



The Primacy of Translation in Injury Prevention

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ACIP Injury Prevention Conference
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The Primacy of Translation in Injury Prevention



Greetings from CDC



Tom Frieden, MD, MPH
CDC Director

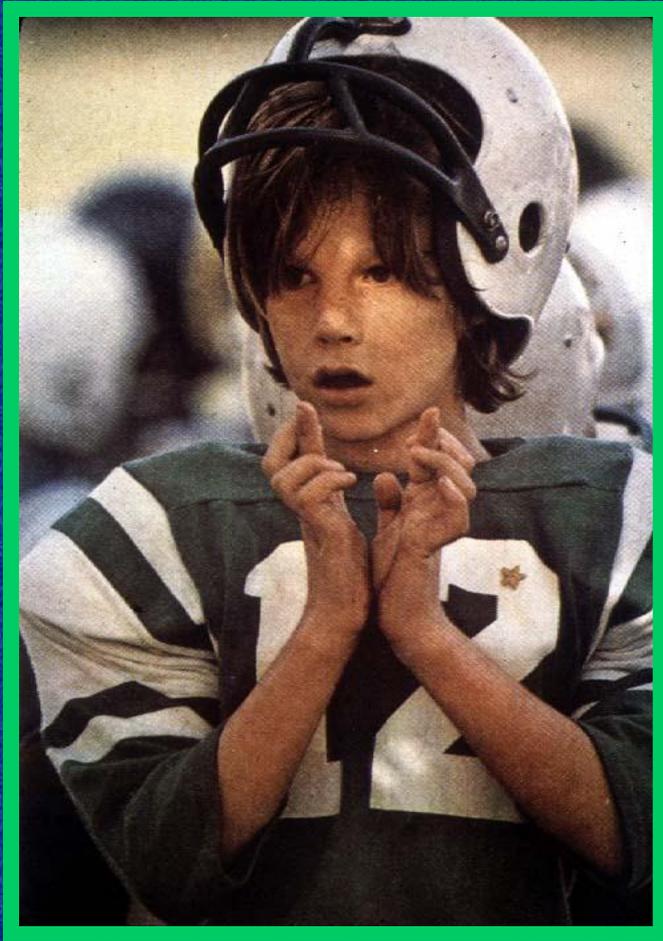
Impact: Describe how the work will have a positive impact on population health and reduce the burden on public health resources

CDC Logo

“Healthy people in a healthy world
through prevention”



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**When It Comes To
Injury Prevention,
We're Doing
More Than Just
Crossing Our
Fingers.**



Injury Prevention

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parachute
NEW SINGLE
"SOMETHING TO BELIEVE IN"

Available on iTunes

The advertisement for the single 'Something to Believe In' by Parachute. It features the band's name in a large, white, serif font at the top. Below it, the text 'NEW SINGLE' is in red, and the title 'SOMETHING TO BELIEVE IN' is in white. A small image of the album cover is shown, featuring a landscape with a tree and a building. At the bottom, it says 'Available on iTunes'.

Public Health

... efforts organized by society to protect, promote, and restore the people's health.

Purpose: promote health, prevent disease and injury, prolong life and improve the quality of life

Gains in Life Expectancy

US and Canada gained 30 years in life expectancy 1900-2000

(25 of the 30 years have been due to public health advances)

- These advances have been the result of scientific research (e.g. CIHR, NIH)

(NIH has spent 250 billion dollars on health research since 1950)

yet

- **37 other countries are ahead of the US
10 ahead of Canada in life expectancy**

Why we aren't doing better?

"There is a gap between today's scientific advances and their application: between what we know and what is actually being done."



LEE Jong-wook, MD
Former Director-General - WHO

Why we aren't doing better?

Claude Lenfant, Director of NHLBI,
at NIH declared:

*“(In America), we are not reaping
the full public health benefits of
our investment in research...we
are not applying what we know.”*

NEJM, August 28, 2003

Where is the problem?

“...I think that we have to ask ourselves whether much of the output of biomedical science is getting lost in translation — and if it is, why it is, and what we can do about it “

It's not for the lack of evidence

Evidence-Based Practice (EBP) and Injury Prevention

2012 Google Search Results:
(Scholarly Articles on...)

Injury Prevention + EBP	= 304,000
Violence Prevention + EBP	= 64,900
Mental Health + EBP	= 1.0 million
Evidence-based public Health	= 1.6 million

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EVIDENCE-BASED PUBLIC HEALTH

ROSS C. BROWNSON
ELIZABETH A. BAKER
TERRY L. LEET
KATHLEEN N. GILLESPIE

Task Force on
Community Preventive
Services



THE GUIDE TO

Community PREVENTIVE Services

What Works to Promote Health?



Edited by

Stephanie Zaza • Peter A. Briss • Kate W. Harris

...but evidence is not leading to action

- **Bicycle helmets are 85% effective in preventing head injury -- only 25% of Americans use them**
- **Protective eyewear is effective – yet 2000 workers each day suffer job-related eye injuries**
- **Cell phones and driving quadruples crash risk -- cell phone use while driving is increasing**

...These are problems of translation

CDC's Mission in Injury Prevention

Prevent injuries and deaths by:

- Conducting National Surveillance
- Identifying risk and protective factors
- Developing and testing intervention and prevention strategies
- Supporting widespread adoption of effective programs and policies

ACIP's Vision & Mission

1. Enhancing communication and knowledge exchange through Health Promotion Clearinghouse network
2. Providing learning opportunities through bi-annual conference and journal
3. Converting evidence to improved policy and practice through research, training, and resource development

Converting evidence to improved policy and practice

The ultimate goal is to reduce the burden of injury in Atlantic Canada.

Dalhousie University Atlantic Health Promotion Research Ct.

Our Mission

To be a leading Atlantic centre for research, training and **knowledge translation** that promotes health and reduces health disparities.



