

## Moving Translational Research Forward: Do We Need a GPS?



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## Our goal is to turn knowledge into applications that benefit people.



*"To him who devotes his life to science, nothing can give more happiness than increasing the number of discoveries, but his cup of joy is full when the results of his studies immediately find practical applications."*  
~Louis Pasteur

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## Why A "Global Positioning System?"



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## Why A "Global Positioning System?"

- We need a shared means of **tracking** change when we are studying it.
- We need a shared means of **navigating** when we are **driving** change.
- The GPS system is built around a **shared map** and **common metrics**, and our system should be, too.

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## Dissemination/Translational Process

Discovery



Interventions



Testing



No Delivery



Roadblocks to Delivery—No Road, No Map

Adapted from Mark Levin, Millennium Pharmaceuticals.

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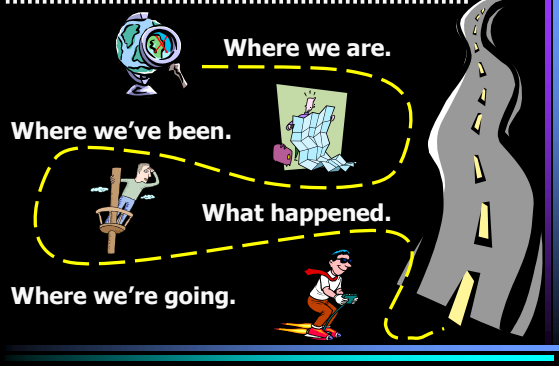
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## DISSEMINATION – A ROADMAP



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To ensure we get to translation / dissemination...

we need a map and a GPS.



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First, we need a map.



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**Research funding agencies should have explicit models that include translation / dissemination as territories to be explored.**




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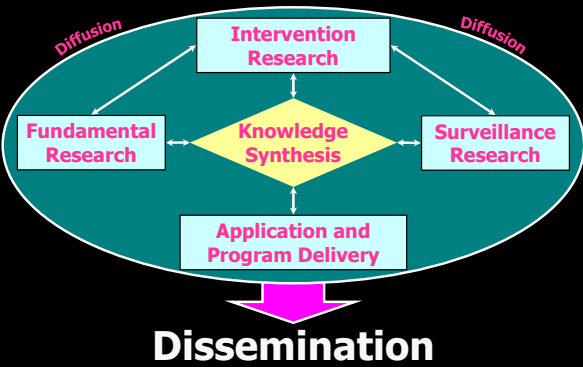
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**Role of Dissemination in Research Lifecycle**



Adapted from the Advisory Committee on Cancer Control, National Cancer Institute of Canada, 1994.

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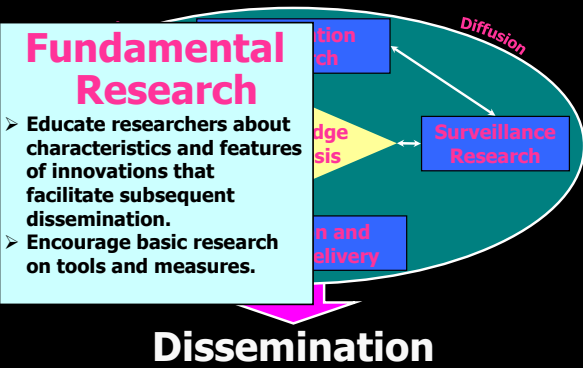
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**Role of Dissemination in Research Lifecycle**



Adapted from the Advisory Committee on Cancer Control, National Cancer Institute of Canada, 1994.

