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Advancing health care resilience through a systems-based collaborative approach: Lessons learned from COVID-19

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Background

In a matter of a few weeks to months, healthcare individuals, teams, and organizations/institutions were forced to adopt, adapt, or expand telehealth and virtual teaching, often without adequate training and resources, as their mainstream services (Lackie et al., 2020; Langlois et al., 2020; Marinoni et al., 2020). These sudden and drastic changes in service provision, in one hand, revealed and further widened the inequity and disparities in accessing services across patient, learners, and staff at the local, national and global levels (Tam & El-Azar, 2020). On the other hand, the COVID-19 pandemic has placed the current and future health care providers under the burden of a heavy expectation to adapt to the increasing workloads and demands. Over 80% of current health care workers and 70% of tertiary students have reported experiencing anxiety, stress, burnout, and/or attempting suicide during this time (Amnesty International Organization, 2020; Khalili et al., 2021), which could indicate the healthcare education and practice systems are at the edge of another but parallel ‘burn-out pandemic’ that needs immediate attention. If unaddressed, the impacts for providers, patients, and the health care system will be devastating (Bansal et al., 2020).

To address the COVID-19 pandemic, global inter-organizational collaboration has fostered the rapid development of diagnostic tests, effective vaccines, and treatment modalities (Guimón & Narula, 2020). Likewise, to effectively respond to the burnout pandemic, collaboration at local, national, and global levels need to be coordinated through knowledge-sharing and strategic action-planning to build and sustain resilience among providers, learners, teachers, communities, and systems during and after the COVID-19 crisis. Resilience is defined as the intrinsic ability of a system to adjust its functioning before, during, or following changes and disturbances so that it can sustain required operations, even after

a major mishap or in the presence of continuous stress (Nemeth et al., 2011). As discussed in this Editorial, there is an urgent need to build structures and processes that support resilience not just among individual providers, but more importantly at healthcare team, organization, and system levels (Hartwig et al., 2020; Sturmberg, 2018).

In response, InterprofessionalResearch.Global (IPR.Global) through its COVID-19 Taskforce developed a Call to Action with key directions to address and support interprofessional resilience at all levels of health care – individuals, teams, organizations, and systems (Khalili et al., 2021).

Resilience – an emergent property of the health system

An emergent property is defined as a collective property that arises from the collaborative functioning of a system but does not belong to any one part of that system or individual members of the system (Mercer, 2018). As an emergent property, resilience arises from the interactions and relationships between different elements and strata within the environment (Sturmberg, 2018). Hence, building health care resilience requires positive adaptation by individuals, teams, organizations, and systems (Kalaitzaki et al., 2020). Likewise, the four levels of (a) individual, (b) team, (c) organizational, and (d) system resilience have been recognized as interdependent and mutually enabled, requiring an inclusivity across stakeholders to also be considered (Hartwig et al., 2020).

Individual and team resilience

At the individual level, resilience has been defined as “the capacity to maintain or regain well-being during or after adversity” (Whitson et al., 2016, p. 489). Individual burnout

has been well established as a key issue in providing health care services with a common solution shifting focus to individual resilience strategies to weather stress and changes in the health care environment. Research studies have identified individual characteristics such as personality, self-esteem, positive affect, self-awareness, cognitive flexibility, and self-monitoring as factors that influence resilience (Murden et al., 2018). Organizations have worked toward addressing individual resilience by implementing educational interventions teaching individual resilience strategies, such as problem-solving approaches, enhanced reflective capacity, cognitive-behavioral training, relaxation, mindfulness training, and mentoring relationships to mitigate the strains of practice (Rogers, 2016). Although individual well-being programs are necessary, they are not sufficient. Care and attention must be taken to ensure individuals in health care are not inadvertently being blamed for governmental and systems shortcomings in these challenging times.

