

There is More to ‘Making Connections to Improve Health Outcomes’

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Abstract

Langevin¹ rightly points to the *reductionist mindset* being the stumbling block for providing person-centered care. While considering the interconnections between the various domains underpinning health is a necessary first step towards more person-centered care, it ultimately is not sufficient. Person-centered care arises from the appreciation of the interdependencies and interactions between the various domains across its large-scale supersystems as much as its small-scale subsystems. Viewed with a *complex-adaptive systems mindset* health and disease are the phenotypical outcome categorisations of a person’s *whole-of-systems dynamics* across all scales of organisation.^{2,3}

Keywords

health services research, personalized care, whole person care

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This *complex-adaptive systems-thinking* perspective is not particularly new. In 1795 Alexander von Humboldt already pointed out that: *If everything is connected, then it is important to examine the differences and similarities without losing sight of the whole.* Humboldt’s insights laid the foundations for systemic thinking to address the complexities – the interconnectedness and interdependencies – of phenomena in the living world.

We need to change the way we look at things, only then will things we look at change. Embracing systems and complexity thinking is the change we need if we want to achieve a *health-delivering* healthcare system – rather than perpetuating our current ‘disease management’ systems. The redesign of real healthcare systems has to integrate 4 fundamental, but generally ignored, observations and understandings:

One, the way we look at health has been shaped by history – medicine began holistically within the frame of the ‘*balance of the 4 humors*’. Leonardo’s detailed drawings of the human body initiated the visual, and William Harvey the mechanistic trajectories of medical thinking. The inventions of the microscope and x-ray only entrenched that focus. The insights about the body as a regulatory system – arising from

the studies of physiology – still play only a minor role in clinical practice and research, to the detriment of our patients.⁴

Two, health and disease remain firmly seen as dichotomous entities, despite our millennia-old insights that health and disease are ‘*patterned states of being*’ that very much depend on the interdependencies of many different factors from the external environment at the macro to the physiological intermediaries at the micro level.³ The studies of external stimuli on physiological responses and pathways ultimately defined the concept of *bio-semiotics*,⁵ ie it is our brain that interprets the many different physiological stimulations which we then experience as good or poor health (or interoception).⁶ A synthesis of these insights leads to an

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appreciation of health and disease as a balanced dynamic state between one's physical and emotional experiences, one's social connectedness, and most importantly one's 'sense-making' abilities – defining a somato-psycho-socio-semiotic (SPSS) model of health.^{7,8}

Three, all models require some form of validation. Psychoneuroimmunology research has demonstrated the physiological interactions that explain the dynamics that underpin the various health states of the SPSS-model of health. We now understand how environmental stressors acutely evoke the HPA-axis cascade, and how persistent environmental stresses are cumulative resulting in rising allostatic load⁹ and immune system modulation. Chronic stress causes a persistent increase in cortisol which in turn results in corticosteroid resistance and immune system dysregulation – the predominance of pro-inflammatory cytokines causes a pro-inflammatory state that promotes almost all disease developments.¹⁰ As the ability to maintain allostasis¹¹ – the regulatory process to maintain health – fails the diagnosable feature of clinical disease manifestations emerge.²

And fourth, there is a need to reconsider what we regard as validated knowledge in medicine. There is an important distinction between data and information, and information and knowledge.¹² We are preoccupied with data as if they equate to knowledge – it is the connection of data that creates information, and the connection of information that creates the networks for the emergence of knowledge.¹² Applying knowledge, not data or information, is the basis for managing the inherent complexities needed to dissolve clinical problems.¹³ Person-centered care, approaching a person's unique illness and disease presentation, requires the constant *weaving together* of the often seemingly unconnected pieces of history with clinical findings, and the management of uncertainties, patient understandings, anxieties, and treatment choices. Person-centered consultations are highly dynamic, and it requires awareness of these dynamics to adapt one's approaches to changing patient perceptions and needs.¹⁴

Salutogenesis is *not* a *mechanistic path* towards health, rather it is a highly *dynamic and interdependent* one.¹⁵ Facilitating the journey of healing entails making visible to patients the multiple threads of the *interwoven* storylines in their health journey.¹³ Only then will we successfully *assist the patient in the work of healing* – with patience and generalist skills.