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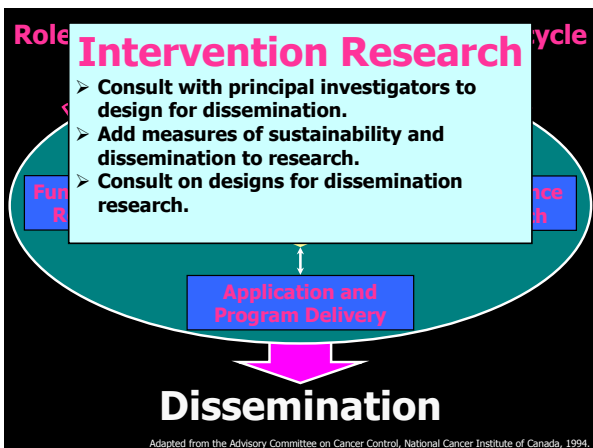
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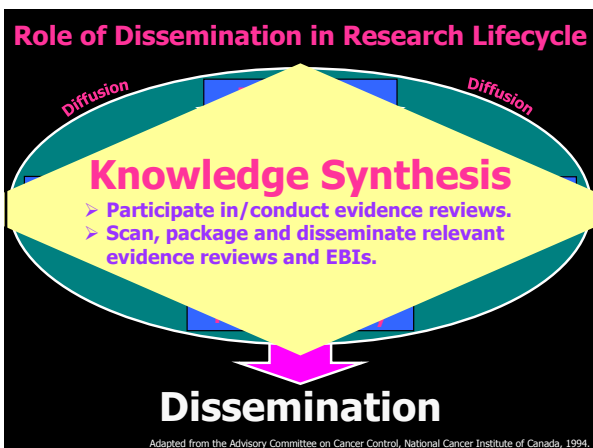
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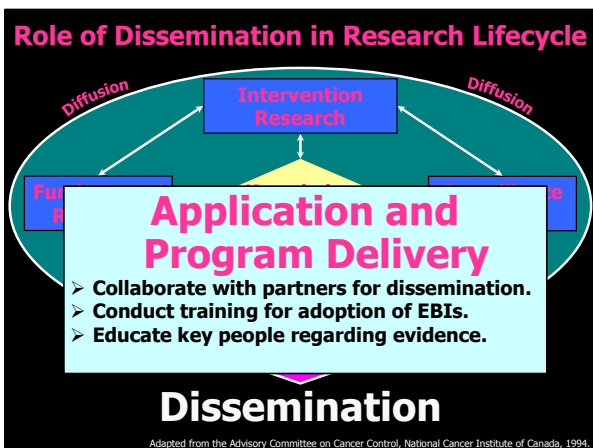
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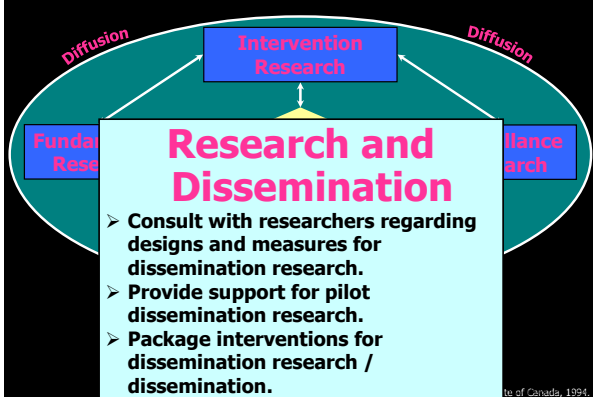
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## Role of Dissemination in Research Lifecycle




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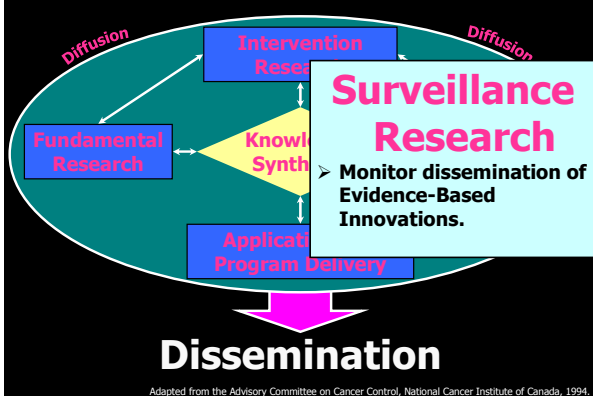
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## Role of Dissemination in Research Lifecycle




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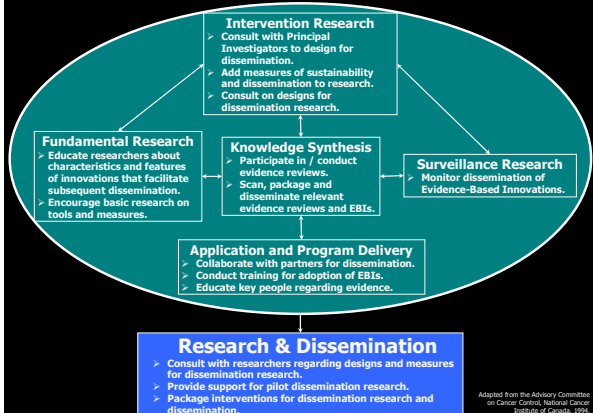
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## ROLE OF DISSEMINATION CORE IN RESEARCH LIFECYCLE




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## To Make Translation and Dissemination a Reality

Disseminate and evaluate efforts.

