

# **Knowledge Translation:**

## **Where Are We? and Where Do We Go From Here?**

Ian D Graham, PhD, FCAHS  
PRAM- McGill University  
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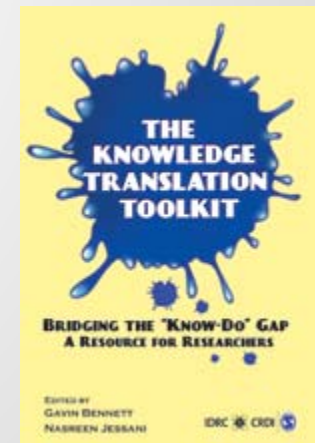
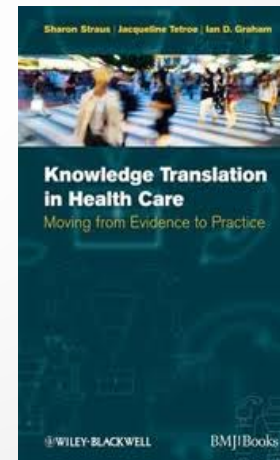
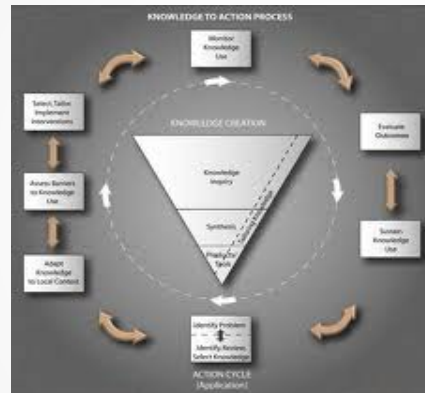
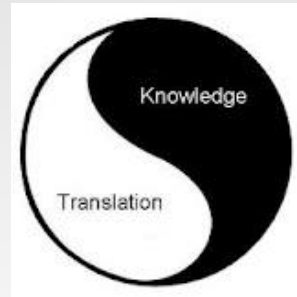
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# The Problem

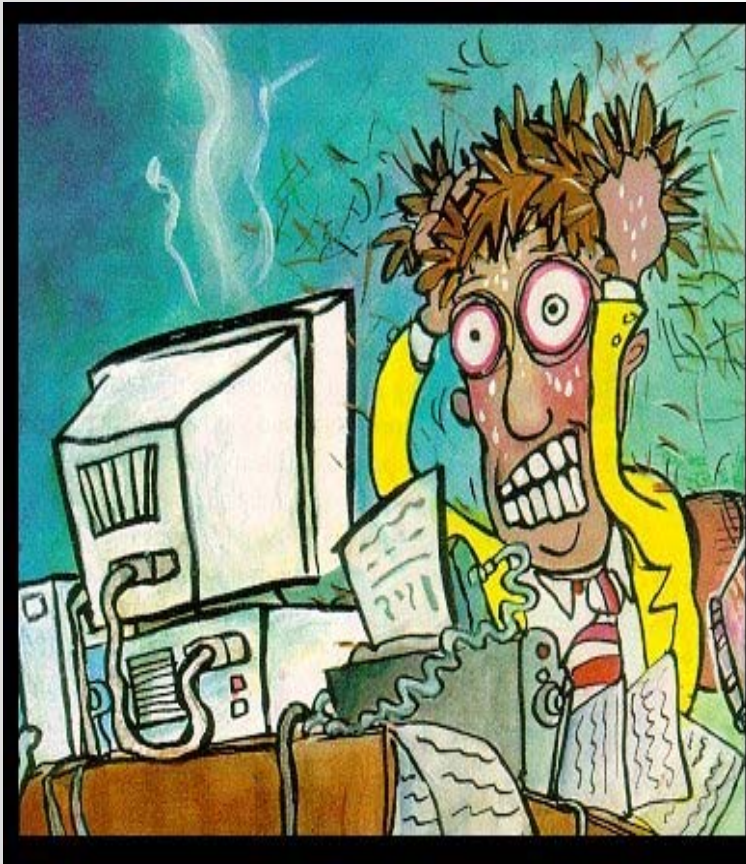


# The Solution

## Knowledge Translation



# BUT... What do we really mean by translation of science into health?



Technology Transfer

Knowledge Transfer (KT)

T1, T2, T3.....