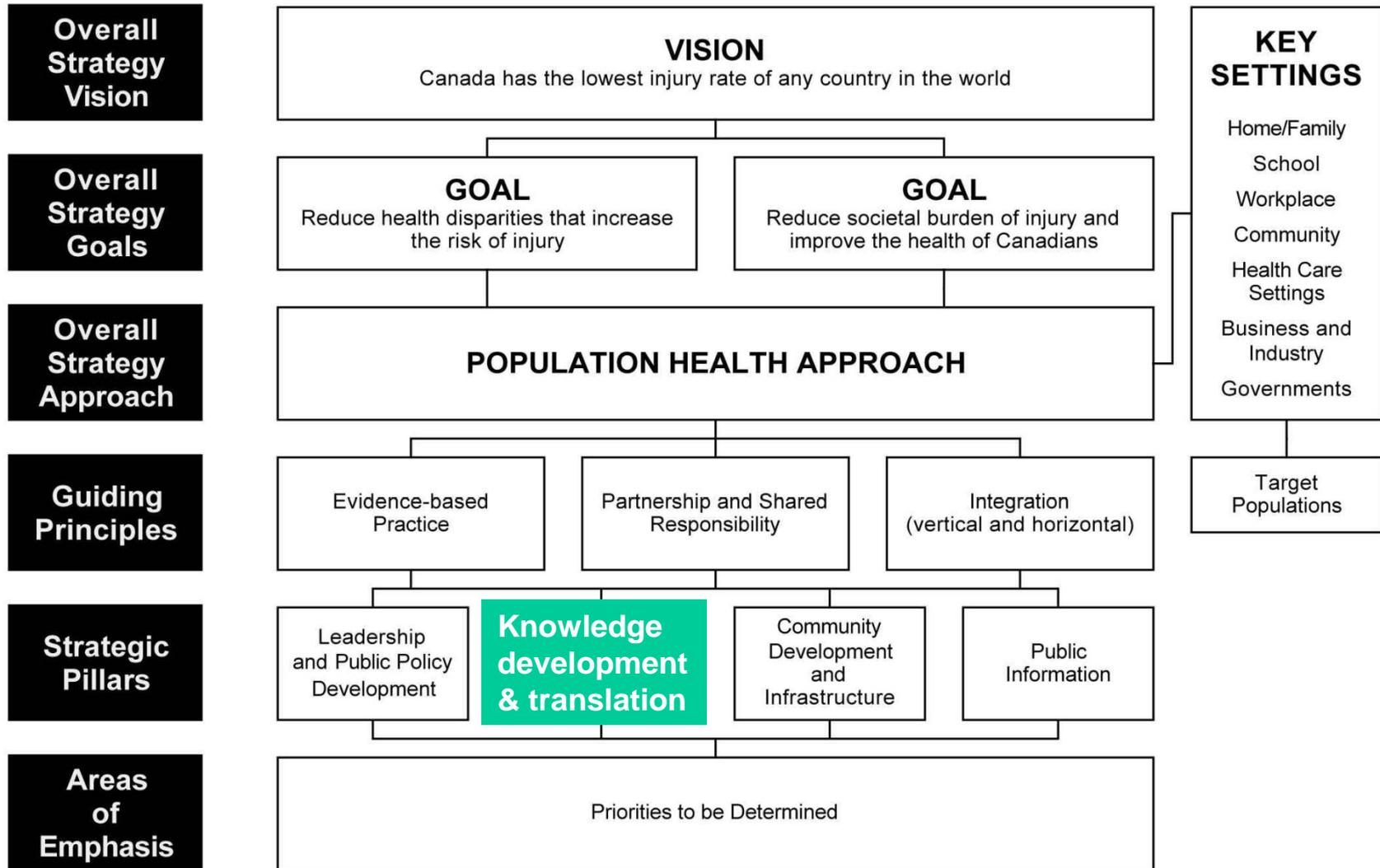
Dalhousie University Atlantic Health Promotion Research Ct.

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FIGURE 1: Key Elements of a Canadian Injury Prevention Strategy



The Problem

Science to Service Gap

- What is known is usually NOT what is adopted

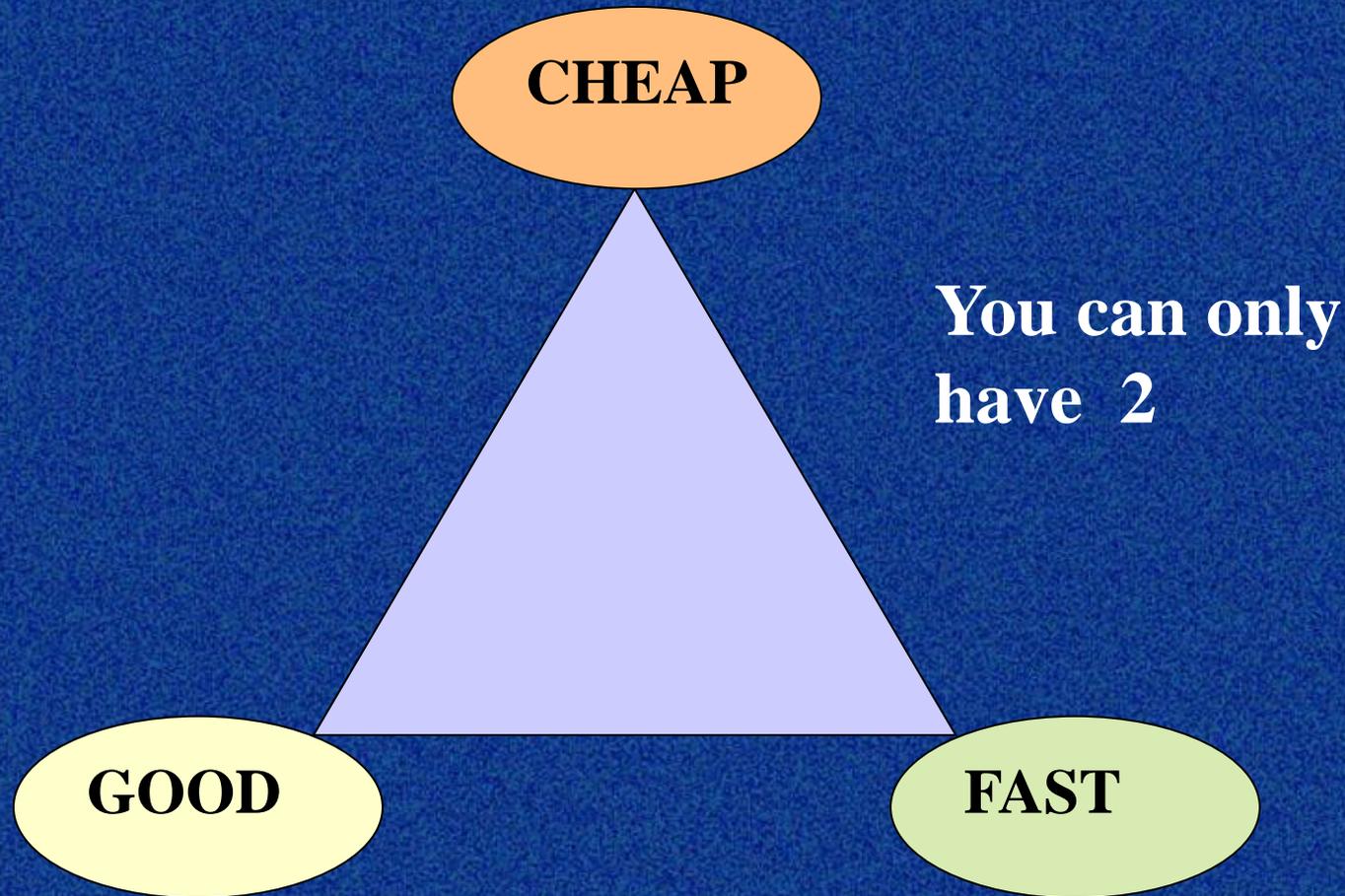
Implementation Gap

- It is not clear how to implement interventions
- What is adopted is often not used with fidelity
- What is implemented disappears with time and staff turnover

