



Evaluation Use and Knowledge Translation: *An Exchange for the Future*

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A
T R E A T I S E
ON THE
S C U R V Y.
IN THREE PARTS.

CONTAINING
An Inquiry into the Nature, Causes,
and Cure, of that Disease.

Together with
A Critical and Chronological View of what
has been published on the Subject.

By JAMES LIND, M. D.
Fellow of the Royal College of Physicians in Edinburgh.

The SECOND EDITION corrected, with Additions
and Improvements.

L O N D O N:
Printed for A. MILLAR in the Strand,
MDCCLVII.



104

1497

Vasco da Gama and a crew of 160,
of which 100 die of scurvy; citrus
suspected as cure

146

1601

Capt. James Lancaster sails with
four ships, with crew of one vessel
given 3 tsps lemon juice daily
having 0% mortality compared to
40% mortality on other 3 ships

48

1747

British Navy physician James Lind
conducts random trial of 6
treatments for scorbutic sailors;
citrus again proves effective

70

1795

British Navy declares citrus to be
part of diet on all navy ships

368

1865

British Board of Trade adopts this
'innovation' at the 'policy level' due
to adherence from the 'ground -up'




The 368 year gap is now a 17 year gap

> 17 years to translate evidence from discovery into health care practice ⁽¹⁾

But, only 14 % of it is believed to enter day-to-day clinical practice ⁽²⁾

- (1) Balas EA, Boren SA. Managing clinical knowledge for health care improvement. In: Bemmell J, McCray AT, eds. *Yearbook of Medical Informatics*. Stuttgart, Germany: Schattauer Publishing; 2000:65-70.
- (2) Westfall JM, Mold J, Fagan L. Practice-based research: “Blue. Highways” on the NIH roadmap. *JAMA*. 2007;297:403–6. 22



*“A little knowledge that acts
is worth infinitely more
than much knowledge that is idle.”*

Kahlil Gibran (1883-1931)



BUILDING A CASE FOR KT IN HEALTHCARE



The Organizational Perspective

Pediatric healthcare centers will be called upon to demonstrate that they are efficient producers of new knowledge and that they can apply and transfer that knowledge effectively to improve the health and well-being of children, contribute to research that is relevant to real-world issues, and inform policy and decision-making.

The Commonwealth Fund Task Force on
Academic Health Centers (2003)



The Practitioner's Perspective

Failing to use available science is costly and harmful; it leads to overuse of unhelpful care, under-use of effective care, and errors in execution.

Donald Berwick (2003)

Institute for Health Care Improvement



The Funder's Perspective

Measuring the returns from research is of growing importance to research funding organizations.

They need to demonstrate the benefits arising from their expenditure which (for government agencies) is directly funded by the taxpayer.

They also need to build an evidence base to inform strategic decision on how to fund research.

USA

- Agency for Healthcare Research and Quality
- Centres for Disease Control
- Robert Wood Johnson Foundation
- US Dept of Veterans Affairs
- NIH – National Cancer Institute

CANADIAN

- Canadian Institutes of Health Research
- Canadian Health Services Research Foundation
- Alberta Innovates Health Solutions
- Ontario Mental Health Foundation
- The Michael Smith Foundation for Health Research
- The Heart & Stroke Foundation
- Cancer Care Ontario
- National Cancer Institute of Canada
- Nova Scotia Health Research Foundation


INTERNATIONAL

- ZonMW – The Netherlands
- NHS & Medical Research Council – United Kingdom
- Danish Medical Research Council
- National Health and Medical Research Council
- Norwegian Research Council
- Swedish Medical Research Council

The Scientist's Perspective

There is a growing movement for scientists to incorporate a KT perspective in their research work

- Accountability: They need to demonstrate the benefits arising from their research, which comes from a funder and originates with the taxpayer
- Impact of the science: what is the impact of the research, on other research, on practice, policy, and health
- Relevance of the science: Where possible involving stakeholders in the development of research will improve the relevance of the findings and create opportunities for knowledge spread



Knowledge translation is about the application and use of the best available science to benefit health and well-being.