Use best strategies to disseminate selected innovations.

Conduct dissemination/translation research to determine best strategies for dissemination.

Apply algorithms for decision-making regarding dissemination research/translation & dissemination.

Identify potential universe of innovations.

Create infrastructure for dissemination.

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## Where We've Been

A brief trip to assess what we know about dissemination



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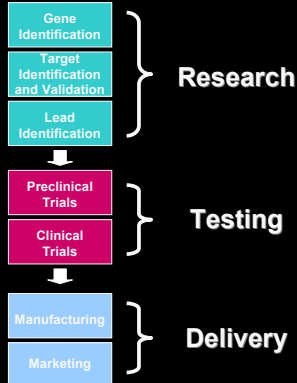
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## The Drug Development Process



Mark Levin, Millennium Pharmaceuticals, Harvard Business Review June 2005

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## Behavioral and Many Other Interventions: No Delivery System

Research (Discovery)



Testing



Roadblocks to Delivery

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## Diffusion

... the passive process by which a growing body of information about an intervention, product, or technology is initially absorbed and acted upon by a small body of highly motivated recipients (Lomas, 1993).

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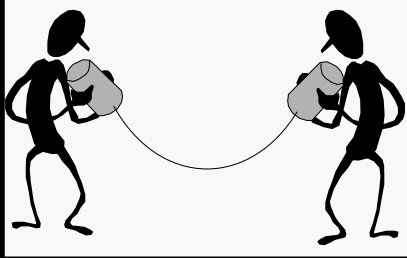
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## Scientist to Scientist Transmission



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## Dissemination Research

- ❖ Research aimed at understanding, influencing and/or evaluating the process of dissemination.
- ❖ Dissemination research is similar to translational research.

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## Dissemination

Active process through which target groups are made aware of, receive, accept and use information and other interventions.

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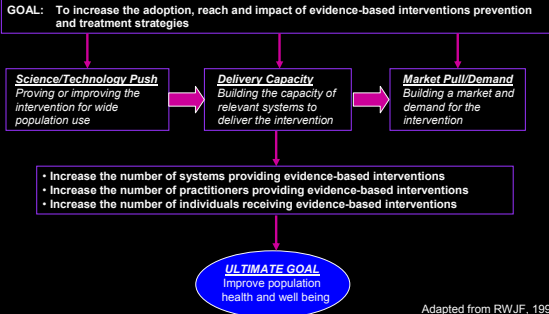
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# A SYNERGISTIC MODEL

Getting Evidence-Based Interventions Into Practice:  
Roadmaps for the Next Frontier




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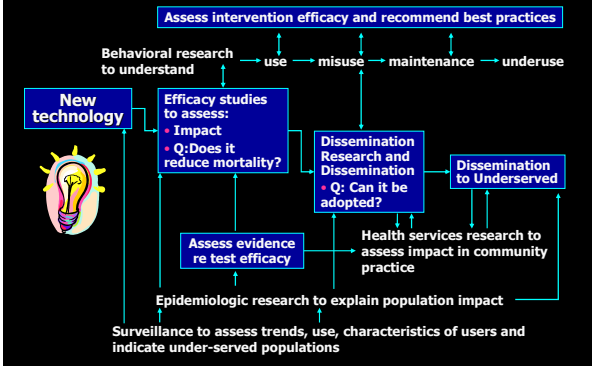
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# Lifecycle of Intervention Research




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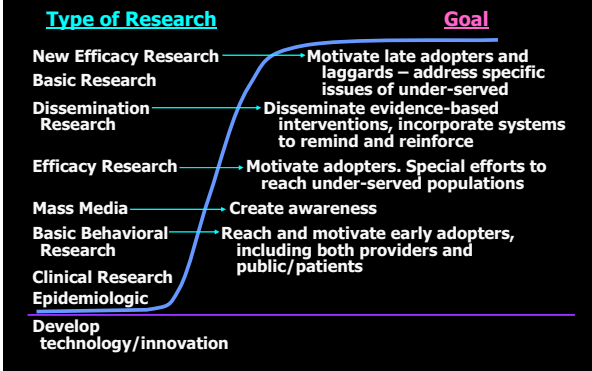
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# Intervention Programs Across the Diffusion Curve




