

The 17 year gap: *The origin, evolution & relevancy*

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We acknowledge with respect and humility that we live, work and play on the traditional and unceded territories of the x^wməθk^wəy̓əm (Musqueam), Skwxwú7mesh (Squamish), and səʼlilwətaʔt (Tsleil-Waututh) Nations.

Studies suggest that it takes
an average of 17 years
for ~14% of research evidence
to reach clinical practice

(Balas & Boren, 2000)

Question #1

- *Do you reference the 17-year evidence to practice gap when you're talking to people about the importance of KT?*

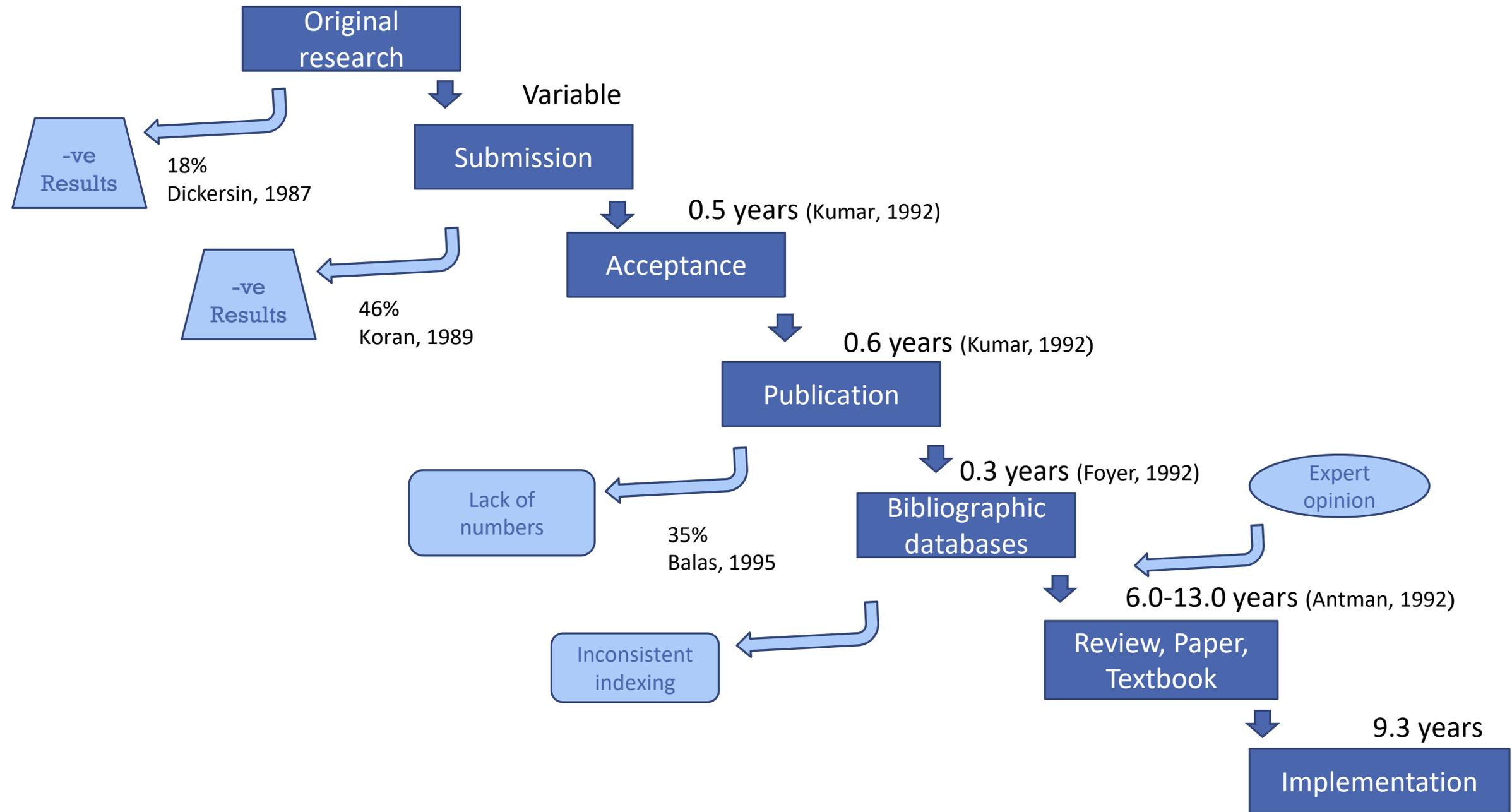
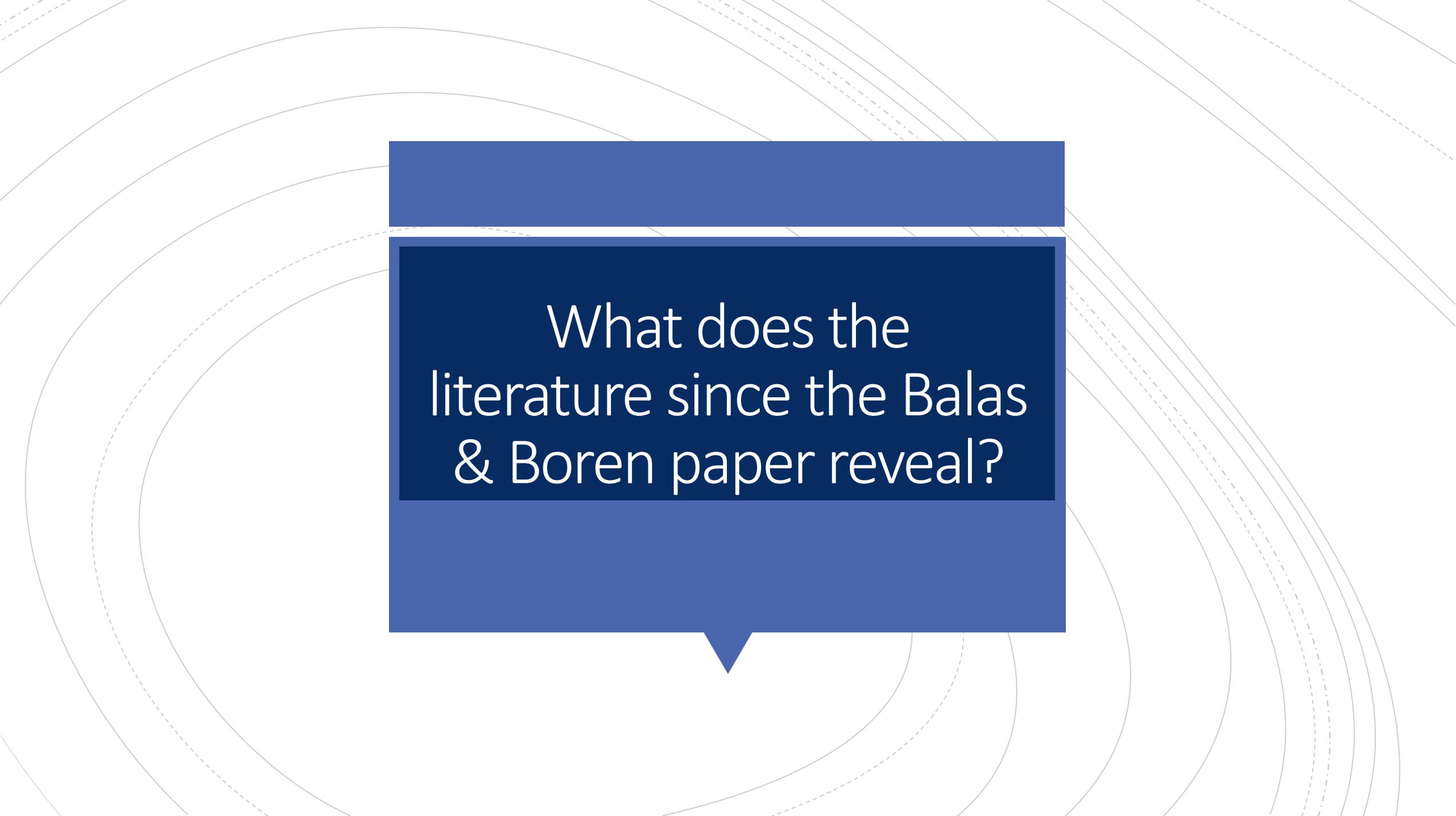


Figure 1. Balas & Boren, 2000 Yearbook of Medical Informatics

Relying on the passive diffusion
of information to keep
health professionals' knowledge up to date
is doomed to failure ...