Terminology

Dissemination
Knowledge translation
Knowledge mobilization
Knowledge exchange
Implementation

Knowledge
management

Technology transfer
Commercialization

Translational research

The Evolution of KT in Science

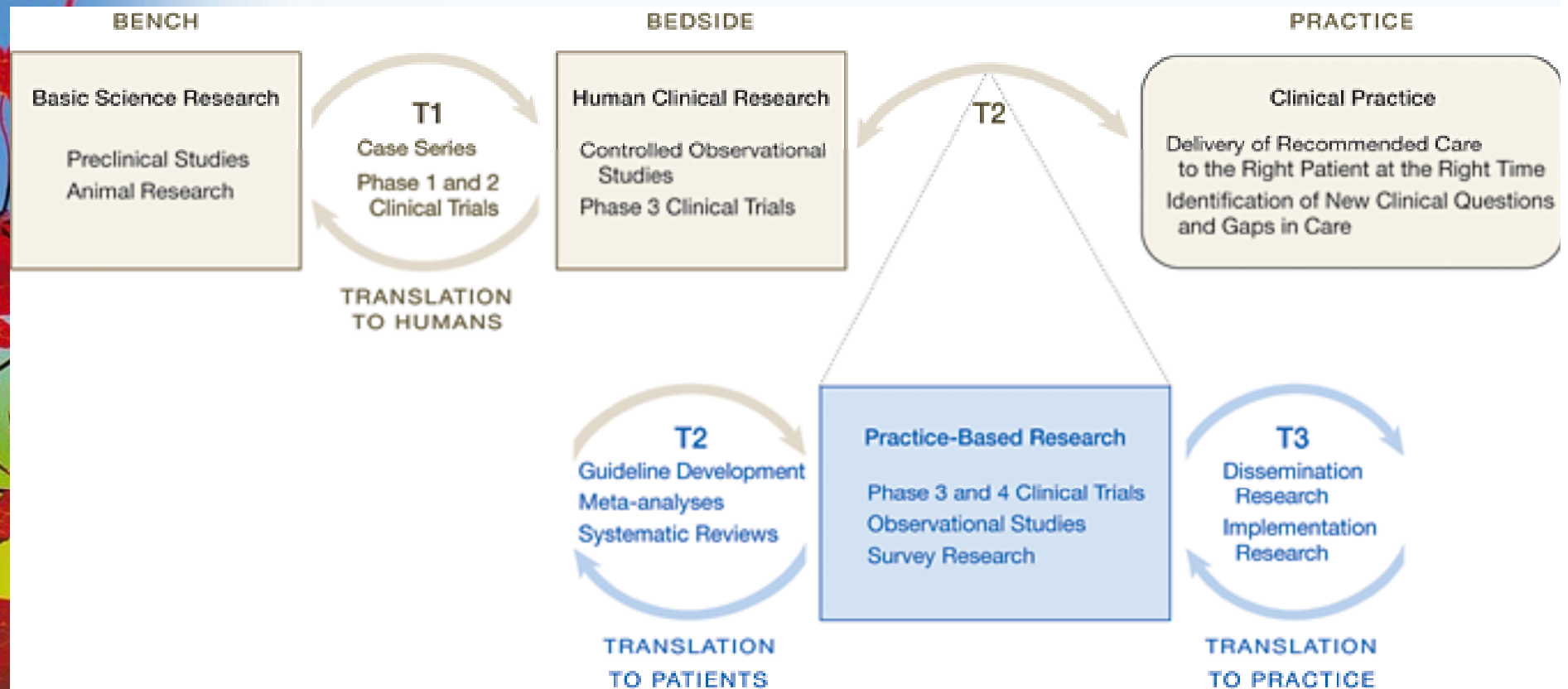
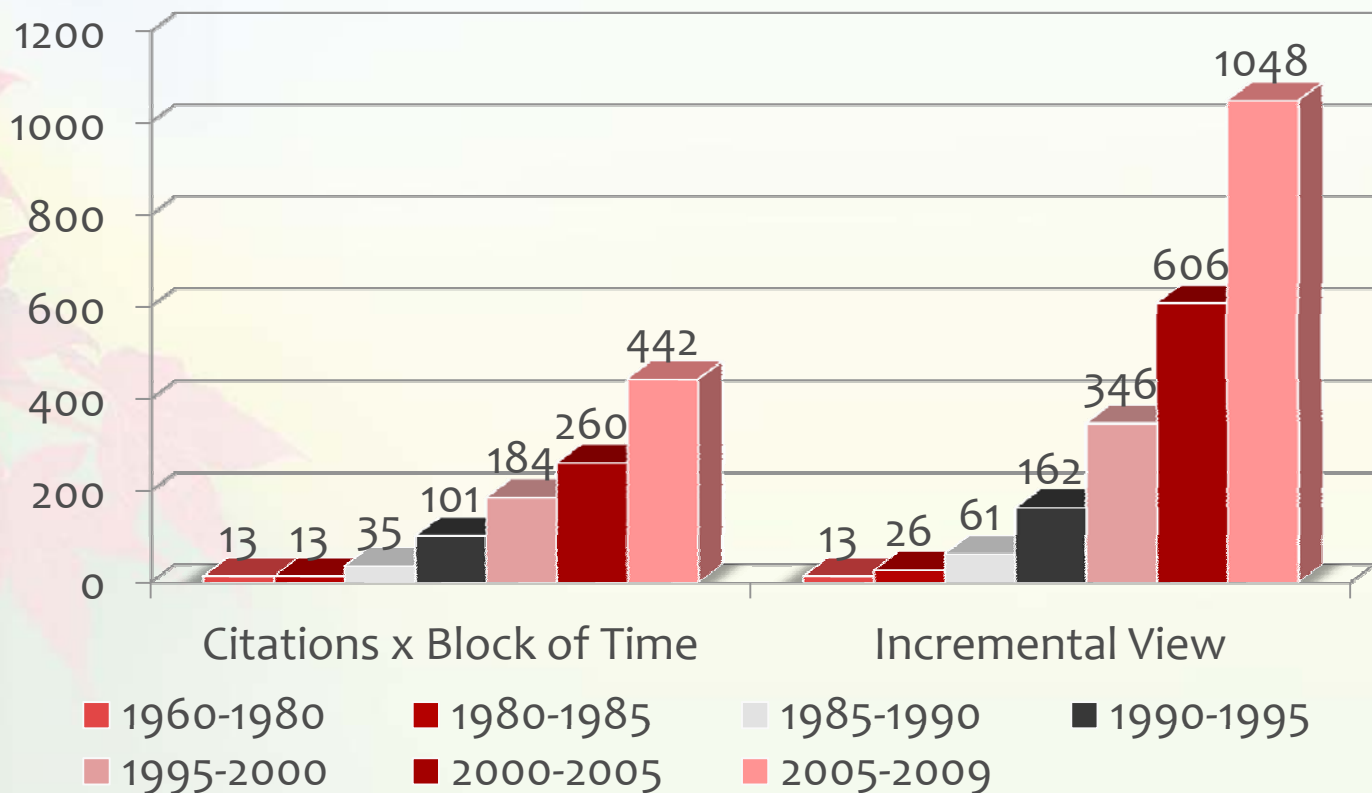