In addition, although interventions at the individual level are common, the concept of team resilience has received much less attention (Chapman et al., 2020). Team-level resilience is described as the collective capacity of team members to effectively manage pressures and deal with the current and future challenges of adversity (Dietz et al., 2017; Flint-Taylor & Cooper, 2017). Team resilience is most critical in health care where a failure of collaboration can have serious consequences and impact on life and livelihood (Hartwig et al., 2020). It is clear that individual resilience can be significantly affected by team-level resilience (Morgan et al., 2013). Recent studies in psychology and organizational behavior have demonstrated that effective teamwork attributes, such as trust, social support, the quality of relationships among members, collaborative leadership, and group cohesion, have a significant impact on team resilience (Morgan et al., 2013). According to these studies, team resilience has great potential to be supportive of groups when collectively encountering stressors.

Learner resilience through collaborative education

To help build and advance team resilience, it is important to train healthcare learners (in addition to the current healthcare providers) for collaborative practice (Khalili et al., 2021; World Health Organization (WHO), 2010). Developing collaborative-ready resilient practitioners takes a community and requires collaboration across many stakeholders.

Moreover and at the time of widespread virtual learning, educators need to solicit and engage with feedback from learners to better understand and address the impact of these inevitable changes on learners' personal and professional lives and resilience (Wilcha, 2020). Although in many cases students may be technologically and generationally more equipped to adapt to technology, educators in both academic and practice settings are recognizing an urgency to advocate and address systemic barriers such as disparity in digital literacy, and inequity of access to resources exposed by COVID-19.

Overcoming these barriers requires that all health professions education at all levels include structurally flexible approaches to instruction, expectations, and curriculum objectives, both in

university and clinical settings (Khalili, 2020; Langlois et al., 2020). Workplace service learning, integrated with growing levels of interprofessional teamwork, can prepare and empower students to be resilient collaborative-ready practitioners.

Organization and system resilience

Organization and system resiliency refer to the intrinsic ability of organizations and systems to respond and adjust to situational change while maintaining core functions (Nemeth et al., 2011). The health system's ability to effectively respond to daily and future stressors and demands (including natural disasters and large-scale emergencies) is an essential element of quality (Ovens & Petrie, 2021). To be resilient, healthcare organizations and systems must be able to respond to adverse stimuli through *adaptation* by involving: evaluating the factors affecting performance, learning from prior experience, managing the change process, and anticipating future stimuli (Hollnagel, 2013). Effective crisis intervention requires both robust public health measures/policies and highly proactive and functioning healthcare delivery systems (Ovens & Petrie, 2021; World Health Organization (WHO), 2021).

We consider that two key areas for health care organizations and systems are *equity in healthcare and healthcare financial structure and payment models*. Equity has a powerful impact on resilience. Social vulnerability and social determinants of health need to be taken into consideration and drive change to support system resilience (Matin et al., 2018). Resilience is fundamental to equitable long-term sustainability of health care organizations and is integral to interprofessional collaboration in teams. Equity means providing individuals, teams, organizations, and systems the support, resources, and services they need when they need them regardless of their social, economic, and cultural status (Braveman et al., 2018). The ability to ensure an adequate health care system response to events such as the pandemic (i.e., equitable COVID-19 deployment and administration) for all populations, whether mainstream or marginalized, depends on collaboration among healthcare workers.

The pandemic has also strongly affected our health systems through its impact on financial structures and payment models that operate as barriers to the provision of quality care for patients. Consequently, increased burnout and resource depletion have prevented the optimal use of system capacity. The pandemic has raised concerns about the system's ability to preserve essential care delivery and services when faced with a crisis (Roiland et al., 2020). The pandemic has underlined the need for healthcare financial structure, policies and regulations that support the ability to mount a robust crisis response, resume normal operations, mitigate burnout of the healthcare workforce, compensate for overtime, and provide the financial support needed to create the best model of care delivery (Center for Connected Health Policy, 2021; Roiland et al., 2020).

Discussion

Although important, individual resilience strategies do not address the need for team resilience and interprofessional support among colleagues, or organizational and system levels resilience. Robust programs/ services need to be designed and

implemented for teams, as team resilience is a critical intermediary between individual and organizational/system resilience (Hartwig et al., 2020). Team resilience is developed through interactive, coordinative, and synergistic team interaction processes and could provide psychological safety for individuals in the presence of adversity (Morgan et al., 2013).