(Balas & Boren, 2000)

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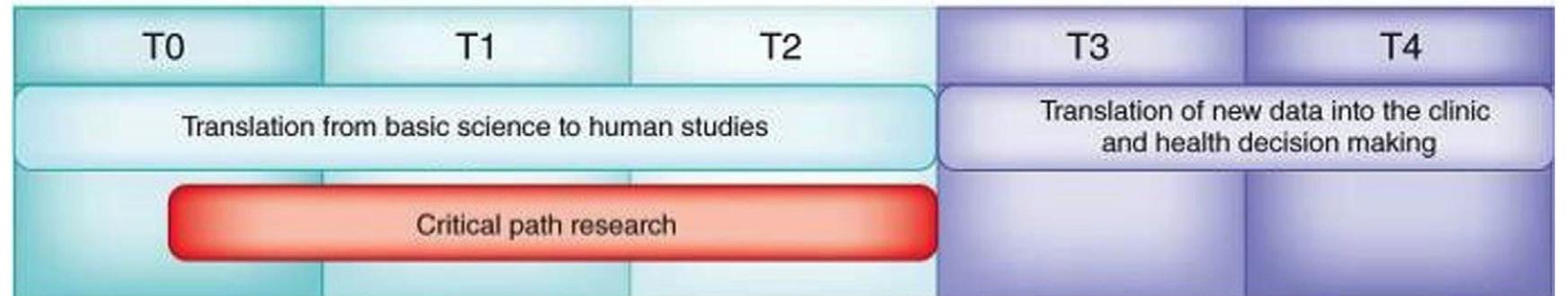
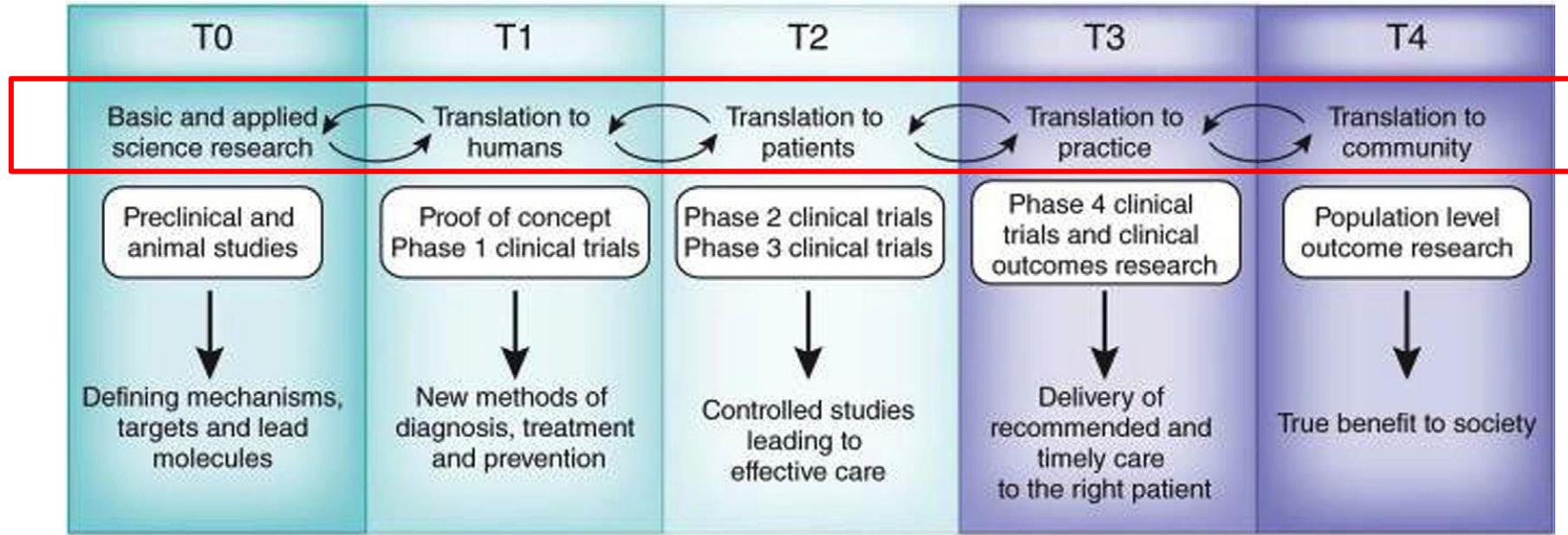
What does the
literature since the Balas
& Boren paper reveal?

The background features several sets of concentric, curved lines in shades of light blue and grey, some solid and some dashed, creating a sense of motion or depth. A dark blue rectangular box with a white border is positioned on the left side, containing the text.

Literature about
duration

Lost in Translation: The Gap in Scientific Advancements and Clinical Application

Fernandez-Moure



The answer is 17 years, what is the question: understanding time lags in translational research