Figure. “Blue Highways” on the NIH Roadmap The current National Institutes of Health (NIH) Roadmap for Medical Research includes 2 major research laboratories (bench and bedside) and 2 translational steps (T1 and T2).

Westfall, J. M. et al. JAMA 2007;297:403-406

The Growth of KT Science

knowledge translation, knowledge transfer, knowledge dissemination, knowledge diffusion, research utilization [mp=title, original title, abstract, name of substance word, subject heading word] Ovid MEDLINE(R)





KT WAVE 1: STRATEGIES

How many journal articles would you have to read *per day* to stay up to date?



- a) 5
- b) 10
- c) 15
- d) 20
- e) 25
- f) 30

Source: Shaneyfelt (JAMA 2001) *Estimate only; not empirical data!*

Role Based KT Strategies

and their evidence for behavior change



Knowledge Broker

- Little evidence



Opinion Leader / Champion

- Good evidence



Consultants

- Some evidence



Substitution of Tasks

- Mixed evidence

Organizational KT Strategies

and their evidence for behavior change



Implementation Planning

- Growing evidence



Continuous Quality Improvement

- Limited evidence



Financial Incentives

- Some evidence

Educational KT Strategies

and their evidence for behavior change



Educational Materials

- Mixed Effects



Audit & Feedback

- Some evidence



Academic Detailing

- Good evidence



Policy Brief

- No evidence



Clinical Practice Guideline

- Good evidence

Technological KT Strategies

and their evidence for behavior change



Social Media

- Mostly effective



Reminders / Decision Supports

- Mostly effective

Small Groups & Networks

and their evidence for behavior change



Interactive Workshops / In-service

- Some evidence



Community of Practice

- Little evidence



Networks

- No evidence



Multi-professional collaboration

- Mixed effects

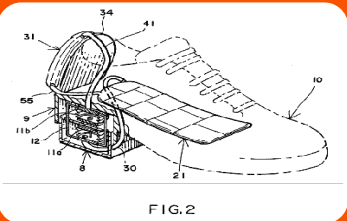
Other KT Strategies

and their evidence for behavior change



Arts-Based KT

- Some evidence



Patent

- Little evidence



Commercialization

- No evidence

Evaluating Effectiveness of KT Strategies for Changing Behavior

Jeremy Grimshaw et al., (2001). Changing Provider Behavior, Medical Care, 39(8), Suppl II. Systematic reviews of professional behavior change interventions published between 1966 and 1998

Participatory research

Interactive small groups

Clinical Practice Guidelines

Academic detailing

Reminders

Computerized decision support

Multi-disciplinary collaboration

Mass media campaign

Combined interventions

Conferences

Opinion leaders

Champions

Educational materials

Audit and feedback

Patient-mediated

Substitution of tasks

Didactic
Presentations

Consultants

Communities of practice

Policy Briefs

Networks

Patent license

Social media

Arts-based KT

Knowledge Broker

Mostly

Mixed

Limited

Unknown

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Limitations of KT Research - Wave 1

- Effects of interventions are modest
- Doesn't take into account the complexity of factors involved in implementation and behavior change
- Ineffective or inefficient translation and implementation can lead to harmful or ineffective care



New Questions of Interest to the KT Field

Individuals

- How do you encourage and prepare scientists to share their findings more readily, in ways that promote their use?
- How do you encourage practice change?

Organizations

- How can organizations implement practice changes successfully?
- How do you scale up to have greater impact?

Culture

- How do you create a culture of organizational learning?



6 Principles of Sticky Ideas

Chip & Dan Heath

A sticky idea is one that is easily understood, remembered, and that changes opinions, behaviors, or values.

1. **Simplicity** – isolate your core message and convey it succinctly
2. **Unexpectedness** – Surprise and intrigue with leaps of thought
3. **Concreteness** – Make it real and recognizable
4. **Credibility** – use details that symbolize and support your core idea
5. **Emotions** – Evoke feelings about what matters
6. **Stories** - Connect the dots

Use of Humour and Innovation *for behavior change*






KT WAVE 2: IMPLEMENTATION



Implementation vs. KT

- Implementation is the use of socio-behavioral strategies to adopt, integrate and scale-up evidence-based health interventions and change practice patterns within specific settings.
- **Implementation is a PROCESS...**
- **Knowledge Translation relates to the STRATEGIES**



It's not enough to *transfer* knowledge.
When it comes to impacting behavior change,
you want to know if people are
using it correctly
with fidelity
the way it was intended to be used!

Implementation Science

		IMPLEMENTATION	
INTERVENTION		Effective	Not Effective
	Effective	ACTUAL BENEFITS	Inconsistent Non Sustainable Poor Outcomes
	Not Effective	Poor Outcomes	Poor Outcomes Sometimes Harmful

Source: Dean Fixsen [Institute of Medicine 2000,2001,2009; New Freedom Commission on Mental Health, 2003; National Commission on Excellence in Education, 1983; Dept of Health and Human Services, 1999]

Fidelity

Good science must be used correctly for good outcomes





The Implementation Gap

Science to Service Gap

- What is known is not what is adopted to help children, families, and caregivers

Implementation Gap

- What is adopted is not used with fidelity and good outcomes for consumers.
- What is used with fidelity is not sustained for a useful period of time.
- What is used with fidelity is not used on a scale sufficient to impact social problems.

