Global Health and Systems Change

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Abstract

The emergent global health challenges make clear that we have so far failed to engage effectively with the intersections and interactions of health with the multitude of other complex systems and determinants. This chapter argues for the need for a systems-wide approach to these emerging global health challenges. This requires viewing these challenges through the various lenses of complexity science which include systems science, systems behavior, systems dynamics, and systems networks. The most important prerequisite can be found in the power of systems networks and partnerships. Major stakeholders and practitioners at all levels need the capability to at least understand the connections across their organizational silos. Connecting global health actors working in different spatial scales of the health system is critical to developing the pervasive systemic sensibility and literacy that is essential for systemic approaches to take root in global health.

Keywords

Systems thinking · Partnerships · Systems science · Systems dynamics · Systems networks

40.1 Emerging Global Health Challenges

As we enter the third decade of the twenty-first century, the trajectory of global health is pivoting away from 20 years of extraordinary and unprecedented improvement in health indicators. The rapid arrest and reversal of progress is a result of multiple, connected, existential, and systemic crises that are, in effect, a single syndemic [1] of intersecting climate change, ecologic disruption, and pandemic communicable disease coupled with the rapid transition to chronic non-communicable disease morbidities. New geopolitical frictions are creating faultlines and re-alignments in global affairs and economic markets that will add further negative ramifications for population health globally. The fracture in globalization and the discord in global markets and supply chains are predicted to accelerate demands for an "economy transition at the scale of the industrial revolution and the pace of the digital revolution" to respond to the underlying crises [2].

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The failures to prepare for the syndemic intersection of climate change, pandemic disease, health and demographic transitions are due in part to a lack of systems-wide conceptualization of these foreseen crises. Such preparation depends on a strong capacity for dealing with systems complexity. This lack of "systems thinking" is especially pronounced in global health, which still takes a largely vertical disease-by-disease approach based on technical fixes and over-medicalization while ignoring the systemic changes and delivering solutions equitably through effective health systems. More than 30 years after the landmark publication of the Commission on Health Research for Development [3], less than 2% of global health spending is on health systems strengthening and health policy and systems research [4]. Political and commercial determinants still dominate health policies and other intersectoral policies that affect population health [5, 6]. Finally, the colonial legacies of global health as currently configured impair the traction needed for supporting the necessary networks of actors and systemic reforms needed to affect change on the ground [7].

This chapter argues for the need for a systems-wide approach to these emerging global health challenges and suggests what could be done to accelerate the adoption of critical systems thinking and complexity science as part of the way forward.

40.2 The Missing Systems-Wide Approach

Health systems are porous systems open to and buffeted by exogenous factors. At the macro-level, health systems are embedded in a context of wider political, economic, and social systems. As such, they inherit diverse histories, cultures, and ideologies from societies of overlapping professional and community networks. The decision-making for health policies and systems involves trade-offs between investments in multiple sectors relevant to health that are often siloed from health policymakers. At the micro-level, health systems are currently framed by interacting sub-systems such as governance, finance, information systems, technologies, human resources, and service delivery [8]. Collectively this constitutes what is known as a complex adaptive system (Box 40.1). Such systems are dynamic architectures of interactions and synergies [9].

Box 40.1: System Dynamics Features of Complex Adaptive Systems

All complex adaptive systems are characterized by common systems dynamics features.

Self-organization: Systems dynamics and system behavior arise spontaneously from the internal structure of the system.

Constant change: Systems adjust and readjust at many interactive levels and time scales.

Tight-linkage: The high degree of systems connectivity means that change in one sub-system affects the others.

Governed by feedback: A positive or negative response may alter expected effects due to feedback loops.

Non-linearity: Relationships within a system cannot be arranged along a simple input-output line.

History dependence: Short-term effects of interventions or reforms may differ from lagged long-term effects.

Counter-intuitive: Cause and effect are often distant in time and space, defying solutions that pit causes close to the effects they seek to address.

Resistant to change: Seemingly obvious solutions may fail or worsen the situation.

Source: [10].