Morris et al, 2011

2011

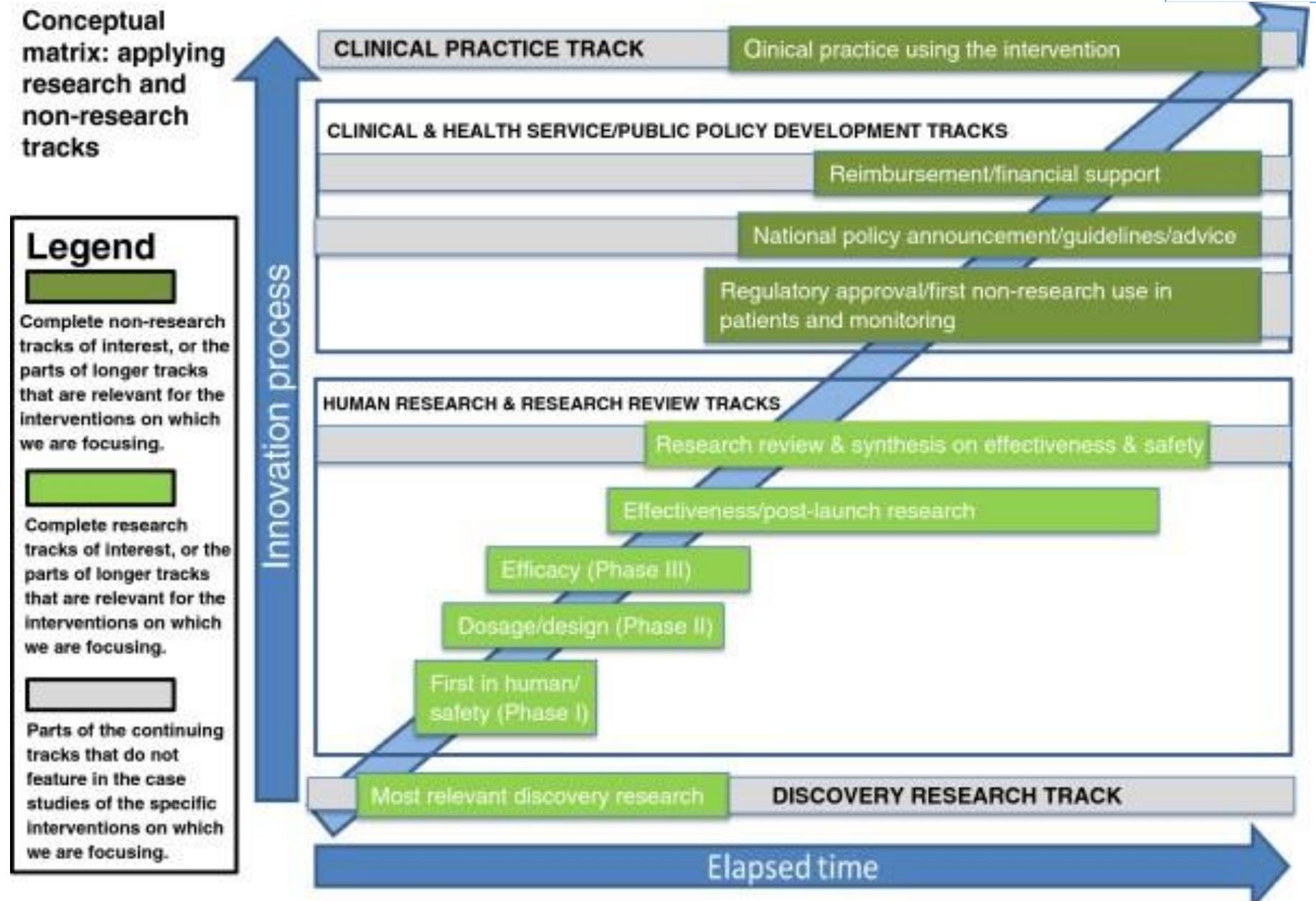
- Difficult to compare d/t:
 - **different measures**
 - avg, median, ranges, ranges with no endpoint eg 3 or more years; preference for averages with no attention to variation
 - **different things**
 - **different time points**
 - time btwn ethical approval & date of first publication; publication to guideline; length of time within & btwn phases in US drug development, date of trial registration & milestones to publication, time backwards from practice to publication
- **Not stable over time**
 - 0.9 yrs vs 0.3 yrs from acceptance to publication in 1992 & 1982

“It is surprising that 17 is the answer to several related but differing questions. Is this coincidence or not?”

Need to agree on & use same models, definitions & measures

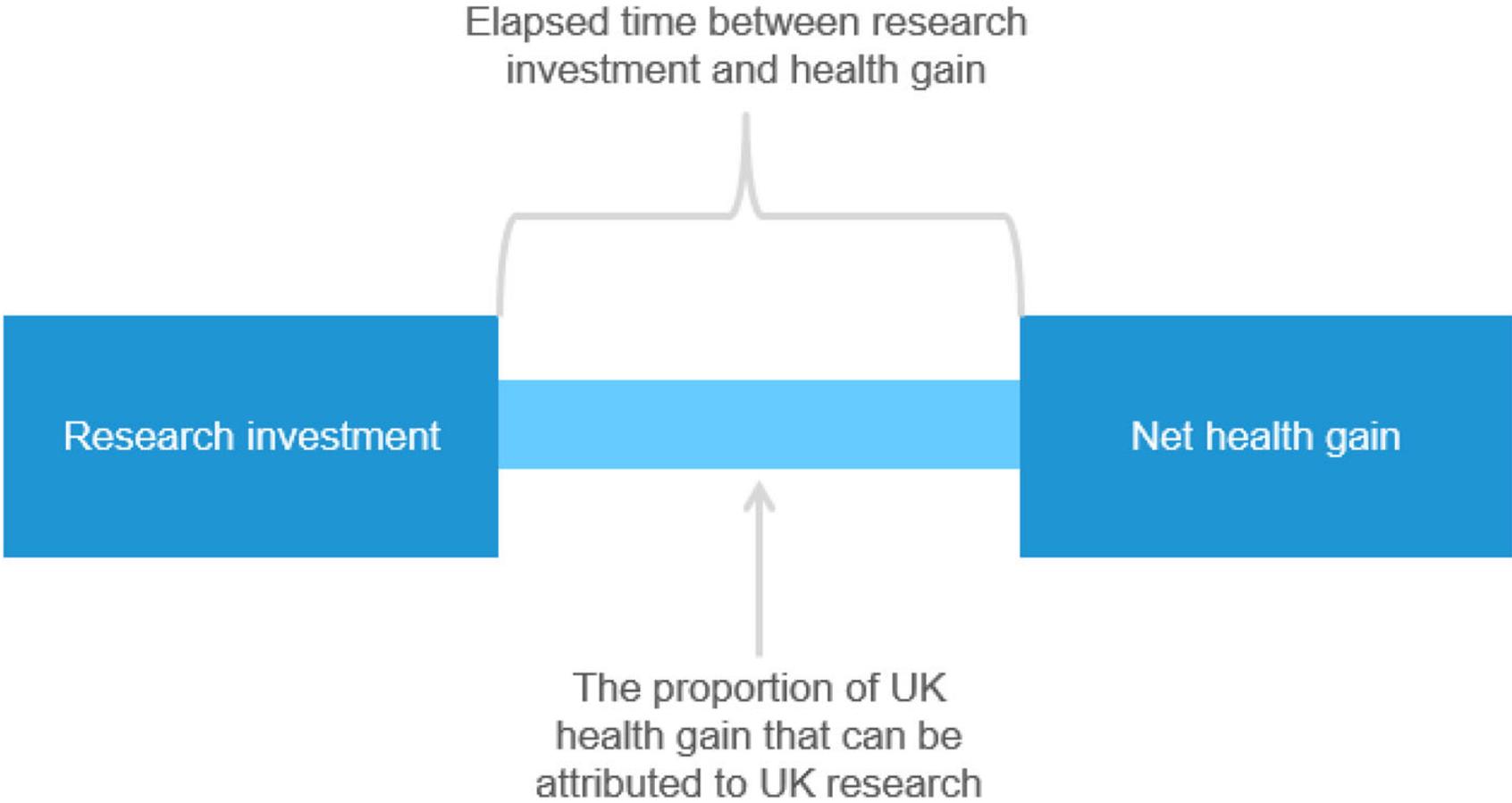
How long does biomedical research take? Studying the time taken between biomedical and health research and its translation into products, policy and practice

Hanney et al *Health Res Policy Sys* 13, 1 (2015). <https://doi.org/10.1186/1478-4505-13-1>



Estimating the returns to United Kingdom publicly funded MSK disease research in terms of net value of improved health outcomes

