

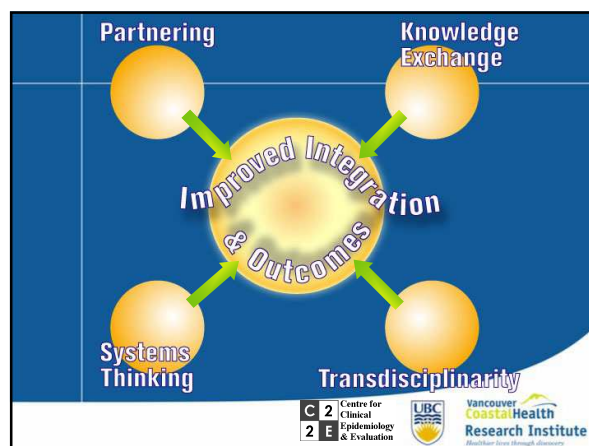
A Systems Approach to Getting Evidence into Policy

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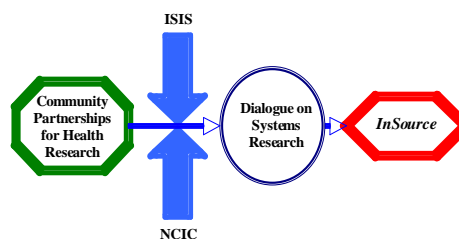
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Old London Bridge, circa 1600s

InSource Journey



Initiative on the Study & Implementation of Systems

- Transdisciplinary initiative to study systems approaches in tobacco control
- A proof of concept for applying systems thinking methods to public health
 - Concept mapping
 - Social network analysis
 - System dynamics modeling
 - Knowledge integration



Leischow S et al, AJPM 2008;35(2S):S196-S203;
NCI Monograph 18. *Greater than the Sum*, 2007.
<http://cancercontrol.cancer.gov/tcrb/monographs/18/index.html>

Generation 1: Linear Models (1960s-mid 90s)

LANGUAGE

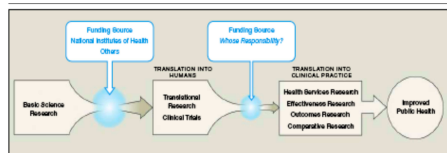
- Dissemination
- Diffusion
- Knowledge transfer
- Knowledge uptake

KEY ASSUMPTIONS

- Knowledge is a product
- Key process is a handoff from research producers to research users
- Knowledge is generalizable across contexts is a function of effective packaging

Best A, Hiatt RA, & Norman CD. *Pat Ed & Counsel* 2008;71:319-327

Linear Models ~ Two Stage Translational Research



Clinical research can be viewed as encountering 2 separate roadblocks on the way to improving public health. These 2 translational blocks have different factors creating each but whereas the National Institute of Health has been consistently targeting the bench-to-bedside block, no one is taking responsibility for the second, which is integrated with the funding of the health care delivery system.

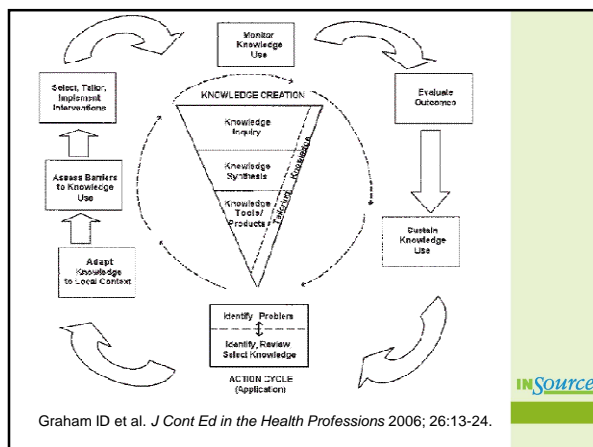
Crowley WF et al. JAMA 2004;291:1120-1126.

Generation 2: Relationship Models

LANGUAGE KEY ASSUMPTIONS

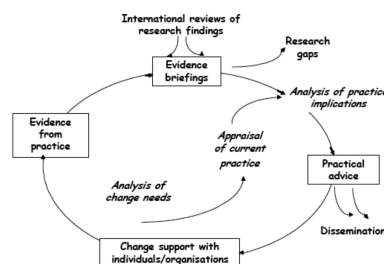
- Knowledge exchange
- Knowledge from multiple sources research, theory, and practice
- Key process is interpersonal, involving social relationships
- Networks of research producers and research consumers
- Collaborate thru production-synthesis-integration cycle
- Knowledge is context-linked, and must be adapted to local setting
- Degree of use is a function of effective relationships and processes

Best A, Hiatt RA, & Norman CD. Pat Ed & Counsel 2008;71:319-327



Graham ID et al. J Cont Ed in the Health Professions 2006; 26:13-24.

