

Dissemination and Implementation Research

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Smoking rates in the US from 1965-2007

How to improve tobacco cessation?

Patient-level treatments

Practitioner-level treatments

Social education

Environmental structures

Legal & regulatory statutes

What we will be talking about

The Problem:

State of the health care system in the US today

Current gap between research and practice

The Big Picture:

The research & translational spectrum

A Solution:

Definitions, principles, and characteristics of D&I research

Example:

D&I research

Design:

Types of designs for D&I research

Unique design considerations

The Future:

Directions and opportunities

Current Health Care Situation in the US

Underperforming health care system

Balkanized and silo approaches to care, lack of integration of care

Expensive, unsustainable cost, increasingly inaccessible

Inequitable, significant health disparities

Evidence-based

Health Care Costs are Rising

Projected Health Care Costs by GDP

Ideally we would have

An integrated health care system

Cost-effective

Personalized care

Rapid translation from research to care

Why is Our Health Care System Not Working?

Many times, we know what to do in ideal settings with “ideal” patients - but not how to translate that into real-world settings.

Until recently, there have been relatively few attempts to translate what we know to practice because

there has been little emphasis on later-stage translational research

Moving Research to Practice

“it takes 17 years, on average,

...for 14 % of research

...to translate into practice”

Balas EA,1998.

Research to Practice Pipeline

The Goal of Dissemination and Implementation Research

The ultimate goal of D&I research is to extend and adapt generally accepted and effective interventions that have previously been carried out in well-controlled settings and test in broader populations or settings (i.e., real-world settings like the workplace, schools, community centers and clinics, neighborhoods, etc).

Understand, study and test how to translate Evidence into Practice

Translation Continuum

Translation Continuum

What is Implementation Research?

Implementation is the use of specific strategies to adopt and integrate evidence-based and guideline-based health interventions for the purpose of changing patterns of care within specific “real world” settings. Interventions developed in efficacy settings typically must be adapted to broader settings. Implementation research tests these adaptations and other strategies.

What is Dissemination Research?

Dissemination is the targeted distribution of information and intervention materials to a specific public health or clinical practice audience. The intention is to spread knowledge and associated evidence-based interventions.

Dissemination research tests these active process to determine if they result in increased awareness, acceptance, and use of the lessons learned from science.

A rose by any other name....

Diffusion of Innovations

Knowledge to Action

Knowledge Transfer

Knowledge Translation

Research to Practice

Research Utilization

Scale up

Translational Research

Questions Addressed by D&I Research

How to achieve widely accepted and evidence-based interventions in a variety of real-world settings

Potentially modify interventions to be consistently accepted and implemented by individuals with varying training and expertise

Enhance feasibility, provider and patient adherence, and community uptake while producing reliable effects at reasonable cost

Determine how to reach large numbers of people in real-world settings, especially those who can most benefit

Dissemination and Implementation Research

Bridges research and practice in real-world settings

Strikes a balance between rigor and relevance in study designs, methods and outcomes

The Balance Between Relevance and Rigor (Internal and External Validity)

Risk of Type I

Risk of Type II

Error (false positive - α)

Error (false negative - β)

Dissemination & Implementation Research Characteristics & Challenges

Contextual

Complex (non-linear)

Multi-component

Transdisciplinary

Multi-level

Timing

Sequencing of implementation studies

Study Designs

Study Methods

Typical Outcomes in D&I Research

Primary outcomes are related to D&I strategies.

Provider acceptance and adherence

Patient/community adherence and adoption

Uptake into practice

Formation of community partnerships

Penetration of guidelines more globally/diffusion

Actionable measures

Cost, cost-effectiveness

Effectiveness of the intervention

Sustainability

Evaluation of impact and unintended consequences

Dissemination & Implementation Approaches

Patients

Self-management

Behavioral counseling

Self-monitoring and feedback

Health care providers

Clinical guidelines

Technological

Home monitoring

Internet or phone-based intervention

Health care system

Chart reminders

Team approaches

Decision support

Community

Community health workers

Pharmacy

Worksite resources

Smoking rates in the US from 1965-2007

Smoking Rates are High in Military Recruits

Until 1975, cigarettes

were included in

K-rations and C-rations

Smoking was banned

in submarines – at the

end of 2010

Today, over 30% of

members of the military smoke; smoking while

in active duty is even higher

The Problem

The DOD has identified tobacco cessation as a US military priority

Quit lines and nicotine replacement are both effective in increasing quit rates in well-controlled trials

Recruits still smoke at alarmingly high rates

Can these strategies be effectively implemented in US military recruits?

What are the questions and challenges that need to be addressed?

Recruitment is a significant challenge

Following chain of command

Obtaining appropriate approvals

Coordinating with installation

Establishing a point-of-contact

Choosing the right intervention

Interventions known to be efficacious

Quit lines

NRT

Can these be effective when self-paced?

Can these be delivered in a cost-effective manner?

Smoking Cessation Among Military (n~1400)

Abstinence Rates by Condition

Key Findings

The overall cessation rates are high – about twice that expected.

Even among the self-paced group, cessation and maintenance of cessation is high after 1 year.

This is a low-cost, effective strategy for this population.

Design Strategies Used in D&I Research

RCTs

Simulations, modeling, dynamic systems science models

Natural experiments

Use of EHRs

Pragmatic trials

Often utilize cluster randomized designs

Community Based Participatory Research Approaches (CBPR)*

Patient-centered care approaches

Design Considerations in D&I research

Questions specific to D&I research:

In implementation research, the question is about the implementation strategy of an established (albeit modified) intervention or strategy

In dissemination research, the question is focused on the dissemination strategy and outcomes.

Consider where the state of your science falls on the research continuum

Utilize team science approaches, multidisciplinary, integrated care

Design Considerations in D&I research – con't

Often community based (work-sites, schools, community clinics, churches, community hospitals, HMOs), participatory approaches

Able to incorporate personalized aspects of treatment using patient-centered care approaches

Incorporates multi-level context: personal, organizational, community, policy, environmental and social contexts

Conducted with real (non-selected) patients, often with complex co-morbidities – take all comers

Design Considerations in D&I Research – cont.

Multi-component treatments delivered by real-world health care, community, worksite workers, under real world conditions and settings

Can be vitally important to measure secular trends and potential confounders

Designed for broad adaptation and implementation

Scalable (cost-effective)

Deliverable by variety of personnel in typical settings

Can sometimes be evaluated through real-time data (for example, with Electronic Health Records)

Key Take Home Points

D&I research is contextual and non-linear

Successful programs evolve and are about “fit”, acceptance, flexibility

D&I research is multi-level and complex, and concerns settings, staff, delivery, scale, and sustainability

D&I research involves multiple conditions, behaviors, complex and multi-component interventions

Main outcomes are related to dissemination and implementation processes

This is essential work for successfully bridging research to practice.

D&I Opportunities

“State of the D&I Science” venue

Annual or semi-annual meeting in Bethesda, sponsored by NIH and other partners

Free and open to the public

Training Institute for Dissemination and Implementation Research in Health
(<http://conferences.thehillgroup.com/OBSSRinstitutes/TIDIRH2015/index.html>)

Several NIH funding initiatives

Center for Translational Research and Implementation Science (CTRIS), National Heart, Lung, and Blood Institute

Implementation Science, National Cancer Institute