Glover et al, 2018



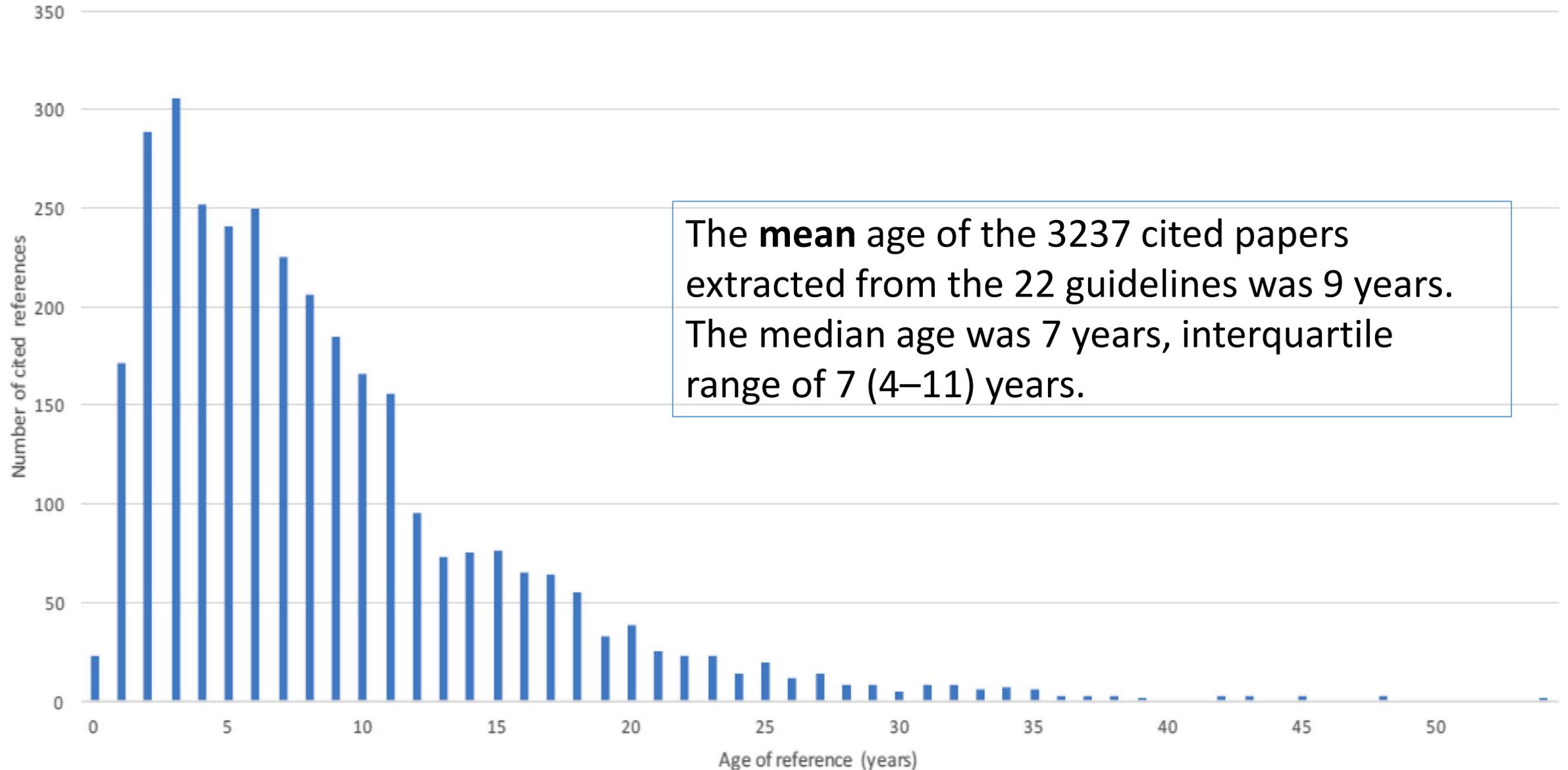


Fig. 5 Elapsed time of the cited papers extracted from guidelines

- Total expenditure on MSK research (1970 - 2013): *£3.5 billion (5.6 billion CAD)
- Key interventions produced 871,000 QALYs
- Net monetary benefit: *£16 billion (26.3 billion CAD)
- Proportion of benefit attributable to UK research was 30% (**in 2013 prices*)

- **Time between funding and impact of MSK treatments was 16 years**

- Internal rate of return for MSK research: 7%; 9% for CVD; 10% for cancer



Trisha Greenhalgh  @trishgreenhalgh · Mar 20



Please can we all now stop saying "it takes 17 years to get research evidence into practice and policy".

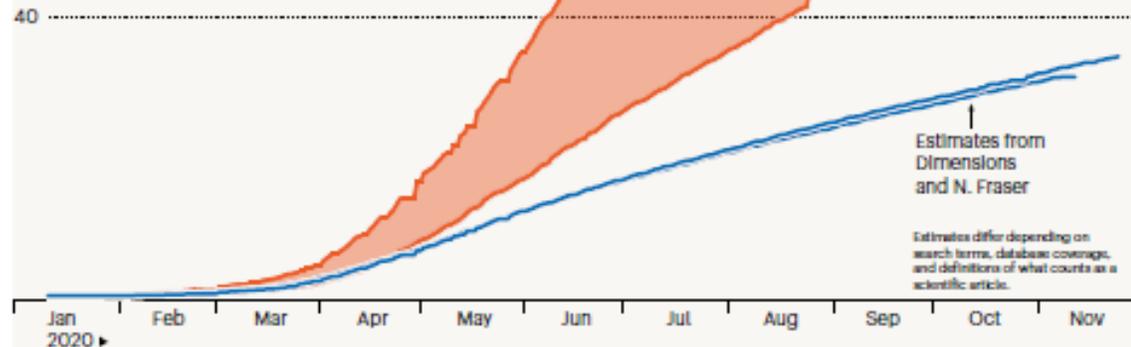
This week, I've seen observational studies and rapid reviews done in days, which have changed policy in minutes and practice in hours.



COVID IN PAPERS: A TORRENT OF SCIENCE

An unprecedented flood of research on the coronavirus swept websites and journals this year.

By Holly Else



Scientists raced to share their work on COVID-19 and the SARS-CoV-2 virus, often through preprints — articles posted online before peer review. They published well over 100,000 articles about the topic, and might even have passed 200,000 in December. There was a sharp increase in articles on all subjects submitted to scientific journals this year. Submissions to publisher Elsevier's journals alone were up by around 270,000 — or 58% — between February and May compared with 2019, for instance. Even so, around 4% of the world's research output was devoted to the coronavirus, according to the Dimensions database.

