

Exploring Complexities in Primary Health Care for Universal Health Coverage in Africa: How do we start to model Complexities?

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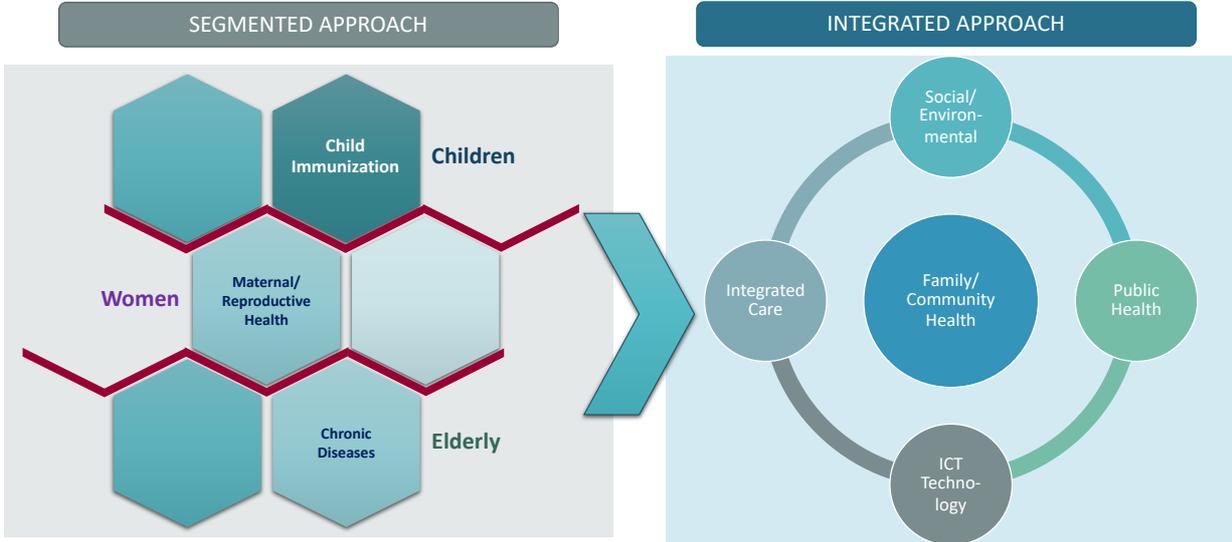
Exploring Complexities in PHC for UHC in Africa

AN OVERVIEW

1. What do we mean by “complexities” in Primary Health Care?
2. Why is PHC becoming more complex:
 - In the healthcare system?
 - In the patient’s environment?
3. How can we describe and model complexities in PHC?

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1. What do we mean by “complexities” in Primary Health Care?



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2.1 Increasing complexity in the social environment

- Breakdown of extended family connections and community networks.
- Isolation and loneliness among young and old.
- Growing inequities and marginalization of vulnerable groups.



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2.2 Increasing complexity of the healthcare system

- Managing rapid advances in technology
- Working with new category of professionals
- Honing interpersonal skills and emotional intelligence
- Dealing with adaptive problem solving in team settings



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3. How can we describe complexities in PHC?

- Complexity is more than a mere sum of multiple factors influencing the outcome.
- Complexity produces an unforeseen, “emergent” behavior which cannot be predicted using deterministic models.



Example of an “emergent” behavior: a flock of starlings forming a larger, moving cloud. Based on simple “rules” followed by each bird: 1) Separation, 2) Alignment & 3) Cohesion.

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3. How can we describe complexities in PHC?

Examples of emergent behavior in population health

Vaccine Hesitancy requires better understanding the role of "Influencers" and the impact of social sentiments such as "mistrust of authority".