Knowledge to Action (KTA)

Knowledge Mobilization (KM)

Knowledge Exchange (KE)

Commercialization

Implementation

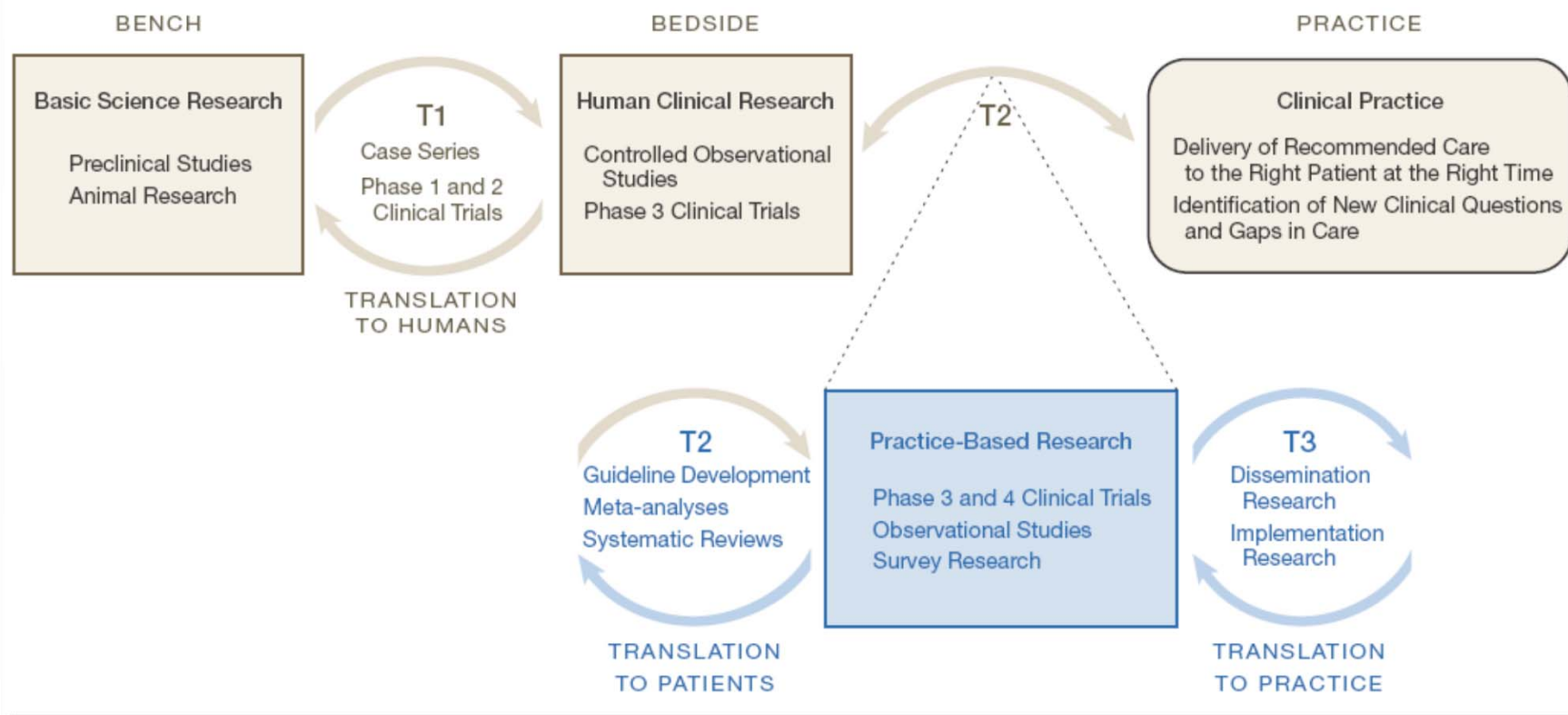
Translational Research

Knowledge Translation

# Different conceptualizations of KT

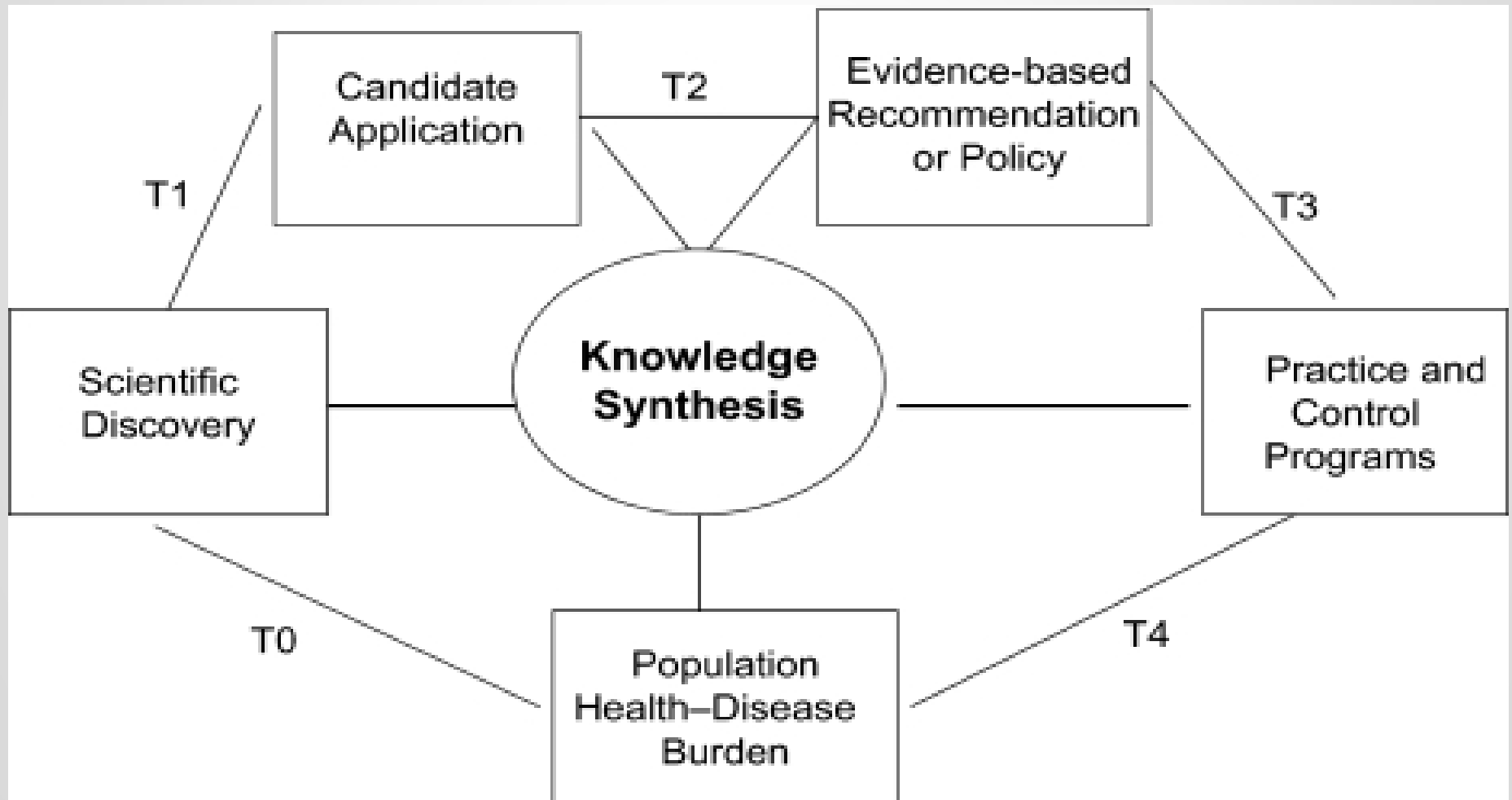
# Translational Research

**Figure.** "Blue Highways" on the NIH Roadmap

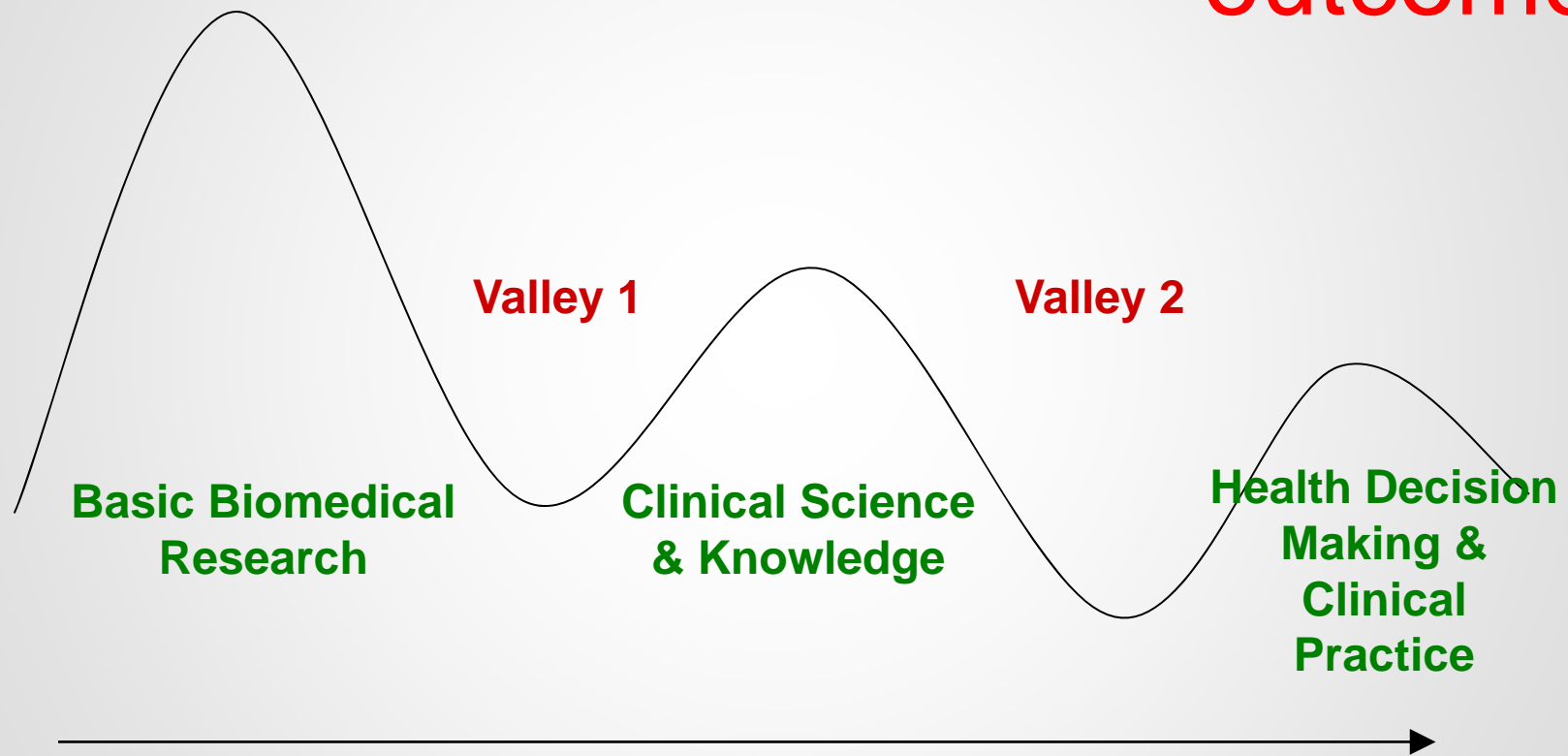


Westfall, J. M. et al. JAMA 2007;297:403-406

# Khoury et al (2010)



# Bridging the 'death valleys' between research and outcomes



**Translational Continuum**

Adapted from Reis et al, Clin Transl Sci 2008;1(1):9-10



# A Very Different Conceptualization of KT

KT is a dynamic and iterative process that includes **synthesis, dissemination, exchange and ethically sound application** of knowledge to improve health, provide more effective health services and products and strengthen the health care system.

*This process takes place within a complex system of interactions between researchers and knowledge users which may vary in intensity, complexity and level of engagement depending on the nature of the research and the findings as well as the needs of the particular knowledge user.*

*(adapted from <http://cihr-irsc.gc.ca/e/29418.html>)*

# Three Aspects of KT

## End of grant KT

- The researcher develops and implements a plan for making knowledge users aware of the knowledge generated through a research project

## Integrated KT research

- Research approaches that engage potential knowledge-users as partners in the research process.
- requires a collaborative or participatory approach to research that is action oriented and is solutions and impact focused (Mode 2).