There is a gap in interprofessional team resiliency in the literature, which provides an opportunity for the interprofessional community to address practical team resilience interventions and investigations designed to optimize the potential of collaboration and support from a variety of professional perspectives and expertise, especially from those professions that regularly support mental health and counseling of patients/clients. Furthermore, there have been references to productive team functioning and team climate in interprofessional competency frameworks (Canadian Interprofessional Health Collaborative, 2010; Interprofessional Education Collaborative, 2016); perhaps one area of future exploration is to consider more explicit language and domains that support interprofessional team resilience. Furthermore, a possible strategy to support interprofessional teams of the present and future is to add readiness/resilience as part of training and planning in health systems. In the future post-COVID-19 context, the inclusion of readiness/resilience to healthcare training and planning could also help address health care professionals' wellbeing, as well as diversity/equity in health care.

The COVID-19 pandemic, acting as a stress test, has exposed the strengths and vulnerabilities of healthcare organizations and system design and capacity (Sundararaman et al., 2021). There are a number of vulnerabilities in the health systems that have affected pandemic responses around the globe. A comprehensive analysis inclusive of collaborative research teams of economic, social, and clinical experts across sectors, is needed to further examine the health care system vulnerabilities, such as surge capacity, single just-in-time supply chains, large human resource gaps, under-resourced public health, governance/regulatory/funding shortfalls in long-term planning, lack of integration/ coordination between professional/organizational silos, and the persistent inequities affecting the determinants of health, for future preparedness and readiness (Ovens & Petrie, 2021; Sundararaman et al., 2021). Furthermore, financial payment structures within the context of a complex healthcare system need to be reevaluated to progress to quality-based funding payments and effective and resilient systems in the face of crisis and burnout.

Addressing these vulnerabilities in an increasingly complex system of health care could be difficult, however, the downstream cost of not doing so could be massive and devastating (Ovens & Petrie, 2021; Sundararaman et al., 2021). There is no one-size-fits-all approach, but a possible strategy is to add readiness/resilience as part of training and planning in health systems. Furthermore, financial payment structures within the context of a complex healthcare system need to be reevaluated to progress to quality-based funding payments and effective and resilient systems in the face of crisis and burnout.

Global strategic directions guide the implementation of health professional practice and education at national levels, which in turn influence organizational policies and practice approaches, eventually percolating to teams in practice settings and ultimately the provision of optimal patient/client care.

Through global networks in both education and practice environments, we can build strategic partnerships among and between local, national, and global practice communities, as well as education and research organizations and institutions, to capitalize on their expertise and collaborations to enhance potential influence on micro and macro-level system change.

Conclusion

The COVID-19 pandemic has reminded everyone of the importance of longer-term planning and preparedness. It is important for decision-makers to frequently assess health systems' strengths and resilience, and to address any potential weaknesses in the systems. Effective pandemic preparedness requires the engagement of all stakeholders from across the spectrum of care while being aware of the strengths, susceptibilities, and capabilities of the health care system. Identifying gaps in preparedness, determining specific priorities, and developing plans for building and sustaining healthcare delivery while effectively addressing the pandemic and resilience at all levels from the individual, to team, organization, and system is crucial for success (Centres for Disease Control and Prevention (CDC), 2016; Ovens & Petrie, 2021; Sundararaman et al., 2021).

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References

- Amnesty International Organization. (2020). *Global: Amnesty analysis reveals over 7,000 health workers have died from COVID-19*. Author. <https://www.amnesty.org/en/latest/news/2020/09/amnesty-analysis-7000-health-workers-have-died-from-Covid19/>
- Bansal, P., Bingemann, T. A., Greenhawt, M., Mosnaim, G., Nanda, A., Oppenheimer, J., Sharma, H., Stukus, D., & Shaker, M. (2020). Clinician wellness during the COVID-19 pandemic: Extraordinary times and unusual challenges for the allergist/immunologist. *The Journal of Allergy and Clinical Immunology in Practice*, 8(6), 1781–1790.e3. <https://doi.org/10.1016/j.jaip.2020.04.001>