Submissions to Elsevier's journals increased 58% between February - May compared with 2019

The carnage of substandard research during the COVID-19 pandemic: a call for quality

Katrina A Bramstedt ^{1,2}

J Med Ethics Epub doi:10.1136/medethics-2020-106494

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Consequences of the gap

Question #2

- *What are some of the consequences of the evidence to practice gap?*

Challenges and Opportunities Facing Medical Education

Densen

Transactions of the American
Clinical and Climatological
Association VOL. 122, 2011

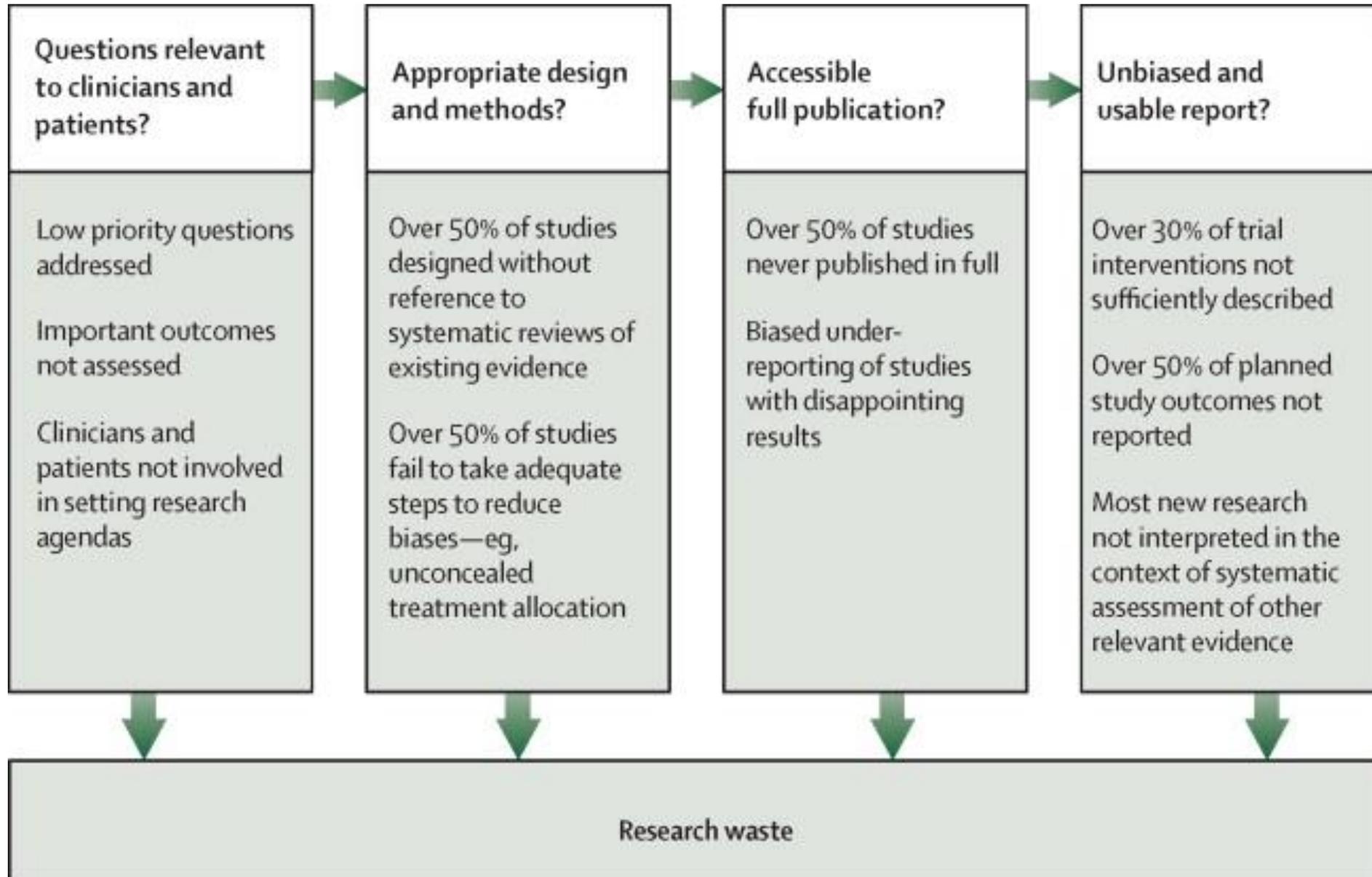
“Knowledge is expanding faster than our ability to assimilate and apply it effectively”

It is estimated that the doubling time of medical knowledge

- in 1950 was 50 years
- in 1980 was 7 years
- in 2010, 3.5 years
- in 2020 it is projected to be 0.2 years— just 73 days

Stages of waste in the production and reporting of research evidence

2009



Chalmers & Glasziou
Lancet Vol 374, Issue 9683,
P86-89, 2009

How many child deaths can we prevent this year?

Jones et al.

Lancet 2003; 362:65-71

The Bellagio Study Group on Child Survival reported that:

- ~ 6 million children under the age of 5 could be saved each year (63%)
- if 23 interventions, with sufficient and limited evidence of effect,
- were implemented in the 42 countries
- where 90% of worldwide child deaths occurred in 2000

Inappropriate use of clinical practices in Canada: a systematic review

Squires et al

CMAJ 2022 February 28;194:E279-96

- Systematic review
- 174 studies
- 228 clinical practices
- 28,900,762 patients
- The median proportion of inappropriate care, was 30.0% (IQR 12.0%– 56.6%)
 - Underuse (median 43.9%, IQR 23.8%–66.3%)
 - Overuse (median 13.6%, IQR 3.2%– 30.7%)

Adoption / De-adoption

Effect of Published Scientific Evidence on Glycemic Control in Adult ICUs

Niven et al

Before publication of Leuven I: 17.2%(95%CI, 16.2%-18.2%) of ICU admissions had tight glycemic control

After the publication of Leuven I (2001) : significant increases in the relative proportion of admissions with tight glycemic control (1.7% per quarter; 95%CI, 1.2%-2.3%; $P < .001$)

Following publication of NICE-SUGAR (2009): no change in the proportion of patients with tight glycemic control

“Among patients admitted to adult ICUs in the US, there was a slow steady adoption of tight glycemic control following publication of a clinical trial that suggested benefit, with little to no de-adoption following a subsequent trial that demonstrated harm.”

Question #3

What other factors can contribute to the lag time?

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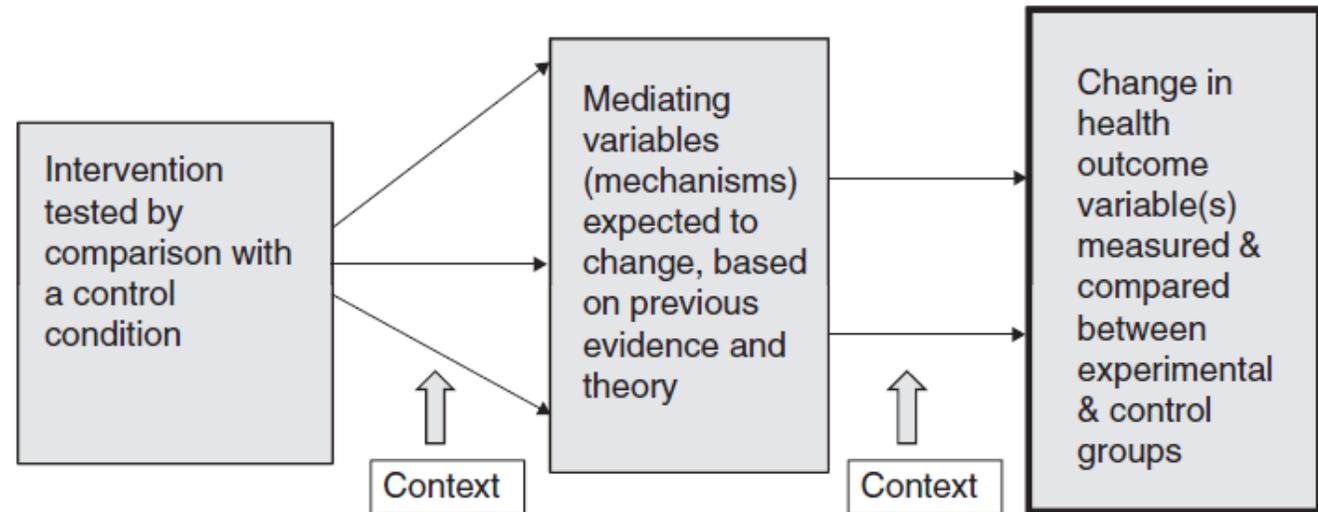
Considerations
to address
the lag