## KT/implementation Science

- The study of how to promote uptake of research in decision making

# So what is KT?

It comprises research, the science of translation, and doing translation (ie the practice of translation)

Translation research includes: focusing on the translation gaps, and doing research in a collaborative fashion (iKT)

Science of translation (implementation research) is about:

- Studying the determinants of knowledge use and effective methods of promoting the uptake of knowledge

The practice of translation is about:

- Closing the gap between what we know and what we do (the reducing the know-do gap)
- Making users aware of knowledge and facilitating their use of it to improve health and health care systems
- Transforming evidence into practice (moving knowledge into action)

How to reconcile these different perspectives?

# *Knowledge Translation*

# *Impact*

**Translational Research**

**Translational Practice**

Advances in knowledge

Translational gap research

Health & Social Systems impacts

Integrated knowledge translation research

Dissemination

Application  
**Research informing decision making**

Health impacts

Implementation research

Economic impacts

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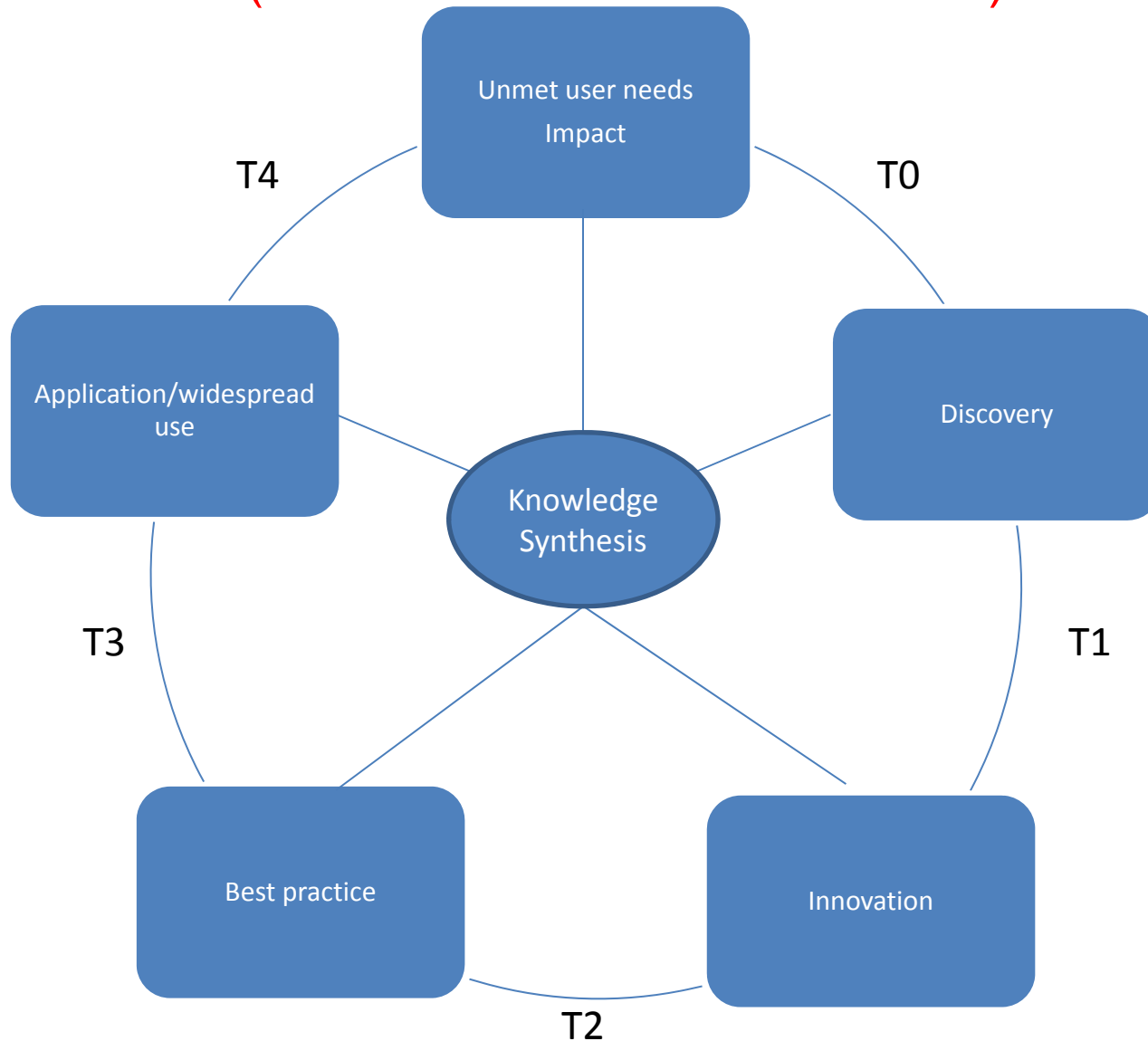
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# Translational Research Gaps