- Braveman, P., Arkin, E., Orleans, T., Proctor, D., Acker, J., & Plough, A. (2018). What is health equity? *Behavioral Science & Policy*, 4(1), 1–14. <https://doi.org/10.1353/bsp.2018.0000>
- Canadian Interprofessional Health Collaborative. (2010). *A national interprofessional competency framework*. http://www.cihc.ca/files/CIHC_IPCompetencies_Feb1210.pdf.
- Center for Connected Health Policy. (2021). *An analysis of private payer telehealth coverage during the COVID-19 pandemic*. Author.
- Centres for Disease Control and Prevention (CDC). (2016). *Healthcare system preparedness and response*. Author. <https://www.cdc.gov/flu/pandemic-resources/planning-preparedness/healthcare-preparedness-response.html?cv=1>
- Chapman, M. T., Lines, R. L., Crane, M., Ducker, K. J., Ntoumanis, N., Peeling, P., Parker, S. K., Qusted, E., Temby, P., Thøgersen-Ntoumani, C., & Gucciardi, D. F. (2020). Team resilience: A scoping review of conceptual and empirical work. *Work and Stress*, 34(1), 57–81. <https://doi.org/10.1080/02678373.2018.1529064>
- Dietz, A. S., Driskell, J. E., Sierra, M. J., Weaver, S. J., Driskell, T., & Salas, E. (2017). Teamwork under stress. In E. Salas, R. Rico, & J. Passmore (Eds.), *The Wiley Blackwell handbook of the psychology of team working and collaborative processes* (pp. 297–315). Hoboken, NJ: Wiley-Blackwell
- Flint-Taylor, J., & Cooper, C. L. (2017). *Team resilience: Shaping up for the challenges ahead* (M. F. Crane, Ed.). Managing for resilience: A practical guide for employee wellbeing and organizational performance (pp. 129–149). Routledge.
- Guimón, J., & Narula, R. (2020). Ending the COVID-19 pandemic requires more international collaboration. *Research-Technology Management*, 63(5), 38–41. <https://doi.org/10.1080/08956308.2020.1790239>
- Hartwig, A., Clarke, S., Johnson, S., & Willis, S. (2020). Workplace team resilience: A systematic review and conceptual development. *Organizational Psychology Review*, 10(3–4), 169–200. <https://doi.org/10.1177/2041386620919476>
- Hollnagel, E. (Ed.). (2013). *Resilience engineering in practice: A guidebook*. Ashgate Publishing, Ltd.
- Interprofessional Education Collaborative. (2016). *Core competencies for interprofessional collaborative practice: 2016 update*. Author.
- Kalatzaki, A. E., Tamiolaki, A., & Rovithis, M. (2020). The healthcare professionals amidst COVID-19 pandemic: A perspective of resilience and posttraumatic growth. *Asian Journal of Psychiatry*, 52, 102172. <https://doi.org/10.1016/j.ajp.2020.102172>
- Khalili, H. (2020). Online interprofessional education during and post the COVID-19 pandemic: A commentary. *Journal of Interprofessional Care*, 34(5), 687–690. <https://doi.org/10.1080/13561820.2020.1792424>
- Khalili, H., Lising, D., Gilbert, J. T., Pfeifle, J., Maxwell, A., Başer Kolcu, B., Langlois, I., Najjar, S., MacMillan, G., Al-Hamdan, Z., Schneider, C., Kolcu, G., El-Awaisi, A., Ward, H., & Rodrigues, F. J. (2021). Building resilience in health care in the time of COVID-19 through collaboration - A call to action. *Interprofessional Research Global*. www.interprofessionalresearch.global.
- Lackie, K., Najjar, G., El-Awaisi, A., Frost, J., Green, C., Langlois, S., Lising, D., Pfeifle, A. L., Ward, H., Xyrichis, A., & Khalili, H. (2020). Interprofessional education and collaborative practice research during the COVID-19 pandemic: Considerations to advance the field. *Journal of Interprofessional Care*, 34(5), 583–586. <https://doi.org/10.1080/13561820.2020.1807481>
- Langlois, S., Xyrichis, A., Daulton, B. J., Gilbert, J., Lackie, K., Lising, D., MacMillan, K., Najjar, G., Pfeifle, A. L., & Khalili, H. (2020). The COVID-19 crisis silver lining: Interprofessional education to guide future innovation. *Journal of Interprofessional Care*, 34(5), 587–592. <https://doi.org/10.1080/13561820.2020.1800606>
