HEIDELBERG
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Implementation science: What is it and why should we care for implementing vaccination practices

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Potentiel conflicts of interests

Royalties from books

- Wensing M, Grol R, Grimshaw J (eds). Improving patient care. The implementation of change in clinical practice. Wiley Blackwell: 2020.

- Wensing M, Ullrich C (eds). Foundations of Health Services Research: Principles, Methods, and Topics. Springer: 2023.

About me

- Professor HSR & Implementation Science, Heidelberg University since 2015
  - Prof. Implementation Science in Nijmegen NL 2011-2015
  - Member of Research Team of Richard Grol, 1991 -2010

- Head of M.Sc. Program HSR & Implementation Science at Heidelberg University since 2015

- Editor journal Implementation Science 2006-- (EiC: 2012-2022)

KEY MESSAGE

What can implementation science contribute?

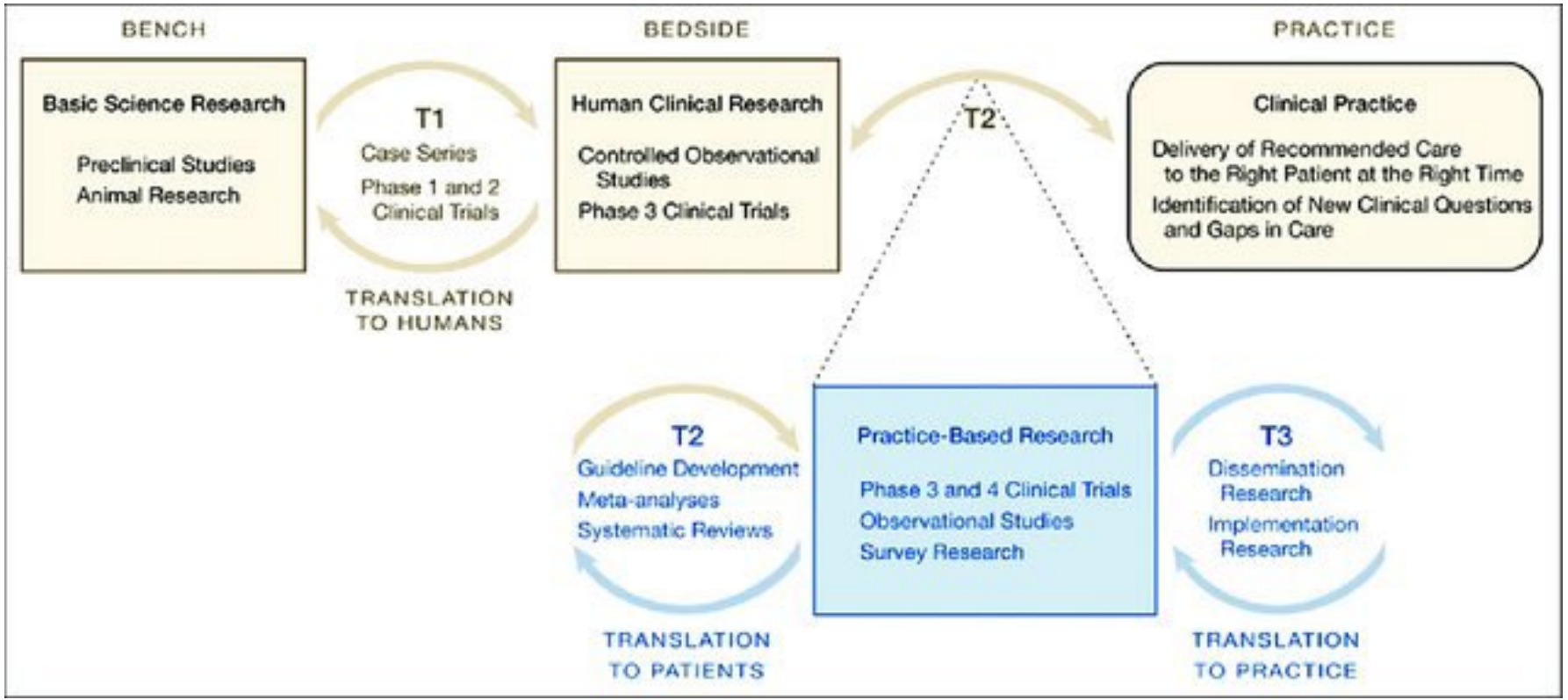
No pertinent guidance, but:

1. Broader range of strategies and factors than practical experience or common sense might provide
2. Concepts and frameworks for design and evaluation of programs, building on previous programs and research
3. Rigorous analytical research methods, albeit not unique
4. Realistic aspirations for implementation goals, based on body of research (including thousands of RCTs)

Outline of this contribution

a) Introduction and overview
b) Implementation science as a field
c) Questions and discussion

INTRODUCTION



Westfall et al. Practice-based research. Blue Highways" on the NIH Roadmap. JAMA 2007; 297: 403-406.

Evidence-Practice Gaps

Systematic Review (174 studies in Canada) on patients without appropriate care (Squires 2022)

- Overuse: 14% of patients (IQR 3 – 31%)
- Underuse: 44% of patients (IQR: 24 – 66%)

Recommended practices

Examples:

- Treatments
- Medical devices
- Clinical guidelines
- Clinical pathways

Complexity
Compatibility
Visibility
Evidence
Costs
…

Context

Including:

- Health workers
- Organisational leadership and culture
- Resources and financial incentives
- Experience with innovation, track record

CFIR
TDF
TICD
NASS
..