(where do we focus research)



# Translational gap research

| Translational gaps  | Research needed   |
|---|---|
| T0- Translation to discovery- from identified unmet user needs for knowledge to discovery                             | Priority setting research, Needs-based assessment, epidemiology, knowledge synthesis  |
| T1- Translation to humans- from discovery to (clinical) innovation  | First in humans, early phase clinical trials, proof of principle studies, knowledge synthesis   |
| T2- Translation to best practice for patients/system- from (clinical) innovation to recommendations/guidelines/policy | Patient oriented research, later phase clinical trials, comparative effectiveness, HTA, knowledge synthesis & guidelines development research |
| T3- Translation to practice- from guidelines to widespread use/implementation   | Implementation science, quality improvement science, organization and system change science, scaling up science, knowledge synthesis          |
| T4- Translation to impact at population level- from widespread use to impact (measuring impact)                       | Population based research, population health research, epidemiology, evaluation science, knowledge synthesis                                  |



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# Integrated Knowledge Translation Research is: (how to approach research)




- a way of thinking about conducting research to make the results applicable to the population under study...
  - a paradigm shift that focuses on engagement with the field and end-users in research (aligned with participative science and collaborative research).
- 
-

# Integrated KT

- Collaborative, participatory, action oriented, community based research, engaged scholarship, mode 2 knowledge production, co-production of knowledge
- Knowledge users can be:
  - Policy- and decision-makers from the community to the federal level, the public, industry, clinicians, health system managers, even whole communities
  - Researchers from different pillars, disciplines, teams, countries

# Why integrated RT research?

Through partnerships, the research is strengthened:

- end-user engaged in developing the research question =  
 solutions-based research that is relevant
- end user engaged in the research process =  
 confidence in the results and in the researchers
- end-user (patients, health system decision makers, clinicians) engagement means readiness for the results and willingness to move those results into practice =  
 impact (improved health care and outcomes)
- CIHR's evaluation of KT funding program

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# Implementation Research/KT Science

- scientific study of methods to promote the uptake of research findings into routine healthcare in clinical, organisational or policy contexts.
  - determinants of knowledge use
  - effectiveness of methods and interventions to promote knowledge use (uptake of effective practices and abandonment of ineffective ones)
- field is theoretically pluralistic and uses mixed methods
- strong social science/behavioral science influence on the field

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# Translational Practice: End of project KT

A broad spectrum of activities including:

**Diffusion** (let it happen)

**Dissemination** (help it happen)

⇒ activities that tailor the message and medium to a specific audience

**Application/Implementation** (make it happen)

⇒ moving research into practice/policy in cases where the strength of evidence is sufficient

⇒ use of a conceptual model to guide application is recommended

⇒ (can also be achieved through iKTR)



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# Dissemination (help it happen)

(activities that tailor the message and medium to a specific audience)

- Tailored summary/briefings to stakeholders
- Educational sessions with patients, practitioners and/or policy makers
- Engaging knowledge users in developing & executing dissemination/implementation plan
- Tools creation
- Media engagement
- Use of knowledge brokers

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# Application (make it happen)

(moving research into practice in cases where the strength of evidence is sufficient)

- Understanding the context/environment where research is to be applied
- Identifying barriers to the uptake of the research findings
- Adapting knowledge, tailoring messages and interventions to promote uptake
- Evaluating the implementation process and outcomes
- Working within a conceptual framework

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# *Impact*

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Research

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Practice

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impacts

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research

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KT: Where are we?

