions[25].

Developing a response culture

Healthcare is reactive in planning based on recent and past events, as opposed to what is to come. Further strategizing how to utilize incident management systems for more complex emergencies that are longer in duration (such as pandemics) and to adapt to concurrent emergencies (ie. Heat waves and community evacuations to fires during a pandemic) is necessary in being more proactive. In addition, new approaches to vulnerability detection in current plans and process or "Red Teaming", as suggested by Hertelendy et al.[26], provides novel approaches to driving continual improvement.

Cultivating a response culture, where emergency preparedness is valued, prioritized, and embraced by those within the health system and local community must be strived towards to ensure preparedness for climate related emergencies[27]. Specifically, Atkinson et al.[27] suggest several recommendations to enable such a culture. These include: prioritization of emergency management (EM) activities by leaders, adequate investment in resources for EM, cultivation of relationships with community partners and the private sector for information sharing, better clarity in roles and responsibilities during emergencies, and ensuring incident management principles are built into daily and routine operations more effectively. In addition, ensuring adequate information flow via harnessing data and analytics across community, facility and system levels.

The linkage to the community through having a shared integrated risk framework which drives collaborative planning is necessary. The North America Climate Resilience Program, which is part of the Resilient Cities Network, is working through 'action cities', such as Houston and Boston, to increase city resilience and reduce risks to life brought forth from climate risk. Health system leaders can build partnerships with their communities and public health entities to address the top hazards. Building trust between community and health leaders and sharing lessons learned in a more honest and transparent way will allow for greater learning for the community. For example across England, the Civil Contingencies Act 2004 dictates the enactment of thirty-eight multi-agency partnership known as a local resilience forums (LRF). A LRF is not a legal entity and lacks the formal powers to direct its members. Nevertheless, the members of the LRF, including health system, civic, first responder, and other partners have a collective responsibility to plan, prepare and communicate in a multi-agency environment.

Reducing system related greenhouse gas emissions

Health systems are significant contributors to the global carbon footprint, notably in the western world. The National Health Service in England alone produces over 6 percent of greenhouse gas emissions [10] in the UK. More is needed to address these challenges. It is not only leadership with this responsibility. Healthcare professionals, union representatives and professional bodies and colleges can also work with employers to drive change. This includes working from home strategies and minimizing the need for in person appointments. Another solution is decentralizing care and moving care away from large carbon intensive hospitals. The use of primary care or home care away from hospitals is one strategy.

As suggested by Pencheon and Wight[10] carbon reporting can be included in reports to health boards and government. To that end, health and environmental departments across all levels government need to work together to better inform each other. Waste management, much like limiting greenhouse gas emissions, can be embedded within ESG measures. In addition, part of future procurement strategies for health systems can look to embedding manufacturing requirements for products and medicines to minimize carbon footprints. New healthcare facilities need to consider emerging hazards and historical hazards based on longer-term climate projections.Healthcare leadership will need to take a more proactive approach as well as look at how business practices impact the carbon footprint.

Conclusion

Climate change must be planned for and acted upon as acknowledgement and 'climate emergency' declarations are not enough. Although the IPCC[6] is largely condemnatory, immediate and deliberate changes to how we organise our health system will lead to outcomes that are more favorable. This includes limiting the intensity of extreme weather events on communities and health systems. Traditional methods of assessing risk based on historical regional hazards will not be enough. Healthcare organisations and government will need to work together to understand climate change projections and how these changes will impact health systems. Resources such as the Health Care Climate Council's[28] playbook for hospitals are important resources that can be applied to any health system.

It is clear that healthcare leadership must be aware of the changing hazards within their communities and the immediate and longer-term population health implications. Health system leaders must embrace a crisis leadership model underpinned by values and ethics, which focuses

on planning and communication, as well; an orientation towards people and communities will enhance adaptive capacity to enable a response culture.

Minimizing unnecessary care and limiting consumables, when safe, is not only helpful for the bottom line; it is better for lowering the carbon footprint. A strategy is required to mitigate future climate related risks, through enhancing the resilience of health organisations while also accounting for their own greenhouse gas contributions. These are a few solutions that are aimed to improve the health system experience for those who lead, who work within and whom access its services. Results matter and we must stay connected to one another, plan for what is to come and work together to be more resilient.

Figure Legend

Figure 1: Adaptation and Disaster Risk Management Approaches for a Changing Climate (Adapted from IPCC, 2012)

PNG File

Contributorship Statement

Jeff Tochkin, John Richmond, and Attila Hertelendy contributed to the design and implementation of the commentary to the analysis of the results and to the writing of the manuscript. Jeff Tochkin led the writing with John Richmond and Attila Hertelendy contributing to forming the arguments. Jeff Tochkin coordinated revisions brought forth by the editorial team.

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