Relationship Models: Scotland NHS Systems Change



Kelly MP, Speller V, & Meyrick J (2004). London: Health Development Agency.
<http://www.nice.org.uk/page.aspx?o=502709>

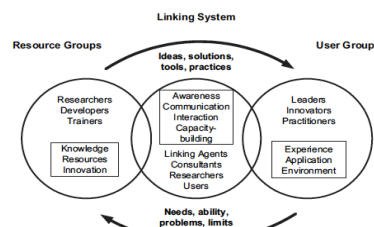
Generation 3: Systems Models

LANGUAGE KEY ASSUMPTIONS

- Knowledge integration
- Knowledge translation
- Knowledge mobilization
- Knowledge exchange and uptake
- Knowledge cycle is tightly woven within priorities, culture, and context
- Explicit and tacit knowledge need to be integrated to inform decision making and policy
- Relationships mediate throughout the cycle, and must be understood from a systems perspective, in the context of the organization and its strategic processes
- Degree of use is a function of effective integration with the organization(s) and its systems

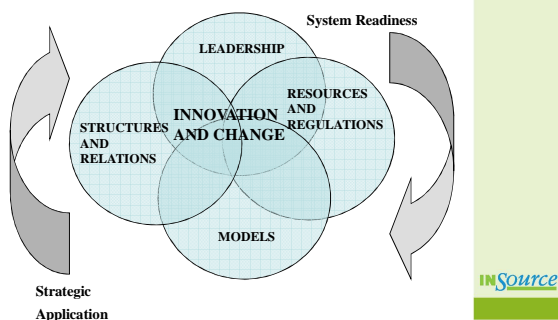
Best A, Hiatt RM, & Norman CD. Pat Ed & Counsel 2008;71:319-327.

Canadian Heart Health Initiative

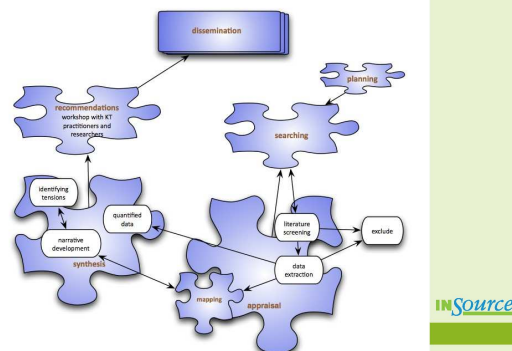


Robinson K, et al, Health Education Research 2005;20:499-513.

Embedded System for Integrated KTA



Metanarrative Review Methodology



Results: Key Tensions in KTA Conceptual Frameworks

- Tensions are issues upon which conceptual frameworks may disagree.
- Understanding the tensions helps to cut through the diverse terminologies and understandings of KTA so we can plan and work together more effectively.
- Understanding tensions allows us to compare narratives in quest to create a meaningful metanarrative.

Seven Tensions

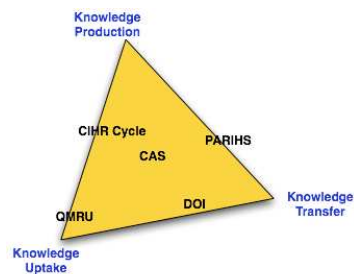
Worldview	1. Positivist, constructivist, or critical theory paradigm?
	2. Newtonian machine or a complex adaptive system?
Problem	3. Production, and/or transfer, and/or uptake?
	4. Individual, and/or organization, and/or society?
Strategies	5. Managed or self-managing?
	6. Collective project shared by researchers and decision-makers, or temporary intersection of different stakeholders?
Framework Purpose	7. Explain and illuminate or guide to practical action?

Tension 3: where do we locate the KTA problem?

Is it a problem of ...

- ... knowledge production?
- ... knowledge transfer
- ... knowledge utilization?

KTA Focus for Each Model



Tension 5: Best organizing approach?

Make It Happen

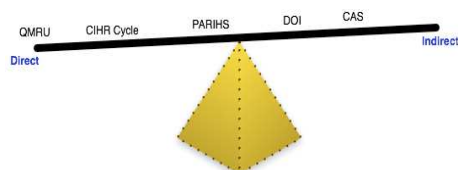
- identify problems
- assign responsibilities
- adopt tailored mechanisms

Let It Happen

- focus on building up relationships and structures
- undertake efforts to build organizational/system capacities

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Approach to KTA per Model



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So What?