Closing the chasm between research and practice: evidence of and for change

Green

Health Promotion Journal of Australia, 2014, 25, 25–29

The Prevailing Standard of Evidence: The Randomised Controlled Trial



- Interventions highly standardised
- Interventions reduced to simplistic form
- Everything else held constant, ignored
- Clients randomised, no choice
- Interventionists have no discretion
- Unrepresentative, trained, supervised

- Comparison based on average change for each group
- Subgroup analysis discouraged
- Dropouts discounted, even ignored
- Cut-off date for outcomes often too soon for change to occur
- Context largely ignored, not described

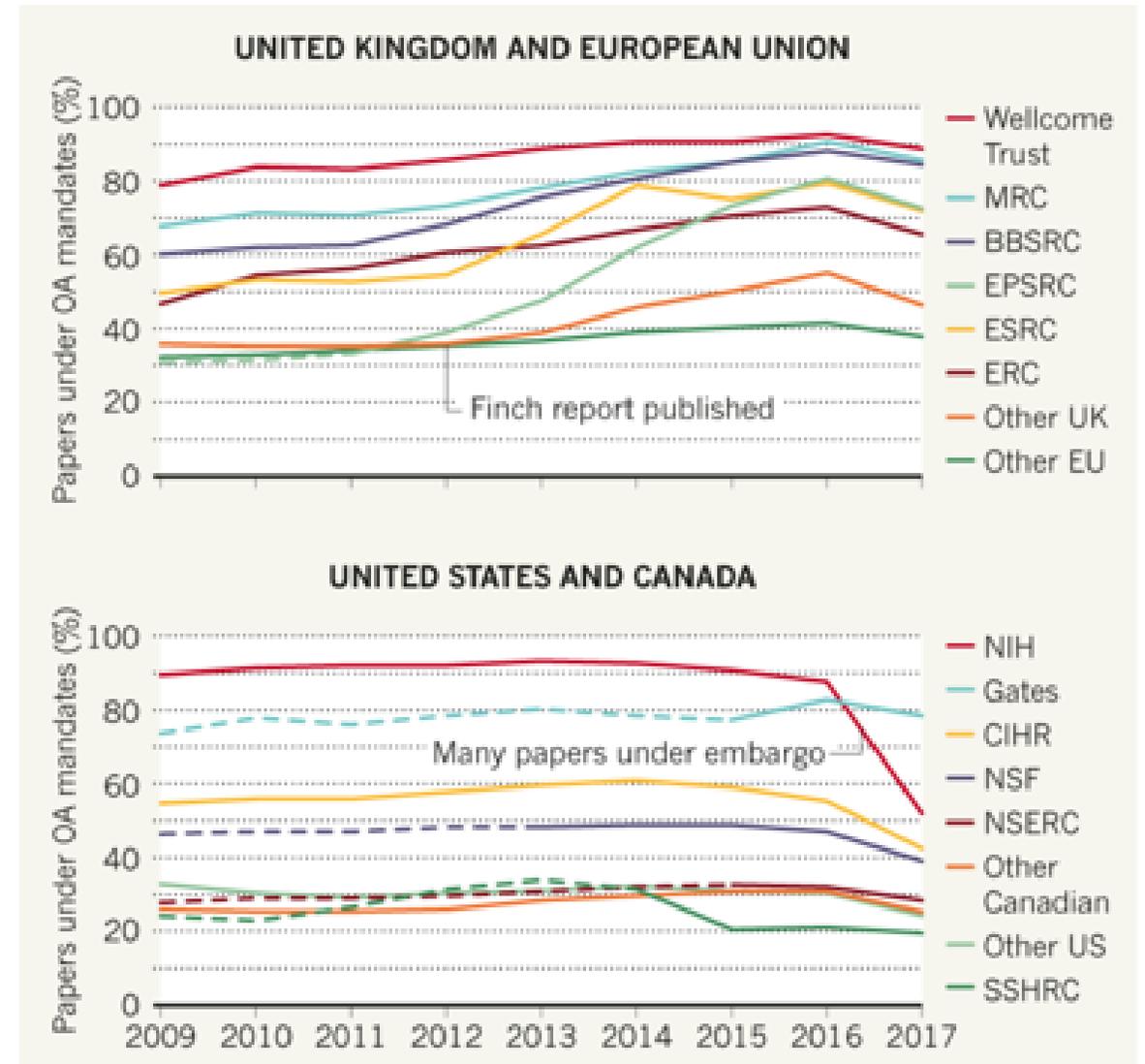
Fig. 1. The main characteristics of the randomised-controlled trial that produce limitations on the external validity or generalisation of its results to implementation and effectiveness in other populations, settings and circumstances.

Open Access Publishing

- Open access publications make up a proportion of the world's total share of publications
- Open accessibility rates vary widely by funder and country

	% OA publications in 2021
Canada	
CIHR	57%
NAPHRO*	49%
Canada - all publications	40%

* Does not include Ontario or Newfoundland



Translation of Research Into Practice: Why We Can't "Just Do It"

Green & Seifert

J Am Board Fam Pract 2005;18:541-5

1. Declarative stage (*accepted*)
 - Construct a memory representation of new info
 - Acquired through lectures, reading, discussion
 - Need case studies
2. Procedural stage (*adopted*)
 - Translate declarative knowledge into action rules:
IF_THEN_.
 - Need practice
3. Autonomous stage
 - Rehearse procedural rules to function automatically

Awareness through acceptance to adoption

In Search of Program Implementation: 792 Replications of the Teaching- Family Model

The Behavior Analyst Approach
Volume 8, Issue 1, 2007

The Teaching-Family Model:

- > 30 years of research, evaluation, program experience
- replicated across North America over 792 in 15 years

Required Steps:

- Development
- Replication
- Training
- Dedicated implementation support
- Supervision
- Evaluation

Ultimately need 'fidelity'

