Introduction to Implementation Science

Part 1: Defining Implementation Science

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The latest research shows that we really should do something with all this research.
The evidence-practice gap

- Consistent failure to translate evidence into routine practice
  - 50% of patients do not receive recommended care
  - 30% of medical spending is on unnecessary care

- Optimizing patient care requires closing evidence-practice gap

Asch SM. NEJM 2006
Dartmouth Atlas of Healthcare
Spend so much...

Get so little...

World Health Rankings
- infant mortality  39th
- female mortality  43rd
- male mortality  42nd
- life expectancy  36th

Murray C et al. NEJM 2010
Traditional approach to implementation

**ISLAGIATT Principle**

It Seemed Like A Good Idea At The Time

Martin Eccles

**KEY PROBLEM** – Does not identify or address factors critical for successful implementation
What are the consequences?

- New research takes **too long** to get adopted
- Interventions **not aligned** with priorities of patients/communities
- Providers lack **tools** to implement relevant and effective interventions
- **Variation** in effectiveness and/or uptake in different settings
Translational Research Pathways

T0
Basic and applied science research
Preclinical and animal studies
Defining mechanisms, targets and lead molecules

T1
Translation to humans
Proof of concept Phase 1 clinical trials
New methods of diagnosis, treatment and prevention

T2
Translation to patients
Phase 2 clinical trials Phase 3 clinical trials
Controlled studies leading to effective care

T3
Translation to practice
Phase 4 clinical trials and clinical outcomes research
Delivery of recommended and timely care to the right patient

T4
Translation to community
Population level outcome research
True benefit to society

Implementation Science
Implementation Science

- Study of **methods or strategies to promote** the systematic uptake of proven interventions into routine clinical practice. In this context, it includes the study of **influences** on the **behavior** of patients, providers, and organizations in either healthcare or population settings.
  
  -- *Implementation Science Journal*

- Study of **methods to promote** the integration of research findings and evidence into healthcare **policy and practice**. It seeks to understand the **behavior** of healthcare professionals and other stakeholders as a key variable in the sustainable uptake, adoption, and implementation of evidence-based interventions.
  
  -- *NIH Fogarty International Center*

- Study of processes used in the implementation of initiatives and **contextual factors** that affect these initiatives. The basic intent is to understand not only what is and is not working, but **how and why** implementation is going right or wrong, and testing **approaches** to improve it.
  
  -- *World Health Organization*
Common themes across definitions

- Implementation science involves
  - Understanding behavior
  - Developing strategies to change behavior
  - Engaging stakeholders

Increase speed, quantity and quality of evidence uptake
A focus on mechanisms of change

- Personal Determinants
- Behavioral Factors / Behavioral Risk
- Environmental Factors / Environmental Risk
- Health Problems

Intervention
- Societal
- Community
- Organizational
- Interpersonal
Use of theory/frameworks

- “Theory without empirical research is empty; empirical research without theory is blind” -- Immanuel Kant

1. Identify determinants of behavioral/environmental risk factors
2. Create a causal model of the problem
3. Specify determinants being targeted for change
4. Select intervention methods to match targets
5. Inform evaluation of implementation strategy
An ecological view of improving practice
Types of implementation science research

- Identify barriers and facilitators to translation of evidence
- Develop strategies to improve healthcare delivery
- Evaluate impact of strategies to improve healthcare delivery
- Adapt interventions and implementation strategies to new settings
- Identify strategies to integrate evidence into policy/program decisions
Cutting-edge research
Implementation Science in context

Adapted from: Remme J. PLoS Med 2010
Challenges facing implementation research

- New and developing field
  - Consensus emerging on optimal methodologies

- Multi-disciplinary approach
  - Coordination between stakeholders
  - Assembling relevant expertise

- Causal inference and generalizability
  - Fidelity vs. adaptation in real-world settings
  - Need for qualitative and quantitative methods