- Context counts
- Complex systems will be the rule, not the exception
- Complex problems require complex solutions
- Problem-based, user-driven research should be the norm
- Collaboration and capacity are critical factors
- We need to better understand key issues around effective networking, leadership, and strategic communications

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A Paradigm Shift

Reductionism	Complexity Science
Metaphor is a machine	Metaphor is a living system
Change by Plan & control. Standardization of parts	Feedback loops and adaptation. Change by Learn & adapt
Single causative factor	Multiple causal factors interacting
No connection between micro and macro	Multilevel influence and emergence
Controlled High internal validity	Context dependency High external validity

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Improvement Leadership

- Openness, risk taking
- Leading change through people – team building, collaborative working, empowering, support, advocacy
- Shared vision and planning – seizing the future
- Evidence-informed planning, decision-making and resource allocation
- Reflective practice
- Strong evaluation and feedback

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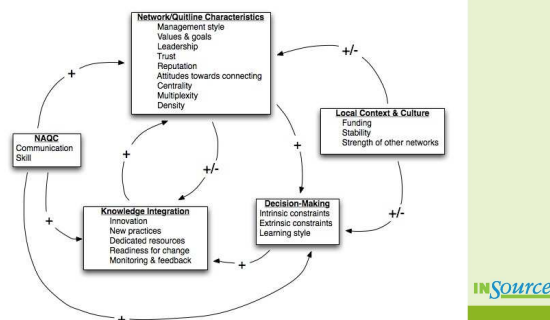
Complicated vs. Complex Systems

Complicated	Complex
Command and control	Facilitation and empowerment
Make it happen	Let it happen
Well-defined roles	Agent-based participatory action
Organized structures	Self-organizing patterns
Discrete evaluations	Continuous evaluation
Siloed action	Coalition alignment

Best & Holmes, *Evidence and Policy*, May 2010; Snowden DJ & Boone ME, *Harvard Business Review* 2001;79:69-76; Trochim W et al, *How do we organize: Purposeful adaptive systems*. NIH Monograph, 2007 . <http://cancercontrol.cancer.gov/tcrb/monographs/18/index.html>

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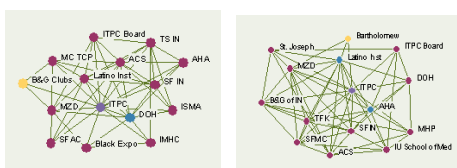
Initial KIQNIC Map



Network Methods: Who We Are

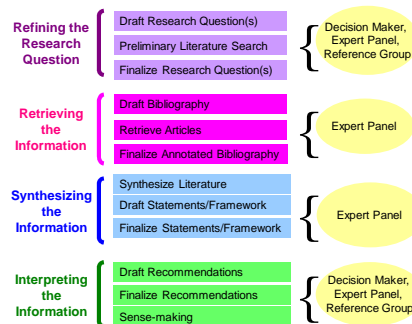
- Examine networks as a means to link tobacco control stakeholders for improved outcomes
- Understand structural issues and indicators of networks: centrality, multiplexity, broker relationships and holes, cliques, etc.
- Use network analysis as a means to understand—and more important, manage—the dynamics of collaboration

Example: Impact of Funding on Tobacco Control Networks



Change in Indiana's tobacco control contact network structure from 2002 (left) to 2004 (right). Centrality decreases from .23 to .13. —Prof. Doug Luke, Center for Tobacco Policy Research at the Saint Louis University ctr.slu.edu

The Rapid Review Process



OBSSR/CHSRF Rapid Review Interorganizational Partnerships

- Clear common aims
- Trust
- Collaborative leadership
- Sensitivity to power issues
- Membership structure
- Action learning

Saskatchewan “Large System Transformation”

- CIHR pilot in expedited knowledge synthesis
- Provincial Ministry taking on transformative change
 - Surgical wait lists
 - Patient and family centred care
- Key principles for culture change
 - Interorganizational collaboration
 - multilevel innovation strategy
 - Full value stream
 - Systems integration
 - evaluation
- Role of government prime interest
- Consensus and learning networks

1. Revolution in academia

- Tenure and Promotion
- Granting agency and publication practices
- Intellectual property
- Conflict of interest
- Financial incentives and management
- Intersectoral collaboration
 - Structures
 - Leadership
 - Networks

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2. Revolution in strategy

- Research a line item competing with patient service
- Sustainable funding
- Integration with planning, decision-making and resource allocation
- Dedication of time, incentives, and resources
- Capacity development
- Transformative versus incremental strategy

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3. Revolution in science

- Generalizable versus contextual knowledge
- Reductionist versus holistic models
- Multilevel/multifactorial, dynamic interventions
- Clinical versus public health evidence

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