NIRNetwork, 2007

Wexelblatt's Scheduling Algorithm

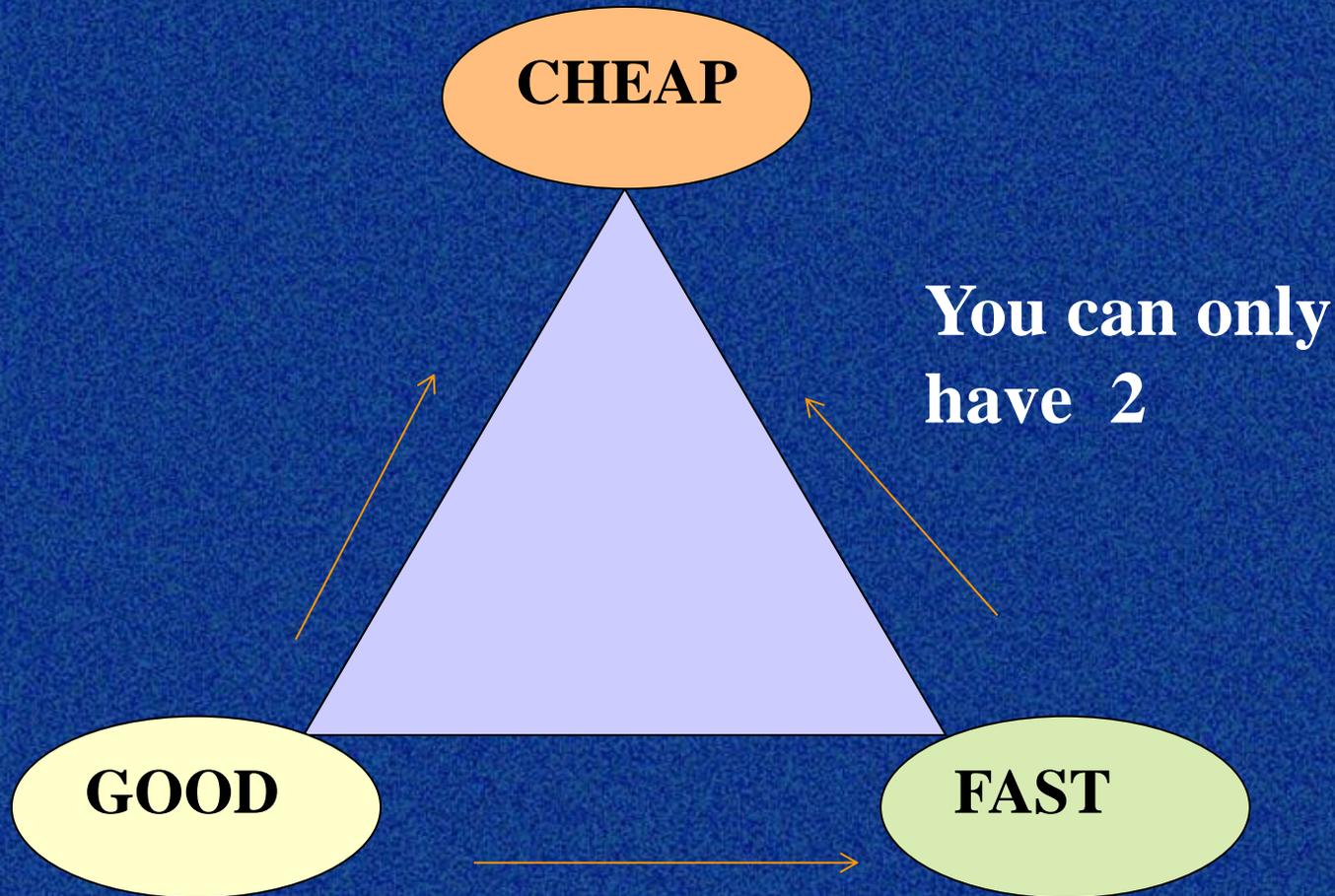
Blase, Naoom, Fixsen, 2005



Implementing a Program

Wexelblatt's Scheduling Algorithm

Blase, Naoom, Fixsen, 2005



Implementing a Program

What About the Science of Implementation?

- About 99% of the annual NIH research budget is spent on understanding etiology and developing new treatments
- Only about 1% is spent on finding ways to use those treatments effectively

Like having vaccine without a syringe to deliver it

On-Line Journal



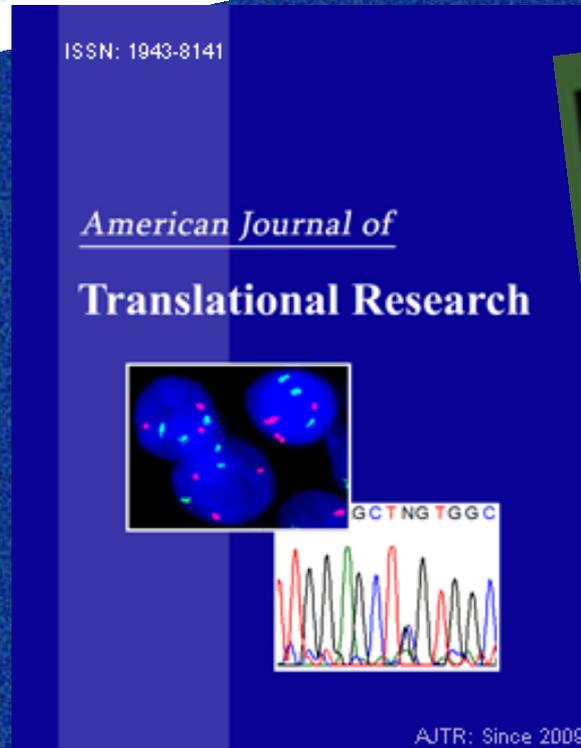
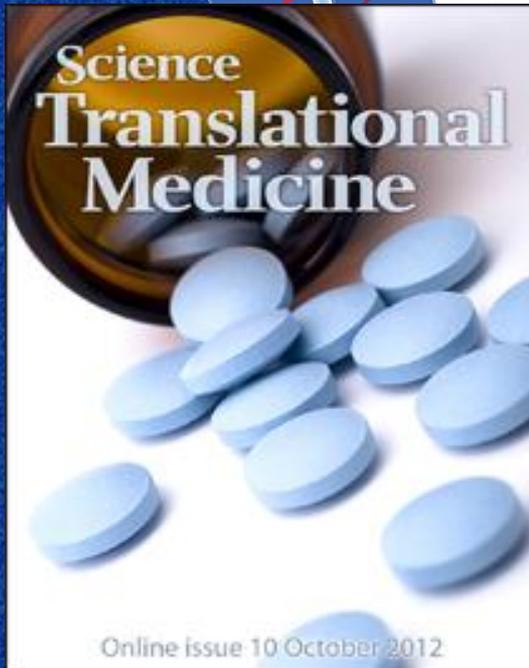
IMPLEMENTATION SCIENCE

Editors-in-Chief: Martin Eccles (UK) and Brian Mittman (USA)

