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RESEARCH

Improving Adult Immunization Performance: Insights and Guidance from Implementation Science

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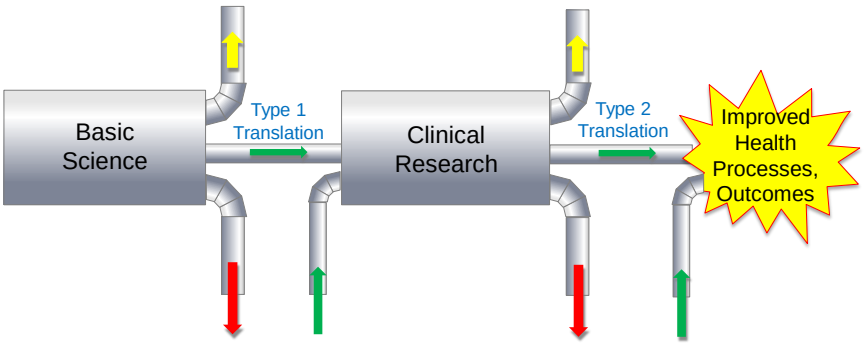
The research-implementation "pipeline"



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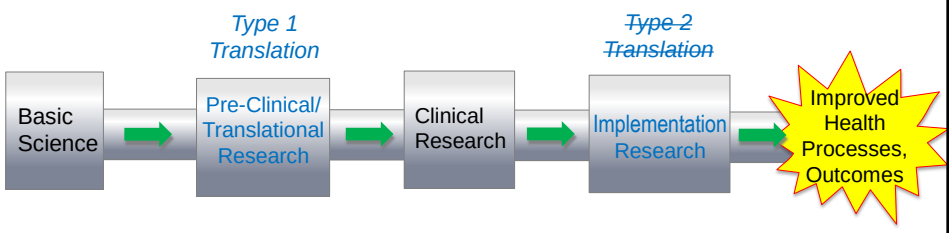

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Implementation science definition

Implementation research is the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services.

It includes the study of influences on healthcare professional and organizational behavior.

Eccles and Mittman, 2006

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Implementation science aims

1. Develop reliable strategies for improving health-related processes and outcomes; facilitate widespread adoption of these strategies
2. Produce insights and generalizable knowledge regarding implementation *processes*, *barriers*, *facilitators*, *strategies*
3. Develop, test and refine implementation theories and hypotheses; methods and measures

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Implementation science activities

- Effectiveness research: “design for dissemination”
- Hybrid effectiveness-implementation studies
- Pre-implementation studies (quality gap documentation, diagnosis)
- Interventional implementation studies (pilot, efficacy, effectiveness, “post-marketing”)
- Observational implementation studies
- Economic analyses, sustainability, scale-up/spread

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The *Tower of Babel* problem

- Knowledge translation
- Translational research
- Research utilization, knowledge utilization
- Knowledge-to-action, knowledge transfer & exchange
- Technology transfer
- Dissemination research
- Quality improvement research
- T-1, T-2, T-3, T-4
- Etc.

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Implementation science, improvement science

- Improvement science generally focuses on the "here and now" – local quality problems addressed via rapid-cycle, iterative improvement
- Implementation science attempts to develop, deploy and rigorously evaluate a fixed implementation strategy to close an implementation gap across multiple sites, emphasizing theory, contextual factors, (sometimes) mediators, moderators, mechanisms
- Implementation science aims to develop generalizable knowledge

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General insights, principles

Improvement and implementation science demonstrate that clinical practices and quality gaps (and solutions) are:

- Highly stable and slow to change; *clinical inertia, conservatism*
  - *With notable exceptions (CT scans, robotic surgery)*
- Variable and heterogeneous (across time, place, problem)
- Multi-faceted, multi-level
- Not responsive to simple practice change strategies

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Selected barriers to implementation

- Insufficient information, knowledge, skill, time
- Too much information
- Evidence is not accepted as legitimate
- Implementation gaps not recognized
- Misaligned financial incentives
- Insufficient staff or systems support
- Lack of external pressure, expectations

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Levels of influence on clinical practice

- Point of care (MD knowledge, patient demand)
- Microsystem, team (norms, culture)
- Clinic, hospital (policies, leadership)
- Delivery system (organizational/fiscal policies, leadership, resources)
- Professional norms (local, regional, national)
- Patients, businesses, other stakeholders (community, region, province/state, nation)
- Local, regional, national regulations
- *Contrast with "1950s medicine"*

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A short history of quality improvement in health care

- Most QI initiatives address no more than 2-3 causes of quality gaps at 1-2 levels
- The result: considerable effort, occasional impact – typically on mediating factors – but limited change in practices
- The classic case: "intervention physicians displayed improved knowledge and attitudes but no change in clinical practices"

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Requirements for practice change

1. Valid, legitimate, accepted evidence
2. Clinician/staff knowledge, skill
3. Supportive professional norms
4. External expectations, monitoring, pressure/incentives
5. Patient acceptance
6. Evidence of quality gaps
7. Etiology of practices, quality gaps
8. Feasible methods/systems

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Condition 1. Evidence-based practice standards, guidelines, recommendations

- legitimate, accepted (acceptable)
- appropriately developed, sponsored
- fully endorsed
- consistent with prevailing beliefs, consensus – or sufficiently compelling to replace current beliefs
- not easily dismissed

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Condition 2.
Clinician and staff knowledge, skill

- requires education, training
- physician response to newer forms of guidance (evidence-based medicine) vs. results of individual studies
- "education" often conveys professional norms in addition to information and knowledge
- *education is necessary but not sufficient*

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Condition 3.
Professional norms and peer influence

- adherence is appropriate, legitimate, expected, normative
- non-adherence is improper, unacceptable, counter-normative

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Condition 4. External pressure, incentives and expectations for improvement

- "external" includes leadership/senior management and other influential entities
- adequate to overcome competing demands and to focus attention/interest
- meaningful consequences
- requires measurement, reporting
- broad, comprehensive, pervasive (external stakeholder, institutional senior leadership, supervisor, peer, patient)

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Condition 5. Patient acceptance

- patient knowledge, attitudes, beliefs:
  - affect acceptability, feasibility of preferred practice
  - underlie patient expectations, demand

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Condition 6. Evidence of deviations from recommended practices

- valid, accurate (casemix adjusted)
- credible
- accepted (acceptable)
- timely
- relevant
- appropriate benchmark

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Condition 7. Etiology of deviations (causes/influences, barriers, facilitators)

- provides guidance in addressing deviations
- thorough diagnosis of (1) multifaceted influences on current practices and (2) causes of quality gaps
- *reliable broad spectrum practice change interventions do not exist*

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Condition 8.
Feasible, operational methods

- logistical arrangements/processes to implement and utilize recommended practices
- elimination of financial, organizational and operational constraints (staffing, time, technology)
- examples: collaborative care models (Chronic Care Model), reminders, group visits, re-engineering

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Implications for quality improvement

Improving clinical practices and outcomes generally requires:

1. Strong evidence base & consensus regarding appropriateness
2. Comprehensive diagnosis of barriers (*root cause analysis*)
3. Clinician knowledge, training, skill, ability
4. Monitoring, expectations, pressure from key stakeholders
5. Supportive patient knowledge, beliefs, attitudes, preferences, expectations
6. Required time, space, equipment, additional resources
7. Multi-level, multi-stakeholder campaigns requiring comprehensive planning, plan deployment, monitoring

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