**Our 17-Year
'Knowledge Transfer'
Gap Is a System
Feature, Not a Bug**

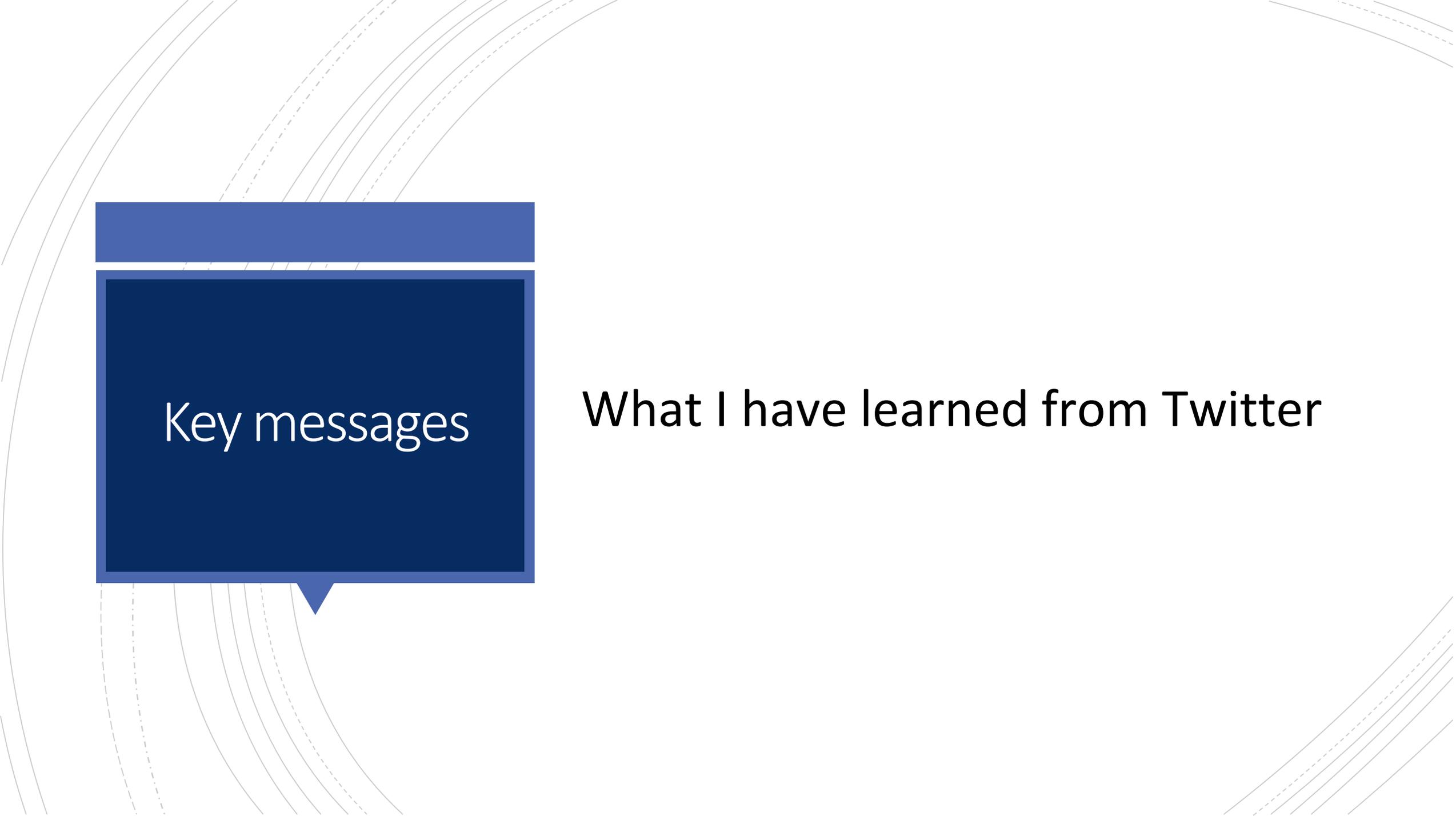
Ed Jones, PhD

“Our healthcare system has no knowledge transfer process built into it.

We neither incentivize nor fund it sufficiently.

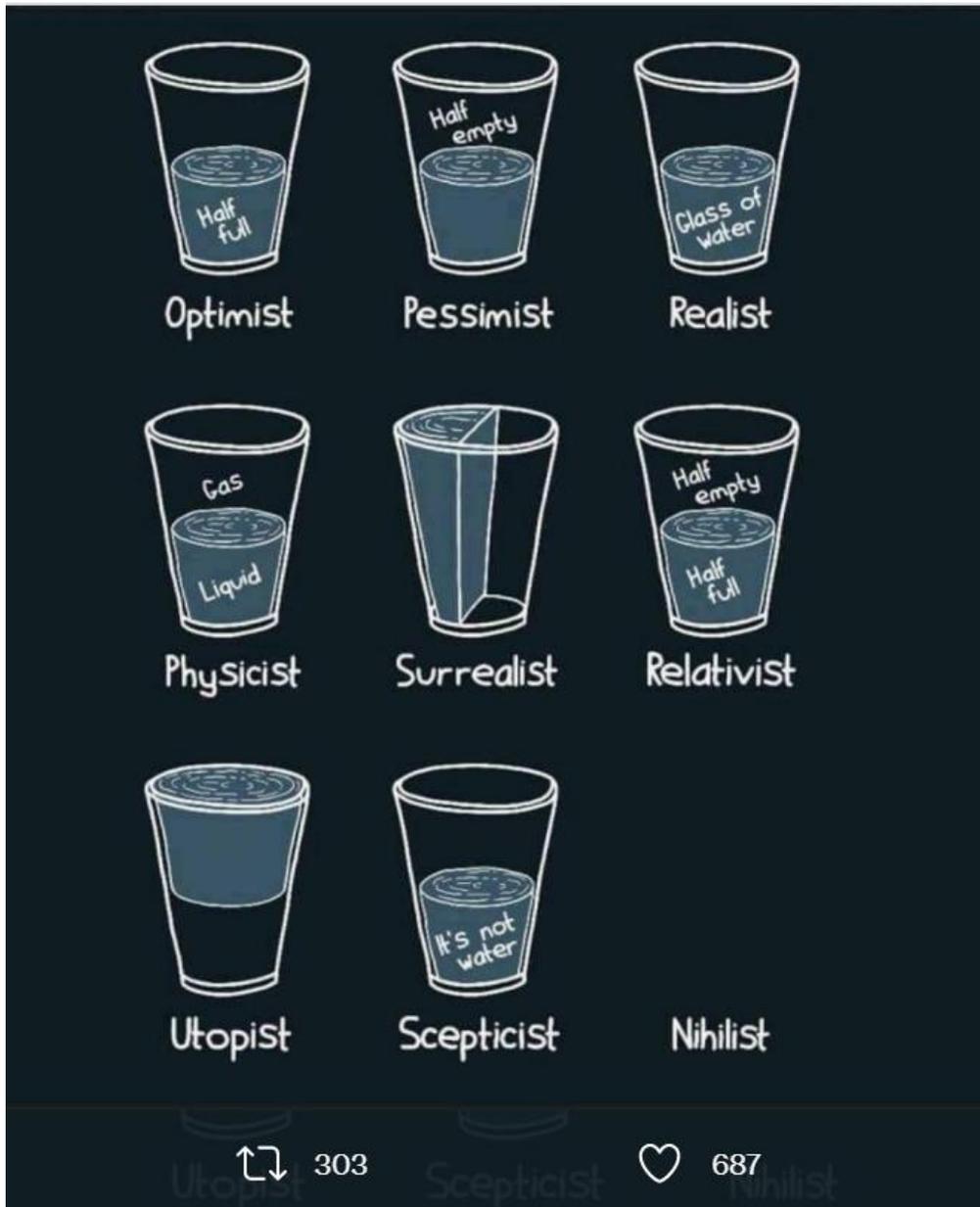
The chasm between research and practice should be no surprise.