Editorial Board: Catherine Borbas (United States); Heather Buchan (Australia); Molla Donaldson (United States); Pierre Durieux (France); Dean Fixsen (United States); Signe Flottorp (Norway); Robbie Foy (United Kingdom); Joe Francis (United States); **Ian Graham (Canada)**; Lawrence Green (United States); Sally Green (Australia); **Jeremy Grimshaw (Canada)**; Richard Grol (Netherlands); **Steven Hanna (Canada)**; Eileen Kaner (United Kingdom); David Kuykendall (United States); Martin Lee (United States); **Frances Legare (Canada)**

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In-Print Translation Journals



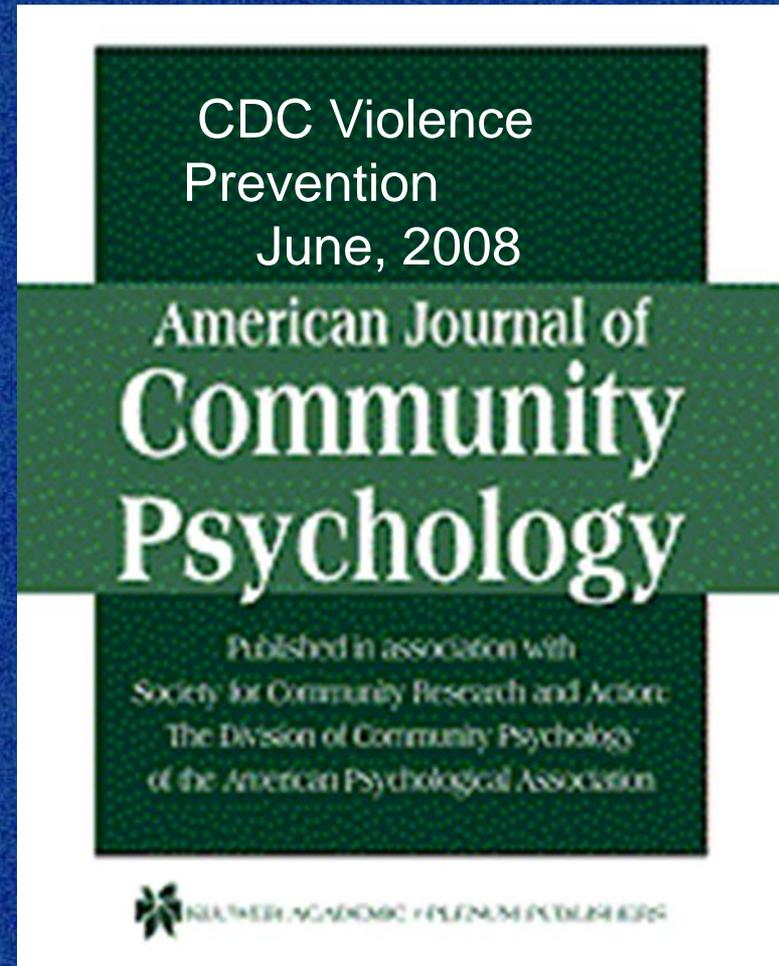
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Implementation Research Synthesis



University of South Florida

<http://nirn.fmhi.usf.edu>



Puzzle Pieces

Effective Intervention Practices

+

Effective Translation & Implementation
Practices

= Good outcomes

This is the combination we are seeking

Source: Blase, Naoom, Fixsen, 2005

But...
we are not doing as well as we should

It can take as much as 17 years
to turn just 14% of original
research into benefits for patient
care.

-Andrew Balas



In Translating Evidence into Action in Injury Prevention

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Knowledge Translation

With respect to "Primacy of Translation" to me it means the importance of spreading the word, and the work, that we do among our partners.



Sarah Blades

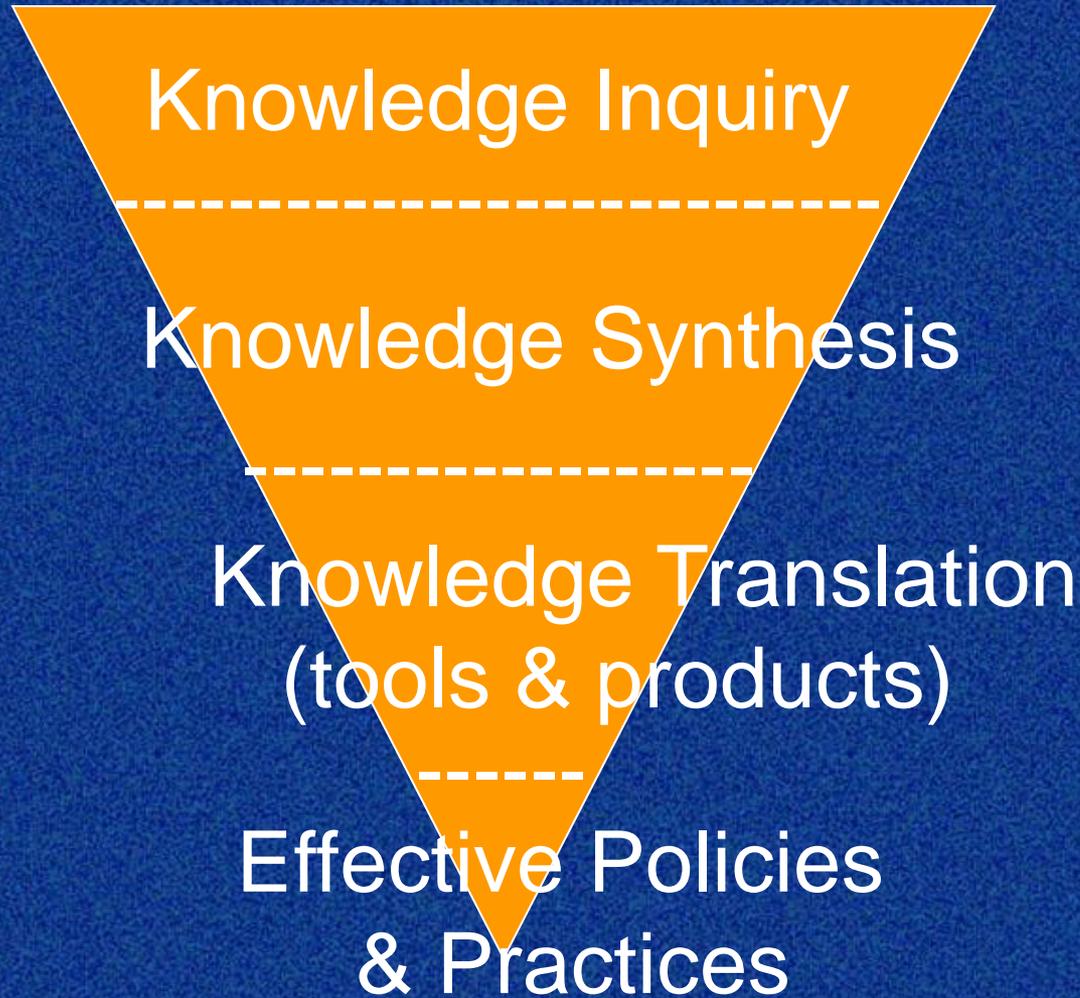
What Do We Mean by Knowledge Translation?