# Canadian Contributions to KT

- KT is key element of CIHR's parliamentary mandate

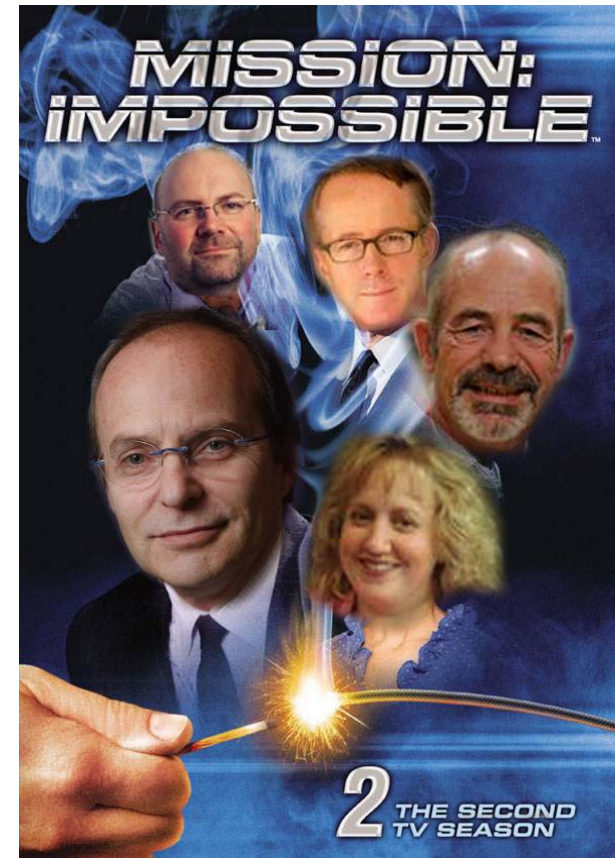
“CIHR is widely recognized and celebrated for its efforts in advancing KT in general, in Canada and internationally. Many colleagues believe that CIHR has been a leader in bringing knowledge translation to the forefront and applaud the importance that CIHR places on the promotion and implementation of KT practices, which legitimizes and prioritizes knowledge translation efforts: It is clear that KT is ... a CIHR priority.”

- CIHR KT specific funding opportunities: Partnerships for Health System Improvement; Knowledge to Action; Knowledge Synthesis; Dissemination Events; KT Supplements

# Canadian Contributions to KT

- Canadian researchers recognized internationally as leading KT science

Some Canadian KT operatives have infiltrated research and the healthcare system to make evidence informed decision making:  
Mission Possible





# KT: Where do we go from here?

- Must recognize the two paradigms in research and research funding:
  - Knowledge transfer paradigm
  - Engagement paradigm
- Each serve different purposes BUT are complimentary and both are necessary to improve the health of Canadians
- Growing recognition of value and need for the engagement paradigm by society and researchers

|  | Knowledge transfer paradigm                                       | Engagement (iKTR) paradigm |  |
|--|---|----------------------------|--|
| Roots:   | Biomedical  |                            |  |
| Motivation:  | Curiosity, researcher-driven                                      |                            |  |
| Who decides:<br><ul style="list-style-type: none"> <li>•Research question</li> <li>•Study design</li> <li>•Data collection approaches</li> <li>•Outcome measures</li> <li>•Analysis</li> <li>•Relevance of findings</li> <li>•Dissemination of findings</li> </ul> | Researcher unilaterally   |                            |  |
| Roles:   | End users subjects or collaborators to achieve researchers' goals |                            |  |
| Focus on:  | Generic findings, applicable in all contexts                      |                            |  |
|  |   |                            |  |

|                 | Knowledge transfer paradigm  | Integrated KT/ engagement paradigm |  |
|-----------------|--|------------------------------------|--|
| KT problem      | Knowledge transfer   |                                    |  |
| KT goal:        | <p>Availability of results</p><br><p>Focus on communication and dissemination</p> <p>- information transmission (1 way transmission)</p> |                                    |  |
| Funding sources | Open operating grants  |                                    |  |
|                 |  |                                    |  |

|  |   |   |  |
|--|---|---|--|
|  | Knowledge transfer paradigm                                       | Engagement (iKTR) paradigm  |  |
| Roots:   | Biomedical  | Social science  |  |
| Motivation:  | Curiosity, researcher-driven                                      | End user solutions-focused  |  |
| Who decides:<br><ul style="list-style-type: none"> <li>•Research question</li> <li>•Study design</li> <li>•Data collection approaches</li> <li>•Outcome measures</li> <li>•Analysis</li> <li>•Relevance of findings</li> <li>•Dissemination of findings</li> </ul> | Researcher unilaterally   | Coproduction of knowledge, Researchers and end users decide:  |  |
| Roles:   | End users subjects or collaborators to achieve researchers' goals | Researchers and end users share decision making power: they are equal partners  |  |
| Focus on:  | Generic findings, applicable in all contexts                      | Recognition of non research sources of evidence, importance of synthesis and application of research results in context |  |

|                 | Knowledge transfer paradigm   | Integrated KT/ engagement paradigm   |  |
|-----------------|---|--|--|
| KT problem      | Knowledge transfer  | Knowledge production   |  |
| KT goal:        | <p>Availability of results</p> <p>Focus on communication and dissemination</p> <p>- information transmission (1 way transmission)</p> | <p>Increased application of research through better quality, relevant research</p> <p>Focus on partnership, power sharing and mutual respect</p> <p>-knowledge exchange, mutual learning</p> |  |
| Funding sources | Open operating grants   | Strategic funding opportunities  |  |
|                 |   |  |  |

