Lost in Translation: Understanding and Confronting the Research to Practice Gap

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Bringing the full power of Science to bear on...

Drug Abuse & Addiction
Priority Areas for NIDA

- Prevention Research
  (Children and Adolescents)

- Treatment Interventions

- HIV/AIDS Research

- Translation
% of Students Reporting Any Illicit Drug Use (Past Year)

Denotes significant difference between recent peak year and current year.
% of High School Seniors Reporting Nonmedical Use of Sedatives (Past Year)

* Denotes significant increase 2001-2005.
## Prevalence of Drugs Among High School Seniors

<table>
<thead>
<tr>
<th>Drug</th>
<th>Prev.*</th>
<th>Drug</th>
<th>Prev.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marijuana/Hashish</td>
<td>33.6</td>
<td>MDMA (Ecstasy)</td>
<td>3.0</td>
</tr>
<tr>
<td>Vicodin**</td>
<td>9.5</td>
<td>Methamphetamine</td>
<td>2.5</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>8.6</td>
<td>&quot;Ice&quot;</td>
<td>2.3</td>
</tr>
<tr>
<td>Sedatives**</td>
<td>7.2</td>
<td>Crack</td>
<td>1.9</td>
</tr>
<tr>
<td>Tranquilizers**</td>
<td>6.8</td>
<td>LSD</td>
<td>1.8</td>
</tr>
<tr>
<td>OxyContin**</td>
<td>5.5</td>
<td>Ketamine</td>
<td>1.6</td>
</tr>
<tr>
<td>Cocaine (any form)</td>
<td>5.1</td>
<td>Steroid**</td>
<td>1.5</td>
</tr>
<tr>
<td>Inhalants</td>
<td>5.0</td>
<td>PCP</td>
<td>1.3</td>
</tr>
<tr>
<td>Cocaine Powder</td>
<td>4.5</td>
<td>Rohypnol</td>
<td>1.2</td>
</tr>
<tr>
<td>Ritalin**</td>
<td>4.4</td>
<td>GHB</td>
<td>1.1</td>
</tr>
</tbody>
</table>

* Percentage reporting use in past year. **Nonmedical use.
Methamphetamine: Our Next Drug Epidemic?
% of Primary Methamphetamine Treatment Admissions (Excluding Alcohol)

SOURCE: CEWG January 2006 reports on State and local data
What Research-Based Findings/Practices Most Need to be Translated into Practice?
Neuroscience is revealing much about the brain and the relationship to addiction, relapse, and recovery.
Biological Factors Interact with Environmental Factors to Produce Addiction

Biology/Genes

Environment

Biology/Environment Interaction

DRUG

Addiction
Addiction is a Disease of the Brain
As other diseases, it affects tissue function

Decreased Brain Metabolism in Drug Abuse Patient

Decreased Heart Metabolism in Heart Disease Patient

Sources: From the laboratories of Drs. N. Volkow and H. Schelbert
PRINCIPLES OF DRUG ADDICTION TREATMENT
A RESEARCH-BASED GUIDE

National Institute on Drug Abuse
National Institutes of Health
3. Effective treatment should attend to multiple needs of the individual.
4. Recovery from drug addiction requires effective treatment followed by management of the disorder over time.
Substance Use Careers Last for Decades

Cumulative Survival

Median duration of 27 years!

Scott & Dennis, (1998)
Treatment Careers Last for Years

Cumulative Survival

Median duration of 9 years and 3-4 episodes of care

Years from first Tx to 1+ years abstinence
Drug Dependence as a Chronic Illness

![Bar chart showing percent of patients who relapse for Drug Dependence, Type I Diabetes, Hypertension, and Asthma.](image)

- Drug Dependence: 40 - 60%
- Type I Diabetes: 30 - 50%
- Hypertension: 50 - 70%
- Asthma: 50 - 70%

Chronic Disease Model

- Initial Services
  - Prescription for Services

- Clinical Practices
  - Screening
  - Initial brief Intervention
  - Engage & Sustain
  - Assessment
  - Therapeutic Interventions

- Patient Engagement and Retention
- Recovery/Chronic Care Management

- Psychosocial Intervention (MI, MET, CBT, Contingency Mgt, CRT, 12-Step Facilitation, Structured Family/Couples)
- Pharmacotherapy
Recovery Management Checkup

• “Linkage Manager” who conducts motivational intervention and provides linkages

• Motivational Intervention:
  - Provide personalized feedback
  - Recognize problem and consider return to treatment
  - Address existing barriers to treatment
  - Schedule assessment

Dennis, Scott, Funk (2003)
H1: RMC Clients will return to treatment sooner

Control (51% readmitted)
RMC (64% readmitted)

Median of 376 vs. 600 days

OR: 1.34
$X^2_{(1)}=6.8, p<.01$

Dennis, Scott, Funk (2003).
5. Treatment must last long enough to produce stable behavioral changes.
7. Continuity of care is essential.