Knowledge Translation (KT) is the creation, synthesis, exchange, and application of knowledge to strengthen health systems and improve health

- adapted from CIHR & WHO, 2005

<http://www.cihr-irsc.gc.ca/e/39033.html>

Cycle of Knowledge Creation & Use



Converting Evidence to Action in Atlantic Region Legislation



Snow Sport Helmet Act

BILL NO. 131 (as passed)

3rd Session, 61st General Assembly

Nova Scotia

CHAPTER 47 OF THE ACTS OF 2011

60 Elizabeth II, 2011

Government Bill

Dissemination, Promotion and User Guide Guidance

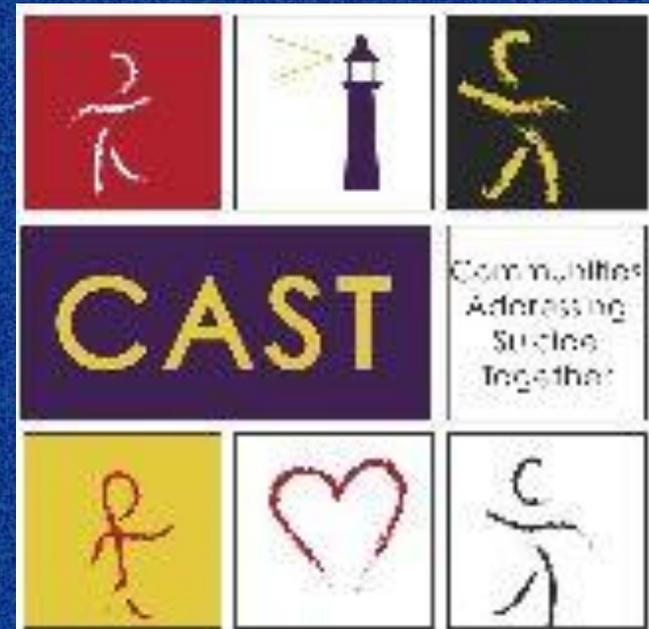


Helmet Hair - Cool
Wear your helmet so the padding inside touches your head with no large gaps. It shouldn't touch the back of your neck.

Converting Evidence to Action in Atlantic Region Prevention Education



Car Safety
Seat Inspection
Program



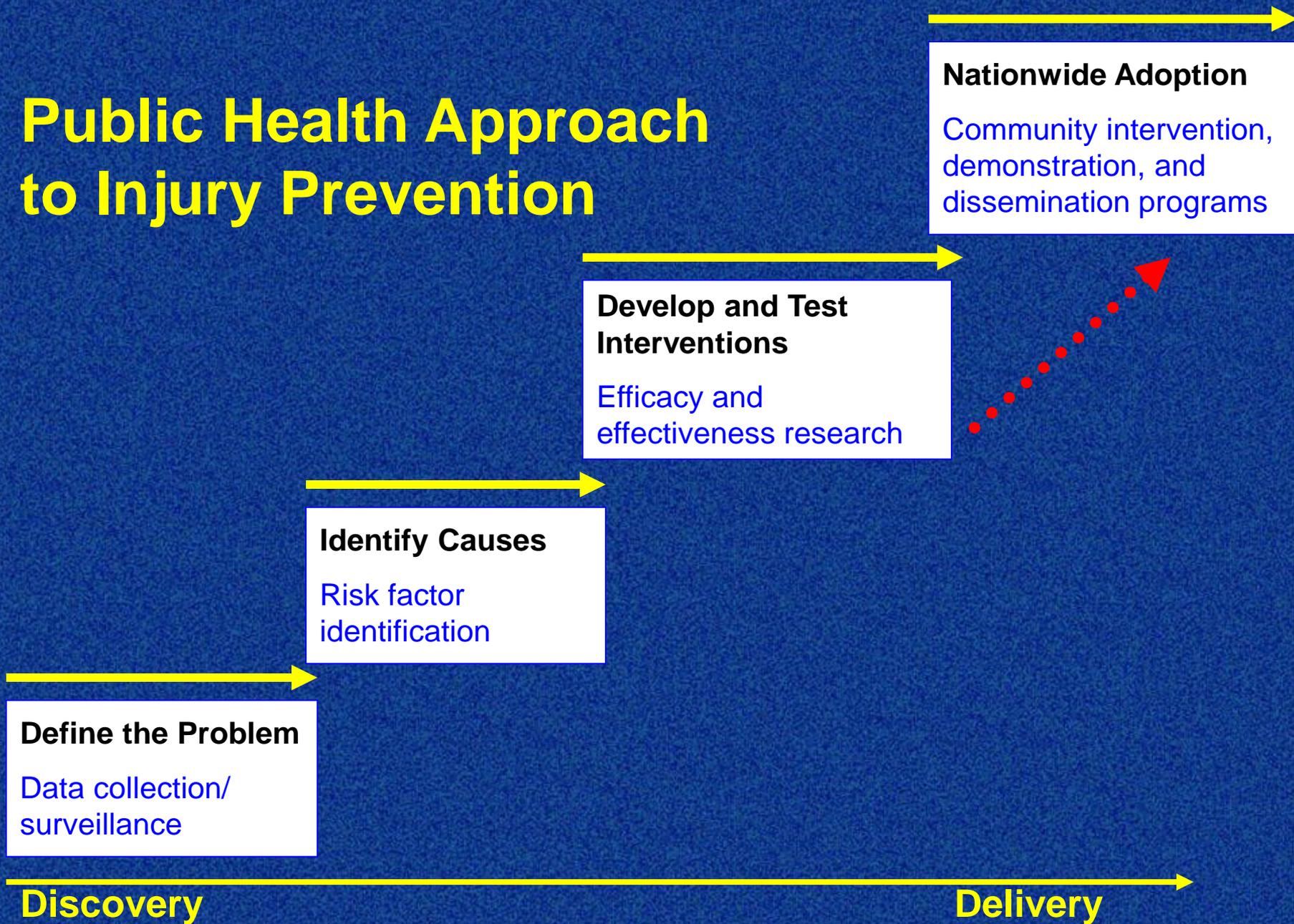
Communities
Addressing Suicide
Together

Translation is Critical

It's the Process of Moving:

- From the Bench to the Trench
- From Research to Practice
- From Discovery to Delivery
- From Efficacy to Effectiveness
- From Evidence to Action

Public Health Approach to Injury Prevention



Translation is Hard

1. Why spend time translating science into programs & practices?
2. Why isn't it getting done?
3. Who should do it?
4. How should it be done?