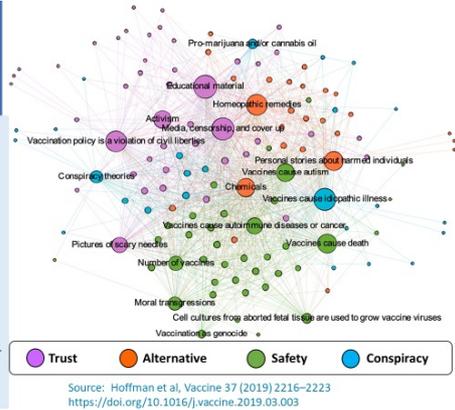
Other cases: Ebola outbreak, wearing facemasks during Covid-19, opioid crisis in N. America.

Capturing vaccine sentiment on social media

Facebook analysis of 197 anti-vaccination posters reveal:

- Identifiable subgroups
- Diverse anti-vaccination arguments which remain consistent within subgroups

>> Health professionals could leverage social network to identify and target different constituencies



Source: Hoffman et al, Vaccine 37 (2019) 2216–2223
<https://doi.org/10.1016/j.vaccine.2019.03.003>

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Family health services	Disease prevention and control	Hygiene and environmental sanitation	Health education and communication
Maternal and child health	HIV/AIDS	Proper and safe excreta disposal	Health education and communication
Family planning	TB	Proper and safe solid and liquid waste management	
Immunization	Malaria	Water supply safety measures	
Adolescent reproductive health	First aid	Food hygiene and safety measures	
Nutrition		Healthy home environment	
		Antropods and rodents control	
		Personal hygiene	

Packages of the rural health extension program of Ethiopia
<https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-019-0470-1>



<https://www.biomedcentral.com/ethiopian-community-health-worker-programs/>

3. How can we describe complexities in PHC?

Ethiopia Health Extension Program (HEP)

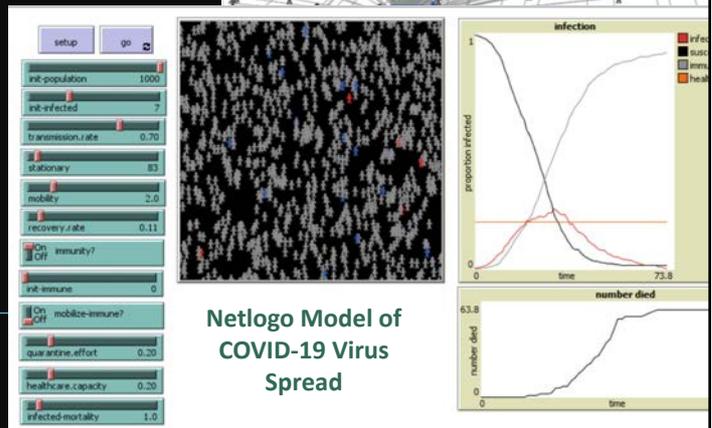
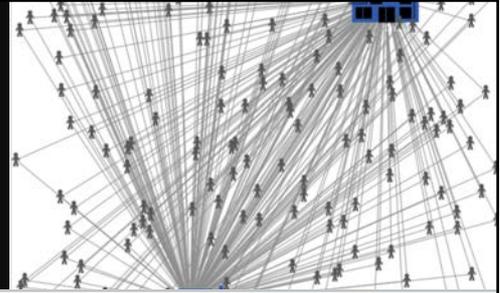
- Achieved significant improvements in MCH, communicable diseases, hygiene and sanitation, knowledge & health care seeking.
- But faces major challenges in improving worker capacity and developing a career pathway for the Health Extension Workers.

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How can we model complexities in PHC?

Agent Based Models (ABM) are being used extensively to model and describe complex behaviors in many fields, including healthcare.

Programs such as Netlogo offer a user-friendly access to ABM, and generates visually persuasive insights into complex behavior.



Netlogo Model of COVID-19 Virus Spread

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Exploring Complexities in PHC for UHC in Africa: Reflections and Key Messages

Complexity is more than a mere collection of multiple agents and factors.

- Be mindful of the details of individual interactions from their diverse points of view.
- Be able to step back and observe the larger emergent patterns which cannot be perceived at the individual interaction level.

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Thank you!

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