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## Landmark Clinical Trials and Their Current Rates of Use

Clinical Procedure	Landmark Trial	Current Rate of Use
Thrombolytic Therapy	1971	20% (2000)
Diabetic Eye Exam	1981	48.1% (2000)
Mammography	1982	75.5% (2001)
Fecal Occult Blood Test	1986	20.6% (1999)

Balas EA, Boren SA, Managing Clinical Knowledge for Health Care Improvement. Yearbook of Medical Informatics 2000.

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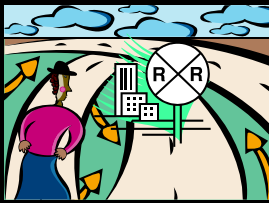
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## Where We Are




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## From Research to Practice: The Current Role of Dissemination

Discovery	Development	Delivery	Dissemination Research & Dissemination
Efficacy trials in the clinical and population sciences	Effectiveness trials to show how programs perform in "real world" settings	Examine impact of innovative dissemination strategies. Disseminate effective programs & interventions.	




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ILLUSTRATION: Joe Sutliff; Science vol 302(24) October 2003; www.sciencemag.org.

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## An Example from the NCI...

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## Translating (Intervention) Research into Improved Outcomes

### ❖ Knowledge Synthesis Model

- Create knowledge transfer teams
- Tobacco (e.g., Youth and Adult Blueprints with ACS, ALF, CDC, NHLBI, NIDA, RWJF, SAMSHA)
- Diet (e.g., 5 A Day with ACS, CDC & USDA), Physical Activity, Sun Safety
- Commission evidence reviews

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## Translating (Intervention) Research into Improved Outcomes

### ❖ Grant Support Model

- D&D Supplements (First Year – 22 applications, 7 (32%) funded through peer review)
- NCI co-funding with CDC D&D research infrastructure in 5 Prevention Research Centers
- NCI partnership with ACS

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## NCI/ACS Dissemination Research in Black Churches – “Body & Soul”

- Create a combined intervention with 2 grants.
- Test feasibility of using ACS, church volunteers.
- Implement and evaluate in 9 black church matched pairs in 3 regions.
- ACS to institutionalize the intervention



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Eat For Life

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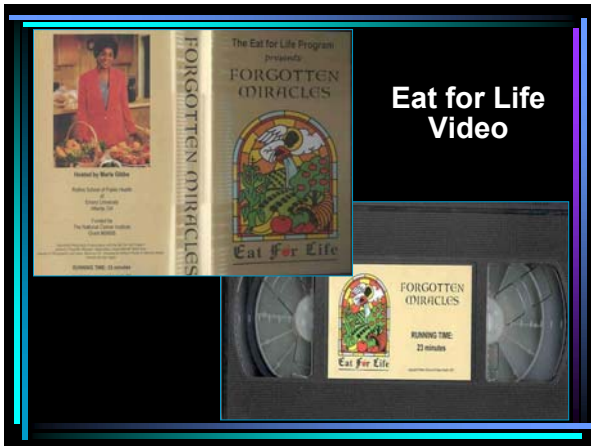
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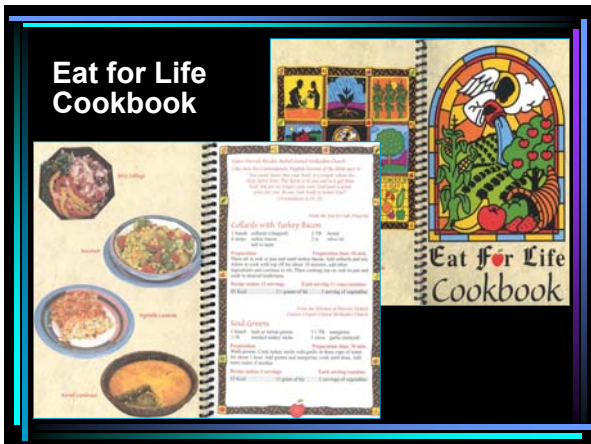
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## Translating (Intervention) Research into Improved Outcomes

- ❖ **Partnership Model**
  - Collaborate with government and non-government organizations to disseminate evidence-based interventions and products, e.g. *Guija Par non Fumar*, *Clear Horizons*.