Source: Dean Fixsen

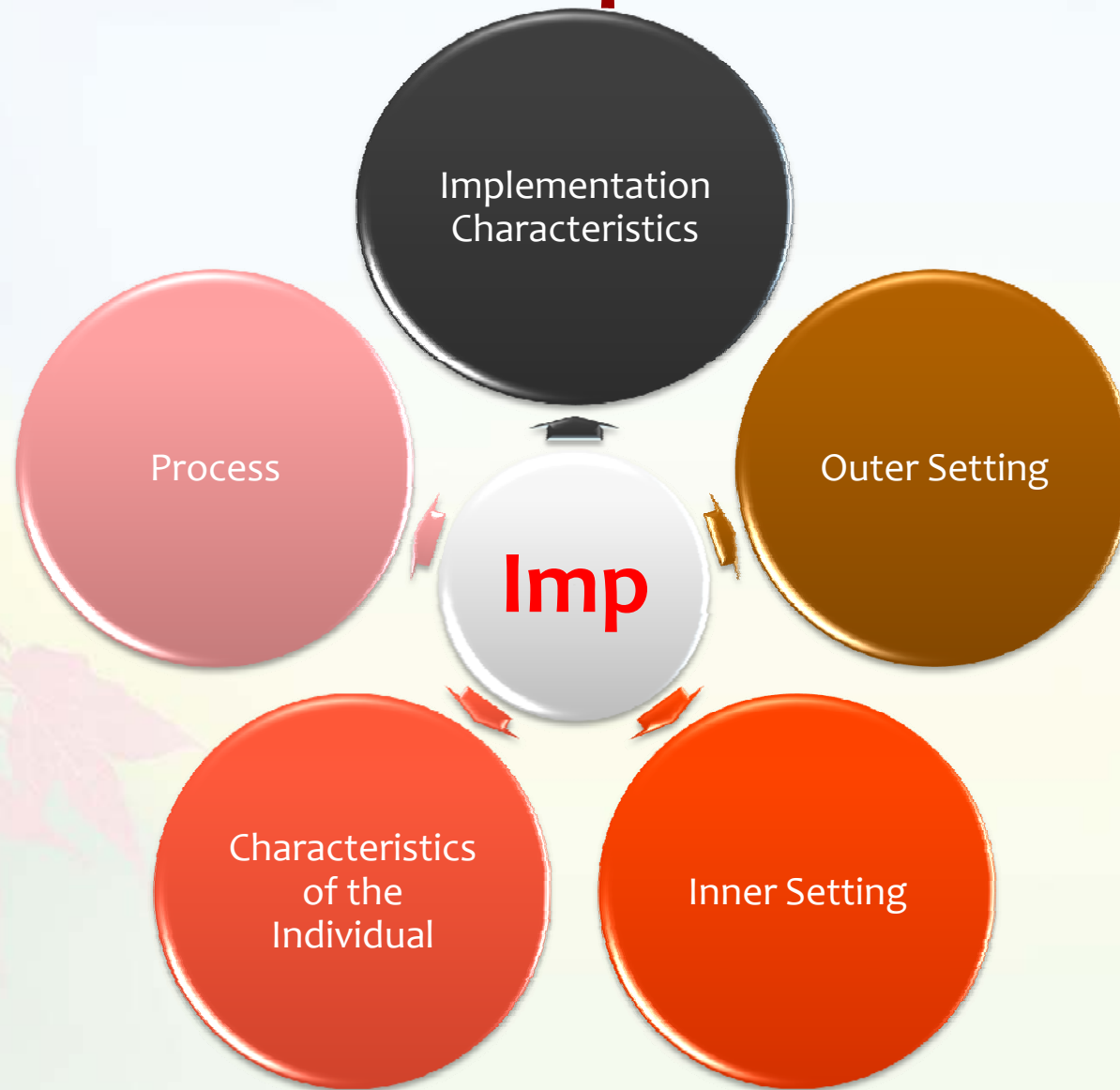
Implementation

Intervention	Implementation Team	No Implementation Team
Effective	80% 3 years	14% 17 years
	Application of implementation science and practice Fixsen, Blase, Timbers & Wolf 2007	Diffusion and dissemination Balas & Boren 2000

Source: Dean Fixsen

Fixsen DL, Blasé KA, Timbers GD & Wolf MM (2001). In GD Bernfeld, DP Farrington, & AW Leschied (Eds) Offender Rehabilitation in Practice, pp. 149-166

Key Factors for Implementation



Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Implement Sci. 2009
Aug 7;4:50.