- Marinoni, G., Van't Land, H., & Jensen, T. (2020). *The impact of CovidCOVID-19 on higher education around the world*. IAU Global Survey Report. https://www.iau-aiu.net/IMG/pdf/iau_Covid19_and_he_survey_report_final_may_2020.pdf
- Matin, N., Forrester, J., & Ensor, J. (2018). What is equitable resilience? *World Development*, 109, 197–205. <https://doi.org/10.1016/j.worlddev.2018.04.020>
- Mercer, E. (2018). What are emergent properties? *Sciencing*. <https://sciencing.com/emergent-properties-8232868.html>.
- Morgan, P. B., Fletcher, D., & Sarkar, M. (2013). Defining and characterizing team resilience in elite sport. *Psychology of Sport and Exercise*, 14(4), 549–559. <https://doi.org/10.1016/j.psychsport.2013.01.004>
- Murden, F., Bailey, D., Mackenzie, F., Oeppen, R. S., & Brennan, P. A. (2018). The impact and effect of emotional resilience on performance: An overview for surgeons and other healthcare professionals. *British Journal of Oral and Maxillofacial Surgery*, 56(9), 786–790. <https://doi.org/10.1016/j.bjoms.2018.08.012>
- Nemeth, C., Wears, R., Woods, D., Hollnagel, E., & Cook, R. (2011). *Minding the gaps: Creating resilience in health care*. Agency for Healthcare Research and Quality. PMID: 21249930.
- Ovens, H., & Petrie, D. (2021). COVID-19 pandemic lessons offer pointers for redesigning a better health care system. *Emergency Medicine Cases (EM Cases)*. <https://emergencymedicinecases.com/covid-19-pandemic-resilience-health-system-redesign/>.
- Rogers, D. (2016). Which educational interventions improve healthcare professionals' resilience? *Medical Teacher*, 38(12), 1236–1241. <https://doi.org/10.1080/0142159X.2016.1210111>
- Roiland, R., Singletary, E., Saunders, R. S., Dentzer, S., Counts, N., Pereira, N., Schor, J., & Halfon, N. (2020). Alternative payment models to support child health & development: How to design and implement new models. *Mental Health America*. https://healthpolicy.duke.edu/sites/default/files/2020-06/apms_for_kids_final.pdf.
- Sturmberg, J. P. (2018). Resilience for health—an emergent property of the 'health systems as a whole'. *Journal of Evaluation in Clinical Practice*, 24(6), 1323–1329. <https://doi.org/10.1111/jep.13045>
- Sundararaman, T., Muraleedharan, V. R., & Ranjan, A. (2021). Pandemic resilience and health systems preparedness: Lessons from COVID-19 for the twenty-first century. *Journal of Social and Economic Development*, (1–11). <https://doi.org/10.1007/s40847-020-00133-x>
- Tam, G., & El-Azar, D. (2020). Ways the coronavirus pandemic could reshape education. *World Economic Forum*. <https://www.weforum.org/agenda/2020/03/3-ways-coronavirus-is-reshaping-education-and-what-changes-might-be-here-to-stay/>.
- Whitson, H. E., Duan-Porter, W., Schmader, K. E., Morey, M. C., Cohen, H. J., & Colón-Emeric, C. S. (2016). Physical resilience in older adults: Systematic review and development of an emerging construct. *Journals of Gerontology Series A: Biomedical Sciences and Medical Sciences*, 71(4), 489–495. <https://doi.org/10.1093/geron/glv202>
- Wilcha, R. J. (2020). Effectiveness of virtual medical teaching during the COVID-19 crisis: Systematic review. *JMIR Medical Education*, 6(2), 20963. <https://doi.org/10.2196/20963>
- World Health Organization (WHO). (2010). *Framework for action on interprofessional education and collaborative practice*. Author. http://www.who.int/hrh/resources/framework_action/en/
- World Health Organization (WHO). (2021). How to make health systems more resilient to COVID-19 and other crises. *WHO Regional Office for Europe*. <https://www.euro.who.int/en/health-topics/Health-systems/pages/news/news/2020/6/how-to-make-health-systems-more-resilient-to-covid-19-and-other-crises>