1. Why Spend Time Translating?

“Research, no matter how compelling will be never fully contribute to improved health unless new findings are translated into products, practices, and policy”

**-Canadian Institutes of Health Research (CIHR)
Knowledge Translation Initiative
(www.cihr-irsc.gc.ca)**

**Perfect science is not always practical
science**

2. **Why isn't it getting done?**

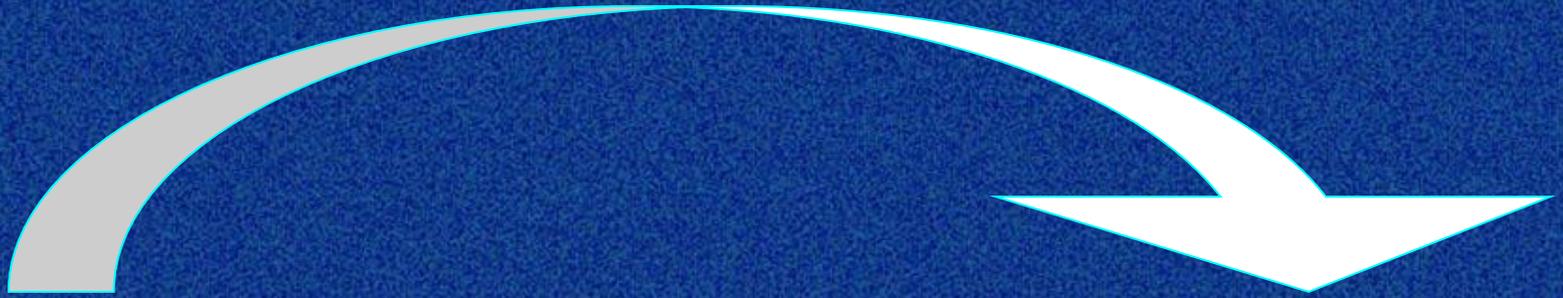
Lack of Leadership

Scientists have not seen translation as an important part of their role

No Incentive structures to facilitate doing translation

Everyone thinks it is someone else's job

Isn't it Automatic?



**Develop
And Test
Interventions**

**Translation
& Dissemination**

**Nationwide
Adoption**

Filling the Gap

CDC's Public Health Model

**Define
the
Problem**

**Identify
Causes**

**Develop
and
Test
Interventions**

Translation and Implementation Process:

- Plan for use
- Specify interventions
- Translate.. attending to core elements
- Support Transfer
- Build capacity
- Increase resources & build infrastructure

**Nationwide
Adoption**

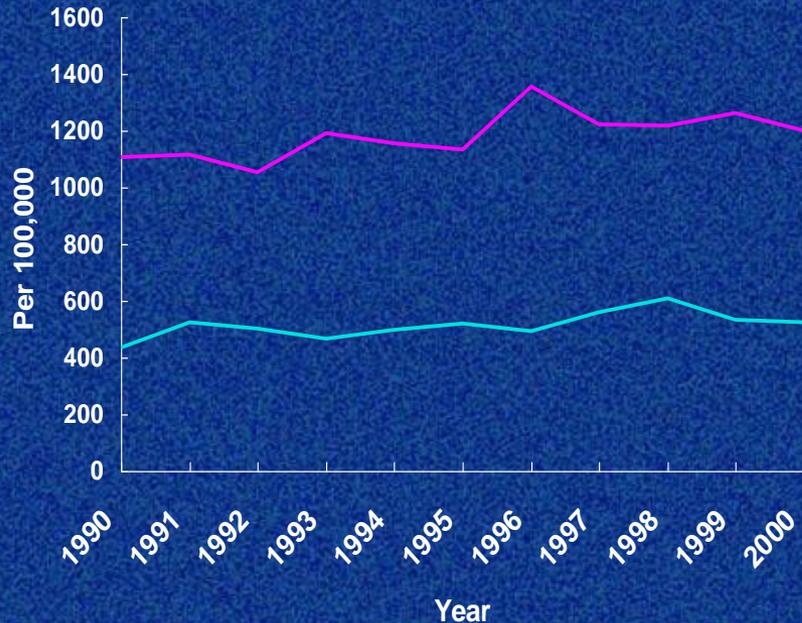
Translation Research



Science un-translated

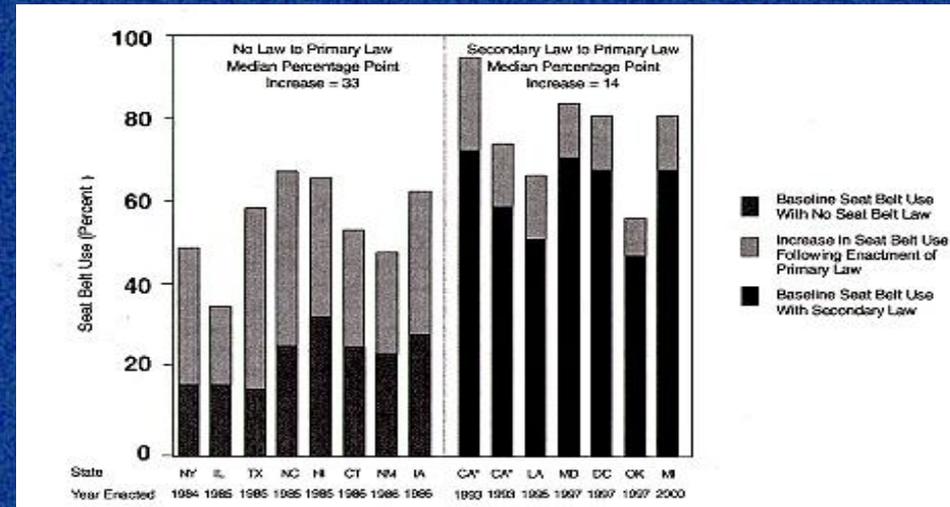
Examples from Journal Pages

Trends in Hip Fracture Admission Rates for Men & Women, Age 65+, 1990-2000



NCHS, National Hospital Discharge Survey, 1990-2000

Primary enforcement on seat belt laws



Accident Analysis and Prevention, 2004

The Scientist. Volume 21 | Issue 10 | 2007 Page 38

Facts Never Speak for Themselves ...Scientists Need to “Frame” Their Messages to the Public.

In a speech at this year's AAAS meeting, Google cofounder Larry Page proclaimed that **"science has a serious marketing problem."** ...

The Scientist. Volume 21 | Issue 10 | 2007 Page 38

Facts Never Speak for Themselves ...Scientists Need to “Frame” Their Messages to the Public.

As a solution, he suggested **that tenure and grants be tied to the media impact of research.** Page is just one of several leaders who have called attention to the urgent need for new directions in science communication...

SCIENCE

State your conclusions first, then support them

Build your case gradually before presenting conclusions

Limit the number of messages

Several points can be made in a single research paper

Too many facts and figures can overwhelm the audience

Supporting evidence is vital

Extensive qualifications can blur your message

Translation

Extensive qualifications can be necessary for scholarly credibility

Technical jargon confuses people

Technical language can add greater clarity and precision

Simplification is preferable

Detailed explanations are useful

Quick, but accurate, preparation and action are often necessary to take advantage of opportunities

Hastily prepared presentations can be discredited

Present a passionate compelling argument based on fact

Be objective & unbiased

Communications

ADVOCACY

3. Who Should Do It?

If Our Goal is....