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KT & EVALUATION

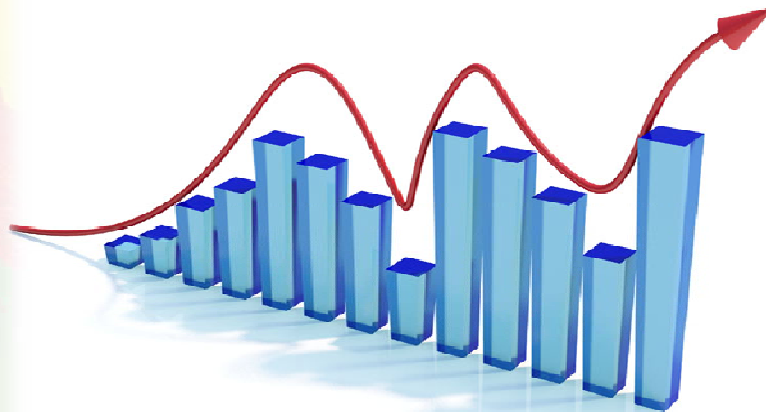
Research Impact



- Journal articles **published** \neq **research investment**
- A piece of research, if it's worth funding and doing at all, must not only be published, but **used, applied and built-upon by other researchers.**
- 'Research impact' is typically measured as the number of times an article is cited by other articles ('**citation impact**').
- **We need other metrics.** This means, **we need to incorporate evaluation,** over and above researching implementation.

Evaluating Impact

Knowledge translation within healthcare requires that we demonstrate how our research directly affects patient outcomes and influences clinical practice. We need systems in place to track and report impact.



Buxton & Hanney's 5 Categories of Research Impact

Categories of Payback (Benefits)	Impact Categories
Increased Knowledge	Advancing knowledge
Promoting future research and research use	Building capacity
Political and administrative benefits	Informing decision making
Health sector benefits	Health impacts
Broader economic benefits	Economic impacts

Source: Buxton M. & Hanney S. 1996. "How can payback from health services research be assessed?" Journal Health Services Research and Policy; 1(1): 35-43.

Canadian Academy of Health Sciences Framework to Evaluate Returns on Health Research