Healthy Aging  
Medicare Stop Smoking Program



No lo dejes para mañana,  
deja de fumar hoy  
Guija Par non Fumar



CLEAR HORIZONS

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## Translating (Intervention) Research into Improved Outcomes

### ❖ Partnership Model (Cont.)

- Co-sponsor *Designing for Dissemination*, a conference designed to overcome barriers to dissemination by convening practitioners, researchers and funders.
- Facilitate State Cancer Plans
- Collaborate with other partners to fund QuitNet.

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## Potential Diffusion and Dissemination (D&D) Partners

- ❖ Schools of public health
- ❖ Schools of communication
- ❖ Business schools
- ❖ Medical schools
- ❖ Voluntary health organizations
- ❖ Private sector, e.g. advertising agencies
- ❖ Comprehensive cancer centers
- ❖ Foundations
- ❖ Public health systems
- ❖ Healthcare organizations

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## Translating (Intervention) Research into Improved Outcomes

### ❖ Production Model

- Create tools to facilitate use of evidence-based interventions, e.g. Cancer Control PLANET



- Create tools to encourage dissemination and diffusion, e.g. web-based, searchable risk communication bibliography, downloadable program materials

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PLANET  
cancer.gov  
NATIONAL CANCER INSTITUTE  
Cancer Control & Population Sciences  
TRIO - Translating Research into Improved Outcomes  
You asked for programs and products that increase fruit and vegetable intake.

Intervention Program / Product	Intended Population	Setting	Research Quality	Implementation Complexity	Level of Effectiveness
Seattle 5 A Day Worksite Program	Employees	Worksite	▲	☼	◆
Gimme 5 Fruit and Vegetables for Fun and Health	Elementary school students	School	▲	☼	▾
5 A Day Power Plus	Multiracial 4th and 5th grade students	School	▲	☼	◆
Peer Education to Increase Fruit and Vegetable Intake	Lower SES employees	Worksite	▲	☼	◆
North Carolina Churches for Better Health Project	Rural African American church members	North Carolina churches	▲	☼	▲

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**We Know...**

- There are effective interventions, e.g. reminders and brief counseling; some regimens for weight loss (e.g. DPP protocol); combinations of support, CBT and education.
- They are under-used in practice.
- There aren't enough of them.

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## Need a Better Understanding of Dissemination Failure



- \* What are peoples' real barriers as opposed to what they say?
- \* What really motivates them?
- \* What will it take to overcome barriers?

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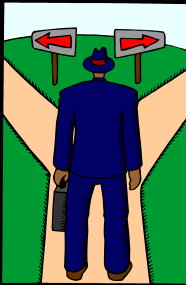
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## Where We Should Be Going



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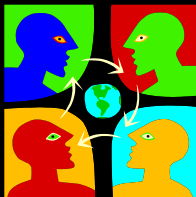
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**Focused and enhanced effort in translational research, dissemination and diffusion are needed to achieve improved population benefits.**



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## INTERVENTIONS



❖ **Interventions should be designed for dissemination.**

- **Intervention design is part of an engineering process.**



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## Dissemination of Evidence-Based Interventions



- \* While there are effective interventions, few have become part of routine practice.
- \* Simpler interventions are more likely to be disseminated.
- \* Interventions need to be turned into protocols that can be replicated and disseminated.
- \* The research culture should be changed to incentivize this.

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## Using and Disseminating Evidence

### ❖ **Knowledge Synthesis Model**

- Encourage investigators not only to conduct reviews but to use evidence.
- Disseminate evidence in clear, actionable text to practitioners.
- Provide economic analyses to aid program leaders in decision making

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## Mark Twain on Knowledge Transfer

*“The mere knowledge of a fact is pale; but when you come to realize a fact, it takes on color. It is all the difference of hearing of a man being stabbed to the heart, and seeing it done.”*

~Mark Twain, A Connecticut Yankee, 1889

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## Philosophy of Ongoing Linkage and Exchange

*“Interpersonal links, spread through the life of a given study, are the key to research use. They allow non-researchers to find their niche and their voice while a study is still young... There are reciprocal effects, such that we are no longer in a conventional research-to-practice paradigm, but in more of a conversation among professionals, each bringing different expertise to bear on the same topic.”*

~ Huberman, M: Research Utilization: The State of the Art. Knowledge and Policy 1994;7:22

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## Support Dissemination and Dissemination Research



 Money Talks.