It is a feature, not a bug”

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Key messages

What I have learned from Twitter



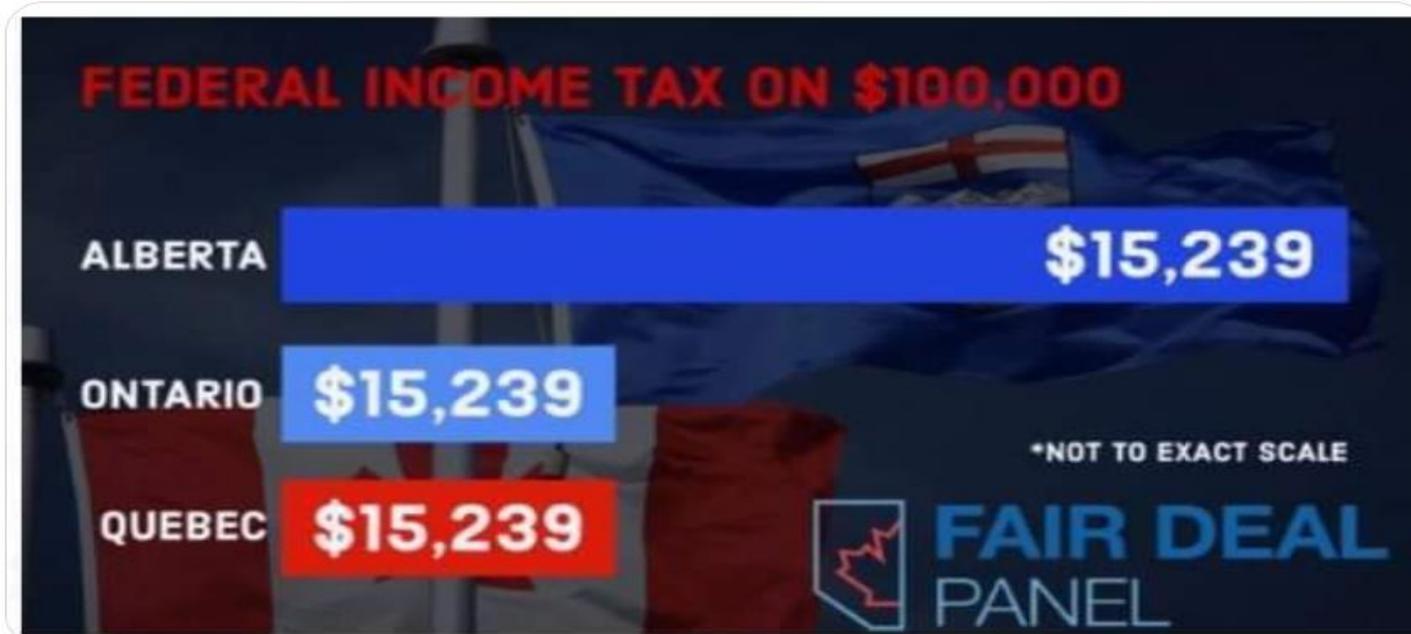
People can view
the same evidence differently



Unselfish Albertan 🇪🇬 🌍 🌈 🏳️ 🍷 🐔 🥜
@disruptfascism



I can't wait until we're treated fairly in Alberta!



9:52 AM · Mar 5, 2022 · Twitter for Android

Carefully check how the data is collected and how the results are calculated, interpreted and reported

<https://twitter.com/disruptfascism/status/1500167394882322433>

Carefully test the message



<https://twitter.com/TheHipPhysio/status/1456682683560599557/photo/1>



<https://twitter.com/LauraFMcConnell/status/1459217287819452417/photo/1>

Sears Catalog, 1961 🤨



Auto Strap for front-seat tots

\$1.88

Guards your child as you're busy driving through traffic. Lets him sit, stand, kneel or sleep without disturbing driver. Prevents spills from sudden stops. Heavy web harness attaches to safety strap that snaps to car seat frame. Removes easily. Also use as walking harness. For 1 to 10-year olds. Fits any car. Shpg. wt. 9 oz.

460 SEARS 3PCBKM

49 G 7945.....\$1.88

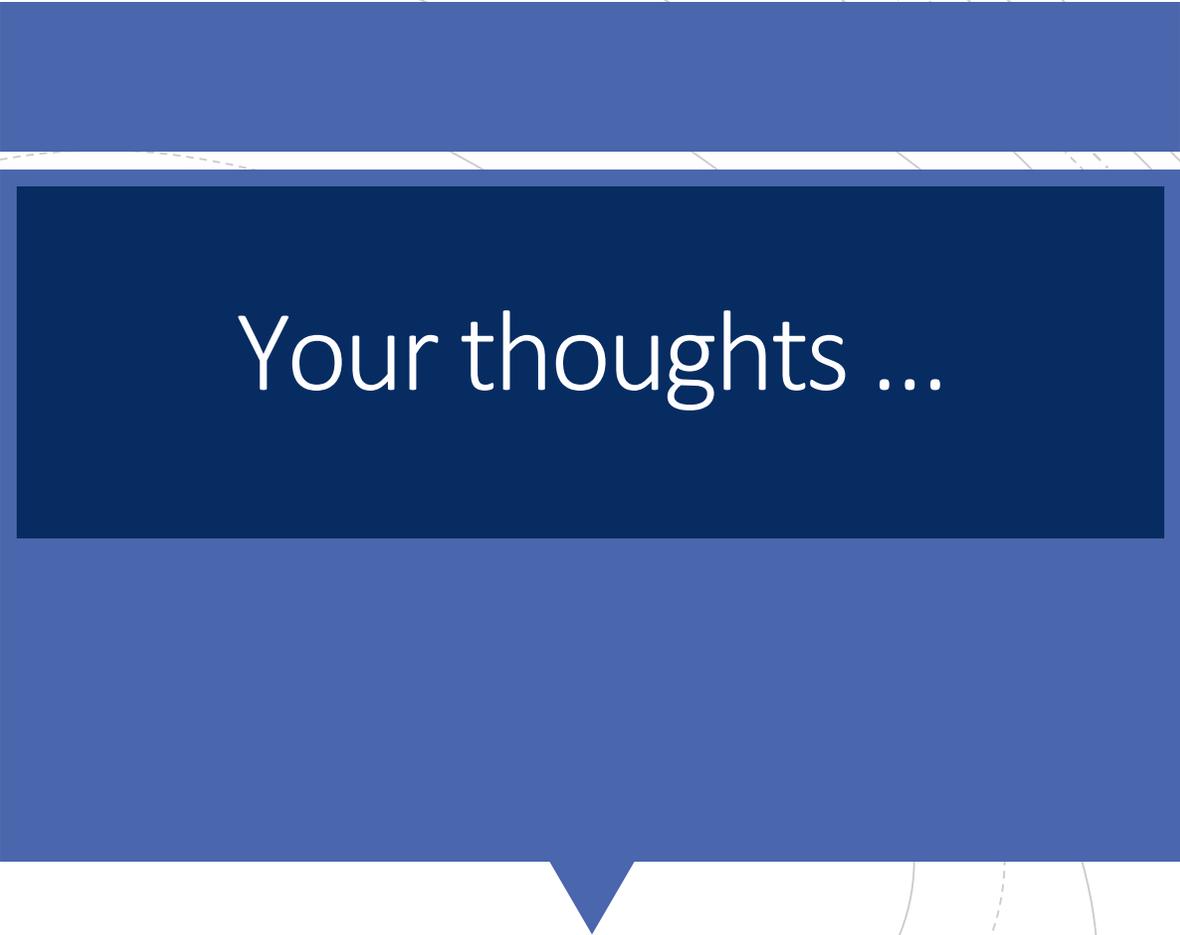
Understand that best practices change over time

<https://twitter.com/HeartOTXHeartMD/status/1309931770989760515/photo/1>

Summary

- Some consistency in the literature about the duration of the time between evidence to policy/practice
- Duration is a reflection of issues within:
 - K creation / synthesis
 - K dissemination
 - K implementation

- Need multiple strategies to reduce this duration, including, but not limited to:
 - Integrated KT
 - Integration of the science of KT/KM/I
 - Integration of behavior change science
 - ...



Your thoughts ...