# Context

- Society and citizens, managers and policy makers in the health system, health care providers are increasingly calling for a shift from a researcher-driven to a health provider/patient-centered research agenda
- IKTR produces impact through engagement and applications of findings
- Solutions focused, participatory approaches to research (engaged scholarship) are consistent with the concept of democratization of science

So...

- IKT or engaged scholarship will continue to grow in popularity and acceptance
- the academy will be forced to reconsider its incentive system so as to remove disincentives and provide incentives for iKTR (e.g. shifting focus from journal impact factors to measures of real impact)

So...

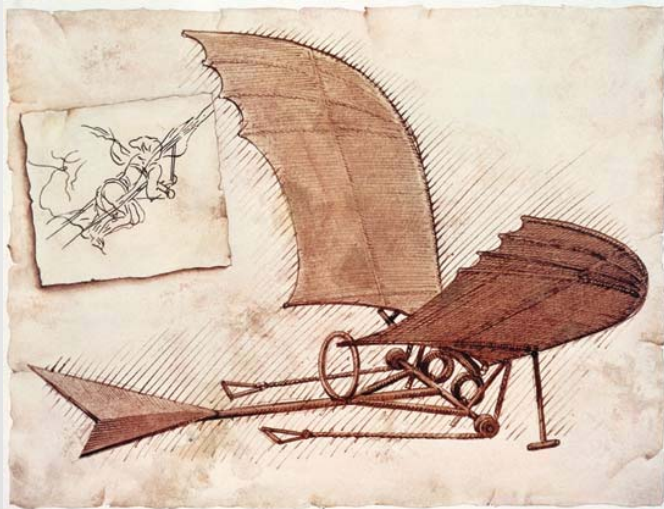
- Most funding agencies will need to embrace iKTR and develop processes to review and fund it
- CIHR reforms must carefully consider how to integrate its existing KT funding opportunities into its open grants competition SO AS TO preserve the key ingredients of the KT FOs (i.e. requirement for partnering with knowledge users, KUs driving research questions, merit review, etc)



# If research is to be used it must:

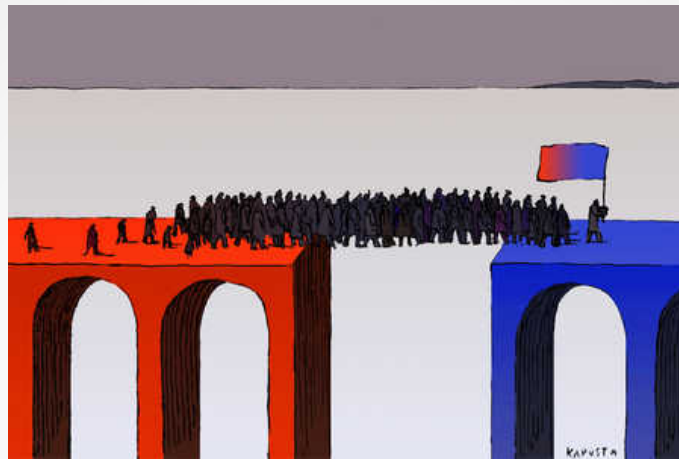
- Answer important questions of concern to knowledge users
- Be integrated with contextual evidence to become actionable in a specific setting
- Undertaken with the genuine engagement of knowledge users (managers, practitioners, patients, citizens) throughout the process
- KT/implementation science must be valued and supported by funding agencies

I have been impressed with the urgency of doing.  
Knowing is not enough; we must apply.  
Being willing is not enough; we must do



Leonardo da Vinci

Thank you



Merci

[igraham@OHRI.CA](mailto:igraham@OHRI.CA)

CIHR KT resources

<http://www.cihr-irsc.gc.ca/e/29529.html>