**Provide support for dissemination research and dissemination.**

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## Applications Of D And D Models

### ❖ Collaborative Model

- Encourage partnerships between researchers, practitioners and people with skill in dissemination.

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## Disseminate Tools and Products



### ❖ Production Model

- Make it easier for people to use evidence-based tools.
- Alternatively, set a higher bar for support of new tools without adequate demonstration of need.



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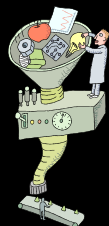
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## Disseminate Tools and Products



### ❖ Production Model

- Make the products of evidence-based interventions available to research and practice communities.



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## INTERVENTIONS



- Improve and build upon prior interventions.
- Likewise, can we design the simplest effective intervention, not the most complex? Use adaptive stepped designs to identify the Minimum Intervention Needed for Change (MINC).
- Communicate to practitioners what are core, immutable aspects of interventions and what elements can be adapted.



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## INTERVENTIONS



- Integrate new communication technologies into the mix.
  - ❖ Friedman and others have shown that automated telephone calls may be nearly as good as human initiated calls.
  - ❖ We and others have shown the cost effectiveness of brief telephone counseling calls.



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## INTERVENTIONS



- Integrate new communication technologies into the mix.
  - ❖ The Internet is an important source of health information. Findings by Tate, Wing and Winett (2001) suggest that virtual counselors may have great potential in diabetes.



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## On the Horizon



### Short Term Horizon:



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## INTERVENTIONS



- Effective interventions should be widely disseminated.
- ❖ Practitioners and researchers should consult the CDC's Guide to Community Preventive Services for information about effective interventions.

[www.thecommunityguide.org](http://www.thecommunityguide.org)



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## INTERVENTIONS



- ❖ Researchers and practitioners alike can get effective interventions through The Cancer Planet. (<http://cancercontrolplanet.cancer.gov/>) Many of these will be relevant for diabetes investigators/practitioners.
- ❖ "Authors should report sufficient detail about their interventions to enable readers to understand what was actually done" (*Speaking of Health*, 2003).

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## Research Needs: Intervention Activities

### ➤ Additional studies:

- ❖ Targeted to populations outside of clinical settings
- ❖ Targeted to providers and systems
- ❖ In non-white or medically underserved populations
- ❖ That attempt to increase reach and target larger populations

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"If we are to benefit at the societal level from 'discoveries' such as the intervention model presented by Sorensen and colleagues, we must grapple with key issues relevant to dissemination. First, there are few infrastructures through which dissemination efforts can be readily undertaken. Efforts to build these infrastructures are sorely needed. Second, standard evaluation strategies do not have the level of sensitivity needed for dissemination."

--Colditz



Colditz GA. *Cancer Causes and Control*, 2002.

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## Applying Wellworks to the Massachusetts Blue-collar Workforce

Age (years)	Number	Smokers	Lung cancer continuing to smoke	Cases averted if 11% quit now	Cases of lung cancer avoided
30-39	214,500	77,040	12,326	$0.11 \times 77040 \times 143$	1212
40-49	214,500	77,040	12,326	$0.11 \times 77040 \times 13$	1102
50-59	143,000	51,480	8237	$0.11 \times 51480 \times 10$	566
Total		205,560	32,889		2880

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**We cannot predict the future...**



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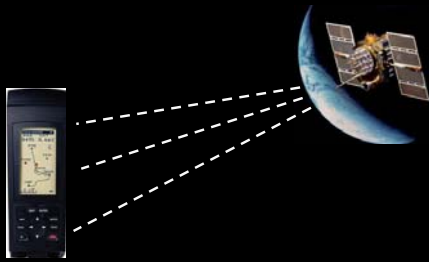
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**But we can prepare for it ....**



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**We can create the systems ....**



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And remove the roadblocks ....



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*"This is not the end. It is not the beginning. It is the beginning of the end."*  
~Churchill



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DISSEMINATION  
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