To achieve person-centred care that meets the needs of our patients not only requires seeing the connections but more importantly understanding the consequences of the dynamics within the system. This indeed, as Langevin emphasises, requires collaborative efforts on both the clinical and research levels.¹⁶

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References

1. Langevin HM. Making connections to improve health outcomes. *Glob Adv Health Med*. 2022;11:2164957X221079792. doi:10.1177/2164957X221079792.
2. Sturmberg JP, Picard M, Aron DC, et al. Health and disease—emergent states resulting from adaptive social and biological network interactions. *Front Med*. 2019;6:59. doi:10.3389/fmed.2019.00059.
3. Sturmberg JP. Health and disease are dynamic complex-adaptive states implications for practice and research. *Front Psychiatr*. 2021;12(354):595124. doi:10.3389/fpsy.2021.595124.
4. Sturmberg J. Person-centeredness - a paradigm shift for healthcare? From disease as a “structural problem” to health, illness and disease as the “Emergent outcomes of complex adaptive physiological network function”. *Europ J Person Centered Healthcare*. 2020;8(2):164-172. doi:10.5750/ejpc.v8i2.1839.
5. Uexküll T, Pauli HG. The mind-body problem in medicine. *Advances J Inst Adv Health*. 1986;3(4):158-174.
6. Khalsa SS, Lapidus RC. Can interoception improve the pragmatic search for biomarkers in psychiatry? *Front Psychiatr*. 2016;7:121. doi:10.3389/fpsy.2016.00121.
7. Sturmberg JP. The personal nature of health. *J Eval Clin Pract*. 2009;15(4):766-769. doi:10.1111/j.1365-2753.2009.01225.x.
8. Sturmberg JP. Health: A personal complex-adaptive state. In: JP Sturmberg, CM Martin, eds. *Handbook of Systems and Complexity in Health*. New York: Springer; 2013. p. 231-242. doi:10.1007/978-1-4614-4998-0_15.
9. McEwen BS. Stress, adaptation, and disease: Allostasis and allostatic load. *Ann N Y Acad Sci*. 1998;840(1):33-44. doi:10.1111/j.1749-6632.1998.tb09546.x.
10. Bennett JM, Reeves G, Billman G, Sturmberg JP. Inflammation, nature's way to efficiently respond to all types of challenges: Implications for understanding and managing “the epidemic” of chronic diseases *Front Med*. 2018(5):316. doi:10.3389/fmed.2018.00316.
11. Sterling P, Eyer J. Allostasis: a new paradigm to explain arousal pathology. In: S Fisher, J Reason, eds. *Handbook of Life Stress, Cognition and Health*. New York, NY: John Wiley & Sons; 1988. p. 629-649.
12. Sturmberg JP. Knowledge translation in healthcare – towards understanding its true complexities; comment on “using complexity and network concepts to inform healthcare knowledge translation”. *Int J Health Pol Manag*. 2018;7(5):455-458. doi:10.15171/ijhpm.2017.111.

13. Sturmberg JP, Getz LO, Stange KC, Upshur REG, Mercer SW. Beyond multimorbidity: What can we learn from complexity science? *J Eval Clin Pract.* 2021;27(5):1187-1193. doi:[10.1111/jep.13521](https://doi.org/10.1111/jep.13521).
14. Scott JG. Complexities of the consultation. In: JP Sturmberg, CM Martin, eds. *Handbook of Systems and Complexity in Health*. New York: Springer 2013. p. 257-277. doi:[10.1007/978-1-4614-4998-0_18](https://doi.org/10.1007/978-1-4614-4998-0_18).
15. Antonovsky A. Complexity, conflict, chaos, coherence, coercion and civility. *Soc Sci Med.* 1993;37(8):969-974. doi:[10.1016/0277-9536\(93\)90427-6](https://doi.org/10.1016/0277-9536(93)90427-6).
16. McEwen BS, Getz L. Lifetime experiences, the brain and personalized medicine: An integrative perspective. *Metabolism.* 2013;62:S20-S26. doi:[10.1016/j.metabol.2012.08.020](https://doi.org/10.1016/j.metabol.2012.08.020).