

Complexity thinking – a key for implementing interventions in health ecosystems Ayesha Iqbal 1, Eric Weidenman1, Ashley Hyde1, Nicole Ofosu1, Rhyann Mckay3, Karen Hunter1, Puneeta Tandon1,2, Denise Campbell-Scherer1,2



¹Office of Lifelong Learning & the Physician Learning Program, Faculty of Medicine and Dentistry, University of Alberta, ²Department of Family Medicine, Faculty of Medicine and Dentistry, University of Alberta, ³Department of Alberta SPOR SUPPORT Unit, School of Public Health, University of Alberta, Edmonton, AB, Canada

BACKGROUND Complex intervention Implementing interventions in health systems requires a nuanced understanding of complexity thinking, which views systems as wholes greater than their parts. Complex Complexity problem This holistic approach recognizes the interconnectedness of various contextual elements (Figure 1).

Complexity is not absolute but relative; scaling with the number of components within the system, the number of agents, the disclosed and undisclosed relationships among them, their entanglement, the ability of system to learn and self-organize, and the power and impact of broader social, policy and strategic influences on relationships (Figure 2).



Complexity thinking helps formulate adaptive strategies in response to emergent contextual challenges.

CIRRHOSIS CARE ALBERTA TRIAL

Cirrhosis Care Alberta (CCAB) trial involved implementing the order set to improve care for cirrhosis patients across 9 Alberta hospitals.

A pre-implementation strategy was devised in collaboration with key stakeholders.

During the implementation of the CCAB trial, multiple unexpected 'sentinel events' e.g. implementation investigators leaving, delays in getting order set into sites for use, Covid-19 pandemic and other parallel quality improvement projects emerged as threats to the fidelity of the implementation plan.

Figure 1: Complexity in systems (an unpredictable interplay of object, subject, time, place and experience). Uncertainties in dynamic implementation contexts coupled with complex pathways spanning multiple agents, settings and specialties- can add to complexity



Study investigators used complexity thinking to understand and navigate ongoing, continuous emerging threats.

IMPACT

- In the CCAB project, embracing complexity thinking • empowered study investigators to practice adaptive management within intricate, unpredictable, and continuously evolving contexts (Figure 2).
- A complexity thinking approach facilitated understanding emerging threats to the implementation plan and adjusting efforts to new constraints and opportunities.
- Utilizing complexity-informed approaches enabled implementation investigators to engage in real-time sensemaking, coordination, and planning, drawing

Object, subject, time, place and experiences Multiple actors embedded in their own system impacting sense making and subsequently behaviors

Micro-systems Meso-systems Macro-systems

from information across multiple levels and diverse actors (Figure 2).

Complexity thinking informed real-time pragmatic adaptations to the implementation strategies in real time.

CONCLUSIONS

Augmenting traditional research designs with complexity thinking can enhance the implementation adoption, fidelity and sustainability of interventions in complex spaces.

Researchers from their own systems impacting sense making, comprehension, expertise and subsequently implementation strategies



Figure 2: A graphical representation of what, how and why contributed to complexity within the CCAB project implementation. Depending on time, space and developing sentinel events- complexity varied with number of interacting components in the system and how they connected (densely or sparsely) and impacted each other and overall implementation

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