- Find the most effective interventions
- Produce greatest impact on population mortality and morbidity

Current model

- Researchers get grants, collect data
- Publish results in peer review journals
- Get another grant, conduct more research
- Practitioners continue to do what they always have done

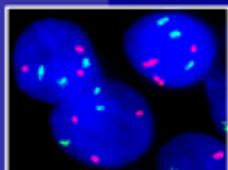
– New Model

- Emphasis on using data for practice
- Identify practice needs and delivery mechanisms
- Conduct TRANSLATION research on practice
- Involve community practitioners in research

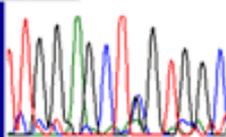
Practice Journals

ISSN: 1943-8141

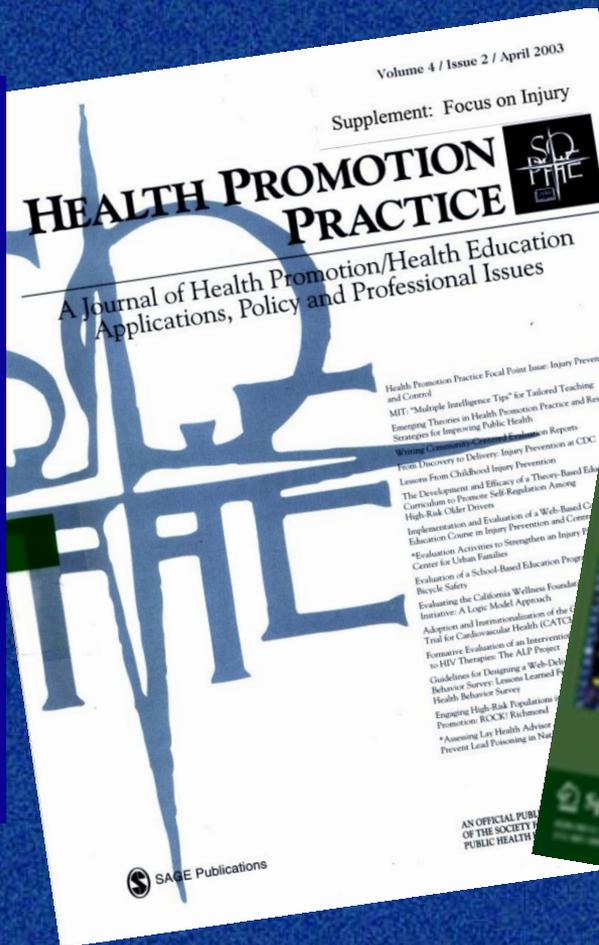
American Journal of
Translational Research



GCTNGTGGC



AJTR: Since 2009



4. How should it be done?

- **Identify Effective Interventions**
- **Key Elements of the Intervention**
 - What is essential, without it the program will not achieve its intended effects?
 - May need guidance by original investigators
- **Provide guidance about options**
 - What equivalent elements are more suitable for this application or this audience?
 - Seek input from community about feasibility

Key Elements

Chocolate
chip cookies



Tai Chi: From Evidence to Fall Prevention Programs



- Li, F, Harmer, P, Mack, K, Sleet, D, et al. Translation of an effective Tai Chi intervention into a community-based fall prevention program. *Am J Public Health, Vol 98(7):1195-1198, 2008*

Steps in the Translation process

- Identify a problem that needs addressing
- Identify the evidence to solve the problem
- Adapt the evidence to the local context
- Assess barriers to using the knowledge
- Select, tailor, and implement interventions
- Monitor knowledge use
- Evaluate the outcomes of using the knowledge

Ian D. Graham et al. (2006). *The Journal of Continuing Education in the Health Professions*, Volume 26, pp. 13–24.

Translate Language and Form

- Develop training & community use materials, with
 - Educators
 - Writers –tool kit developers
 - Editors
 - Graphic artists
 - Video/DVD producers
 - Consumers
- Try out in your setting, and revise

Additional Steps in Translation

- Tailoring
- Adaptation, with fidelity
- Feasibility testing
- Audience acceptance gauging
- Obtain feedback, revise

Products Coming Out of Translation Efforts

- Tool Kits
- Guidelines
- Research syntheses
- Intervention packages
 - Videos
 - Training materials
 - Reproducible materials
 - Protocols
 - Demonstrations

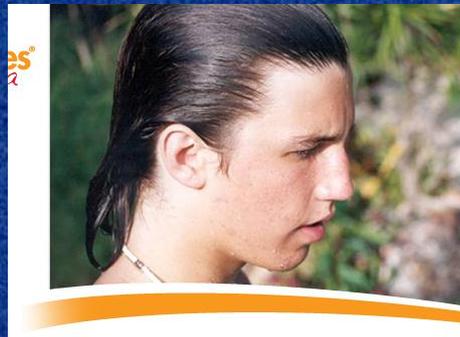
**Examples: Canada's Injury Prevention Curriculum;
Canada Falls Workshops**

Consensus Statements



- Sideline assessment of concussion/SCAT2
- Concussion diagnosis and RTP on the day of injury
- Management of pediatric (< 15 year old) concussion
- Long term problems and CTE
- Knowledge transfer and education

The Power of Stories - Sean Kells



His death was not an "accident"; it was entirely preventable

The Story of Sean Kells

In November, 1994, Sean Kells was pouring a highly flammable chemical from one drum to another when it ignited and exploded. Sean was killed on the third day of his part-time job. He was nineteen years old.

Paul Kells, O.Ont., M.S.M. DCL(Hon), President, Safe Communities Canada. A life-altering event led Paul Kells to found Canada's Safe Communities Canada in 1996.

How would Coca-Cola Do it?



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Coke - Translating evidence into action



- Research a good product (soft drink)
- Gather information on end users' taste preferences
- Test product for public preference & acceptability
- Create user-friendly, accessible delivery system for obtaining it
- Focus on core elements (bottle, taste...)
- Identify people who want it and disseminate it to them

Coke Process



Research & Field studies (R& D)

Literature Review (assess competition)

Systematic Review (market analysis)

Recommendations for shape & flavor

Segmental marketing to specific audiences

Produce & Bottle the drink

Disseminate Coke Worldwide



Coke's Infrastructure

- Bottling Plants Nationwide
- Vast network of distributors
- Trucks & delivery systems
- Roads that carry the product
- Stores, outlets to obtain the product
- Marketing & advertising



Translation Research: Obstacles we Struggle with

The field

1. Injury field is relatively new to knowledge translation
2. Not tapping into what other fields are doing and how they succeed
3. Few if any publications on translation research in injury prevention

Translation Research: Obstacles we Struggle with

2. Not tapping into what other fields are doing in translation, and how they succeed



Lyons, R.F., et al. (2010). Chronic illness research: Translating what we know into what we do . In D. Kralik, et al., (Eds.), Translating Chronic Illness Research into Practice. Blackwell Publishers: Oxford, UK.