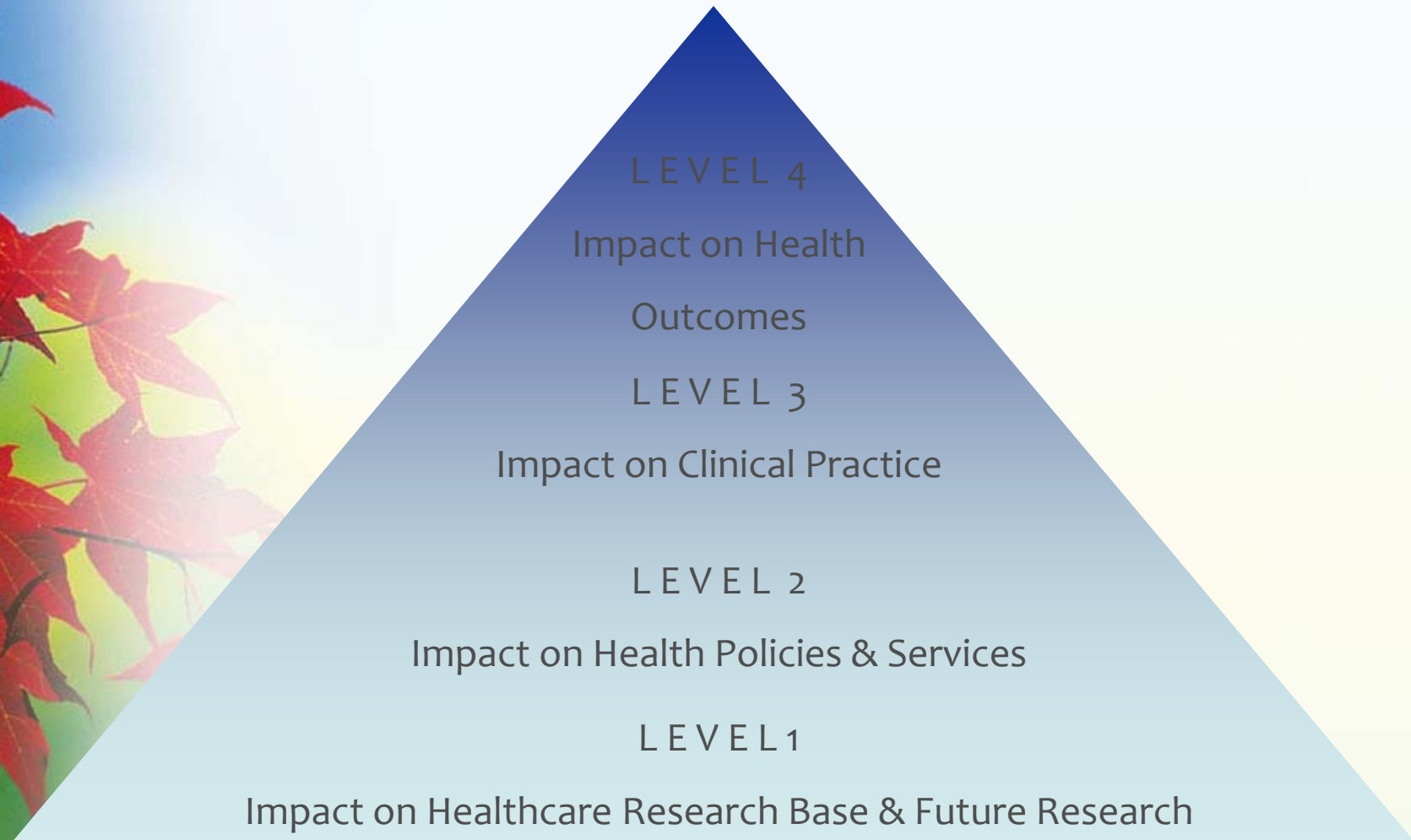


Indicators in the areas of:

1. Research quality, activity, outreach and structure
2. Research capacity-building
3. Informed decision-making
4. Health impact
5. Broad economic and social impacts

http://www.cahs-acss.ca/e/pdfs/ROI_FullReport.pdf

KT Impact



Source: Stryer, Tunis, Hubbard & Clancy (2000) Health Services Research 35:5
Part 1

Evaluation Approaches

- 1) Indicators – e.g., reach, usefulness, use, collaboration
- 2) Quantitative – RE-AIM Framework
Reach / Efficacy / Adoption / Implementation / Maintenance
- 3) Kirkpatrick Model
Reaction / Learning / Behavior / Results
- 4) Stages of Implementation – National Implementation Research Network
Exploration / Installation / Initial Implementation / Full Implementation / Innovation



Research Tools to Measure the Implementation Process

Observational measure of implementation progress in community based settings: The Stages of implementation completion (SIC)

Implementation Science 2011, **6:116** doi:10.1186/1748-5908-6-116

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The **Stages of Implementation Completion (SIC)** is an observation-based measure that is used to track the time to achievement of key implementation milestones in an EBP being implemented in 51 counties in 53 sites (two counties have two sites) in two states in the United States. SIC measure can be used to track and compare the effectiveness of various implementation strategies.



Research Tools to Measure the Implementation Process

Validity and Usefulness of Members Reports of Implementation Progress in a Quality Improvement Initiative: Findings from the Team Check-up Tool (TCT)

Implementation Science 2011, 6:115 doi:10.1186/1748-5908-6-115


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The goal of this study is to validate measures from a short instrument tailored to track dynamic context and progress for a team-based quality improvement (QI) intervention. The primary measure is the Team Check-up Tool (TCT), an original instrument that assesses context and progress of a team-based QI intervention. The TCT is administered monthly.



Strive for simplicity and competence, but
embrace the confusion and messiness
along the way.

Bob Sutton, *Work Matters*

Dave Snowden's *Seven Principles of Knowledge Management*

Challenges for evaluation of KT:

1. Knowledge can only be volunteered it cannot be conscripted.
2. We only know what we know when we need to know it.
3. In the context of real need few people will withhold their knowledge.
4. Everything is fragmented.
5. Tolerated failure imprints learning better than success.
6. The way we know things is not the way we report we know things.
7. We always know more than we can say, and we will always say more than we can write down.

Take Away Messages...

- The field of knowledge translation and implementation is new but evolving rapidly
- Both research & evaluation are of central importance to KT, to help us learn what works, with whom, and in what contexts
- KT requires (better) metrics and methods for evaluating impact in real world contexts
- KT plans need to incorporate *evaluation* to determine whether KT goals are achieved, and *research* to understand the situation with regard to developing, expanding, and testing various theories



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