Since 2009, there has been an exponential surge in the health research literature referring to systems thinking, complexity theory, or complex adaptive systems [11]. Arising from this is greater

clarity concerning what constitutes a systems thinking framework and methodological approach, along with a battery of over 35 systems thinking and systems dynamics tools and methodologic approaches [12] that can be applied for various purposes. Some of them can, for instance, facilitate recognizing and understanding interconnections and systems structure or identifying and understanding feedback. Others can be used to identify leverage points, understanding dynamic behavior, and dynamic simulation models can predict the impact of policies and suggest possible solutions.

Systems thinkers think in terms of "wholes" rather than "parts"; recognize and seek to understand interconnections and feedback; appreciate the concept of dynamic behavior; understand that the system is the cause of its own behavior and understand the way the system's architecture generates such behavior [13].

Yet, examples of the use of systems thinking and systems dynamics for addressing policy challenges at the governmental level are rare. An exception is the UK which has a tradition of engaging academic and managerial professionals with expertise in systems thinking [14]. This has led to extensive resources and practice guides to ground such approaches into the civil service and promoted throughout an "all-of-government" approach [15].

Examples of how systems thinking and systems dynamics approaches have been applied to health systems development and management outside of the research arena are also few. A notable exception is work done in Malaysia to analyze the successes and failures of health system development through a systems thinking lens [16]. Several lessons emerged. Due to the complexity of the system, key stewards and actors within the health system often do not have a fully comprehensive mental model of their health system, its boundaries, structure, stakeholders, and their influence pathways. They may have no organizing hypothesis or theoretical model for how feedback among the various sub-systems works. Without system insights, their understanding and decision-making are consequently overly simplistic.

Systems thinking and systems dynamics tools, methodologies, and approaches are well-developed and widely available to the health systems and other systems. But system problems cut across organizational boundaries both within the health system and beyond the health system. This makes systems analysis and intervention a very political enterprise. Convening power and ownership of the process of engineering change requires skills, engagement, communication, networks, and partnership. Not everyone needs to be a systems thinker or expert in systems dynamics. But health system experts need a basic capacity to understand interlinkages and manage feedback dynamics across organizational silos.

40.3 What is Needed to Accelerate a Systems-Wide Approach?

The emergent global health challenges make clear that we have so far failed to engage effectively with the intersections and interactions of health with the multitude of other complex systems and determinants. The pace and urgency with which the syndemic is unfolding suggest we need disruptive and radical systems-change rather than the usual incremental approach to "building back better." The complexity of the interacting systems requires a more prominent systems thinking approach. Rapid capacity for this needs to be built at various scales. We will need to move from external pushing to internal catalysis as this capacity grows.

Wider use of systems thinking for global health challenges requires viewing these challenges through the various lenses of complexity science which include systems science, systems behavior, systems dynamics, and systems networks. We believe that the most important prerequisite can be found in the power of systems networks and partnerships.

Systems Networks and Partnerships: Different stakeholders need different levels of

understanding of complex adaptive systems. Major stakeholders and practitioners at all levels need the capability to at least understand the connections across their organizational silos. Connecting global health actors working in different spatial scales of the health system is critical [17]. For them, recognizing and understanding interconnections and systems structure is a key first step in systems thinking. There is a useful toolkit [12] for facilitators to assist with this, including stakeholder mapping, social network analysis, systems mapping, process mapping, logic maps, agent-based modeling, etc. Several of these tools are highly participatory and assist stakeholders to come together to better appreciate the whole system and not just their part of it. Through conversations, they help construct shared conceptual models and sense-making that help dissolve the theory/practice divide. Using the shared language of the systems thinking discipline leads to the co-production of solutions and collective action. However, this requires investment and convening power.

At the macro-level (global), the systems thinking capacity strengthening should initially focus on governance and funding bodies that need a UN Interagency approach to health systems change. This would include a radical reform in Development Assistance for Health and the many fragmented Global Health Initiatives that in the end should embrace more "Health in all Policies" approaches including One Health, Ecosystem, and Planetary Health. At the meso-level (national), such capacity strengthening should be directed to relevant national ministries, NGOs and academia with an initial focus on encouraging ownership and domestic investment in systems solutions. At the more micro-level (local governments and communities), orientation should be directed to systems learning from positive deviance and bottom-up efforts.

Leveraging the power of networks and partnerships for systems thinking, it is possible to develop the pervasive systemic sensibility and literacy that is essential for systemic approaches to take root in global health.

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