Translation Research: Obstacles we Struggle with

3. Few if any publications on translation research in injury prevention



- Hanson, Finch, Sleet, et al. Closing the gap between injury prevention research and safety promotion practice. *Public Health Reports*, 2012;127(2):147-55.
- Hanson, Allegrante, Sleet. (2012) Research alone is not sufficient to prevent sports injury *British J Sports Med* doi:10.1136/bjsports 2012-091434

Knowledge Translation Planning Tools for Stroke Researchers



Knowledge Translation Planning Tools for **Suicide** Researchers



One Solution: Intermediaries (Knowledge Brokers)

- Bridge the gap between researchers and community programs
- Provides resources such as technical assistance, training, peer support, networks
- Links knowledge generators with community users
- Translates best-practices into language users can understand

Atlantic Collaborative as the Knowledge Broker



P. A. R. T. Y.
SmartRisk
NB Trauma Program



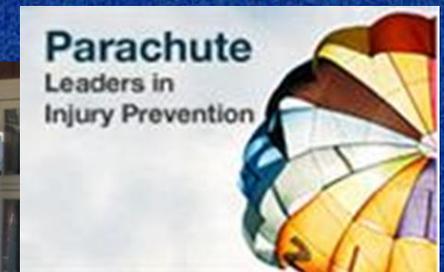
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Knowledge Brokering

Public Health Agency of Canada / Agence de santé publique du Canada

Report on Seniors' falls in Canada

Promoting Active Living (PAL): Best Practice Guidelines for Fall Prevention in Assisted Living®



The question remains

What approaches strengthen or improve the translation of evidence into policy and practice and spread the dissemination of new information and technology?

Wrap-up

- Reviewed our missions in injury prevention that includes translation
- Described the Primacy of Translation
- Stressed the importance of knowing what works, but also how to implement it
- Described why translation is important, who should do it, and how it can be done
- Given you some examples of translation products
- Pointed out obstacles we face in translation
- Finally...

Translation Highway



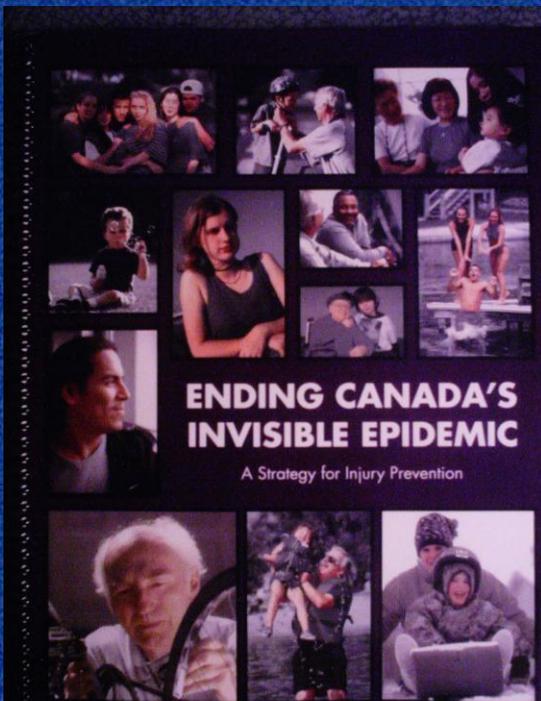


"My question is: Are we making an impact?"

Advice from Canada



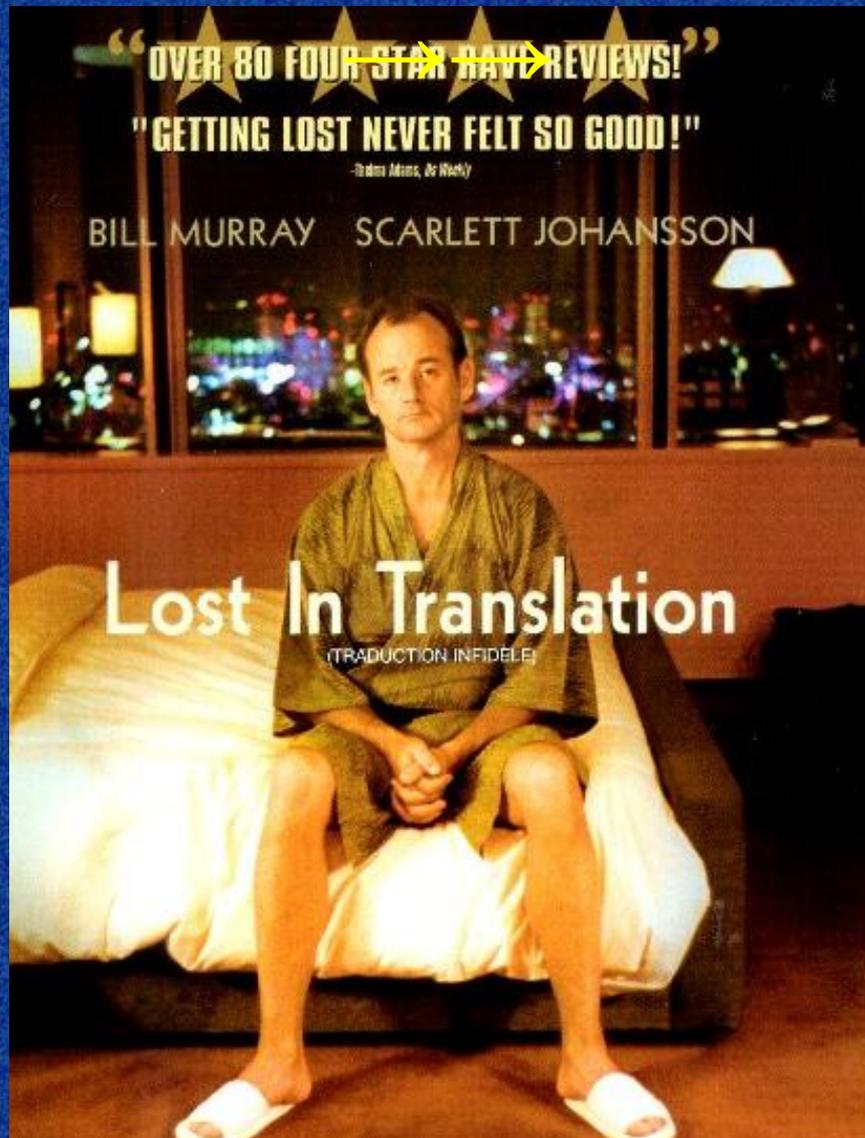
“Your research should never be self-indulgent, never be abstract or theoretical”
-Stephen Lewis (Canada’s UN Amb)



The challenge lies, not in identifying what works, but in understanding the critical success factors for effective uptake and action

- Canada’s National Plan for Injury Prevention, 2005, p 38

Evidence
of what
works



Effective
Uptake
& Action





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