TICD framework (Flottorp 2012)

	Factors (examples)
Guideline factors	Strength of evidence, clarity, accessibility, feasibility, compatability, effort, triability, observability
Individual health professional factors	Domain knowledge, skills, agreement with recommendation, attitudes, intention, self-efficacy, learning style, emotions, capacity to plan change
Patient factors	Patient needs, beliefs, preferences, motivation, behaviour
Professional interactions	Communication, team processes, referral processes
Incentives and resources	Availibility of resources, financial incentives, information system, quality assurance, continuing education, assistance for clinicians
Capacity for organisational change	Mandate, leadership capability, regulations, priority of change
Social, political, legal factors	Economic constraints, contracts, legislation, political stability, corruption

Implementation strategies

Including:

- Continuing education
- Support in practice
- Structure and collaboration
- Organisational development
- Financial incentives
- Hierarchy and regulation

Many opinions ... little evidence

- Epidemiologist: *“publish convincing data”*
- Educationalist: *“provide continuing education”*
- Health services researcher: *“feedback on practice variation”*
- Behaviour change psychologist: *“change individual cognitions”*
- Information specialist: *“adopt decision support systems”*
- Engineer: *“redesign the system of healthcare delivery”*
- Economist: *“pay for good performance”*
- Social scientist*: “change teamwork and culture”*
- Management expert: *“more effective leadership”*
- Political scientist: *“change the powers in the system”*

Grol 1997

ERIC taxonomy (n=73) (Powell 2012; Powell 2015)

		Examples
Plan strategies	Gather information	Needs assessment, assess readiness
	Select strategies	Blueprint, tailoring, simulate change
	Build buy-in	Consensus process, involve patients
	Initiate leadership	Recruit/train leaders, mandates
	Develop relationships	Build coalition, formal committment
Educate strategies	Develop materials	Guidelines, manuals, toolkits
	Educate	Spread materials, organise meetings
	Educate through peers	Opinion leaders
	Inform stakeholders	Prepare patients/consumers,
Finance strategies	Modify incentives	Introduce capitation, user fees, penalties
	Facilitate financial support	Fund for innovation, easier billing
Restructure strategies		Revision of professional roles, new teams, change of record systems,
Quality management		Quality monitoring systems, audit and feedback, cyclic test of change
Attend to policy context		Change in accreditation, liability systems

My personal classification

	New developments
Plan strategies	Stakeholder involvement
Educate strategies	E-learning
Support strategies	Computerized decision support
Finance strategies	Population-based financing
Restructure strategies	Participation of patients
Organisational development	Health worker retention
Hierarchy and regulation	(Re-discovered during Covid-pandemic)

Cochrane Reviews

	Type	Number of RCTs	Effects
Giguère et al. (2020)	Educational materials	32	+4%
Forsetlund et al. (2021)	Educational meetings	215	+4%
O'Brien et al. (2007)	Outreach visits	34	+5%
Vaona et al. (2018)	E-learning compared to other CME	16	No difference

IMPLEMENTATION SCIENCE AS A FIELD

Implementation Science 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 organisational behaviour.’

Eccles M & Mittman BS. Implem Sci 2016;1:1.

Implementation Science is …

Implementation Strategies

Proven effects

'… 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 organisational behaviour.'

Agents

Eccles M & Mittman BS. Implem Sci 2006;1:1.

Alternative ideas on implementation science

- Process evaluation or secondary outcomes in clinical/prevention trials
- Evaluation of newly established structures (e.g. additional rehabilitation, restructured primary care)
- Intervention effectiveness in routine practice

Alternative/related words for implementation

- Diffusion
- Dissemination
- Adoption
- Translation
- Improvement
- Innovation
- Transportation
- …

Brief history

- Until 1990: Diffusion of Innovations (Rogers), Quality Improvement (Berwick), Evidence-based Medicine (Oxman)
- 1990 – 2000: **Pioneers** - Grol, Grimshaw, Eccles, c.s.
- 2000 – 2010: **Growing community** - Journal Implementation Science, NIH Committee D&I, many frameworks (CFIR, TDF, etc.)
- 2010 – 2020: **Steady State**– Studies but little knowledge accumulation, many 1-Project implementation researchers
- From 2020: **Renewed interest** - Conferences (NIH, SIRC, EIC), Research programs, Institutes …

Implementation science as a subject/field

- Scientific journals, e.g. Implementation Science
- Conferences (few)
- Professors (some)
- Masterprograms (few)
- Institutes/centres (few)
- Professional bodies
  - European Implementation Collaborative (EIC)
  - Society for Implementation Research Collaboration (SIRC)

Types of implementation research

- **Descriptive,** e.g. barriers for implementation, goal attainment of an implementation program

- **Supportive**, e.g. support / consultancy in quality improvement programs

- **Analytical**, e.g. comparative studies of implementation strategies, theory-informed analysis of determinants of implementation

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What studies are needed to develop the field?

1. Research on effectiveness of implementation strategies (if Hybrid, then Type 3)
2. Empirical, theory-informed studies of contextual factors and mechanisms of implementation
3. Validation of measures of implementation determinants and outcomes

Challenges in Implementation Science

- Tailoring to local needs and conditions
- Stakeholder involvement
- Defining relevant outcomes
- Theoretical development
- Conducting high-quality studies

- Rapid methods
- Lower certainty of evidence
- Health equity
- Role of healthcare systems

- Learning from non-IS studies
- Teaching and Learning IS

Wensing M, Grol R. *BMC Medicine* 2019;7:88.
Wensing M et al. *Implem Sci 2020;15:42*.
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References

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