Martin, Butzin, Saum, & Inciardi (1999)
Medications to Keep an Eye On

- **Topiramate**: alcohol, cocaine, nicotine
- **Marinol+rimonabant**: marijuana
- **Depot naltrexone**: opiate, alcohol
- **Bupropion, Vigabatrin, Topiramate, Modafinil**: methamphetamine
11. Planning should include a focus on HIV/AIDS and other infections.
Expanded HIV Testing Improves Survival Rates and is Cost Effective

Paltiel, 2006; Sanders, 2006
Behavioral Treatments with Strong Scientific Support

- Medication Adherence
- Adolescent Treatments
- Cognitive-Behavioral Treatment
  - Combined Pharmacotherapies and Behavioral Therapies
- Complementary and Alternative Treatments
- Community Reinforcement Approach
- Smoking Cessation
- Contingency Management Treatments
  - Dialectical Behavioral Therapy
  - Drug Counseling
  - Family Treatments
  - Group Behavior Therapy
  - HIV Risk Reduction
  - Motivational Interviewing/Enhancement
  - Seeking Safety (PTSD)
  - Work Therapy
Modafinil Improves CBT Therapy Results in Cocaine Addiction

Dackis, et al., 2006
National Drug Abuse Treatment

Clinical Trials Network

A research infrastructure of 17 RRTCs & 150 CTPs across 34 States, and Puerto Rico
Drug Abuse Treatment Core Components and Comprehensive Services

- Child Care Services
- Vocational Services
- Educational Services
- Medical Services
- Mental Health Services
- Family Services
- Financial Services
- Legal Services
- AIDS / HIV Risk Services

- Treatment Plan
  - Buprenorphine Detox
  - TELE
  - Self-Help (AA, NA) Meetings
- Motivational Interviewing
- Supportive Group and Individual Counseling
- Clinical & Case Management
- Abstinence-Oriented Substance Abuse Counseling
- Motivational Incentives
- Motivational Interviewing
- Incentives
- Buprenorphine Detox
- TELE
- Self-Help (AA, NA) Meetings
New CTN Protocols

- Health consequences of buprenorphine/naloxone and methadone
- Prescription Opioid Addiction Treatment
- ADHD and Substance Use Disorders
- 12-Step Facilitation
The Challenge of Implementation
Are We Speaking the Same Language?

• Technology Transfer
• Research Diffusion
• Dissemination
• Adoption
• Replication
• Implementation
• Science to Services
• Blending
A Conceptual Framework for Technology Transfer

Dissemination  Adoption  Implementation
An evidence-based program is one thing....

Implementation of an evidence-based practice is a very different thing.
The Translation Bottleneck

Bench → Bedside → Community
Senile cataract
Breast cancer
Prenatal care
Low back pain
CAD
Hypertension
Congestive heart failure
Cerebrovascular disease
COPD
Depression
Orthopedic conditions
Osteoarthritis
Colorectal cancer
Asthma
Benign prostatic hyperplasia
Hyperlipidemia
Diabetes mellitus
Headache
UTI
Community-acquired pneumonia
STDs
Dyspepsia and peptic ulcer disease
Atrial fibrillation
Hip fracture
Alcohol dependence

Adoption of Treatment Innovations


(N = 171 Administrators)
Implementation Barriers

• Off the shelf interventions often not readily accepted.

• May not work in real-life settings w/o modifications.

• Not enough attention to organizational/systems level issues.

• Plastic wrap on manuals often too tight to open.
Implementation research is still limited.
“We are faced with the paradox of non-evidenced based implementation of evidence-based programs.”

-Drake, Gorman, & Torrey (2002)
Diffusion Theory

Everett Rogers
The QWERTY keyboard

Designed in 1873 to minimize jamming
The Dvorak Keyboard

(1932)

Quicker to learn
More efficient
The “S” Curve

% of Adoption

Time

Early Adopters

Take-Off

Late Adopters

Larger farms
Higher incomes
More education

Source: Ryan & Gross (1943)
Adopter Categorization

- Innovators = 2.5%
- Early Adopters = 13.5%
- Early Majority = 34%
- Late Majority = 2.5%
- Laggards = 16%

Source: Rogers (2003)
Key Elements for Adoption of an Innovation

- Relative advantage
- Compatibility
- Complexity
- Trialability
- Observability
“…the best candidate for rapid adoption would be an evidence-based treatment that was simple, was similar with previous practice, had clear advantage, could be tried out temporarily, and was readily observable.”

Early Technology Transfer Research at NIDA

- “Reviewing the Behavioral Science Knowledge Base on Technology Transfer”
- Monograph Number 155 (Backer, David, & Soucy, 1995)
Bridging the Gap

- Community treatment providers should be more involved in research
- More effective dissemination and training strategies
- More knowledge needed about how technology transfer actually occurs
- Organizational and economic factors need to be considered

Institute of Medicine (1998)
At the Louis de la Parte Florida Mental Health Institute
University of South Florida
http://nirn.fmhi.usf.edu
Implementation:
What Doesn’t Work

- Information dissemination alone (research literature, mailings, promulgation of practice guidelines)
- Training alone (<10% transferred)
### Training Components and Implementation

<table>
<thead>
<tr>
<th>Training Components</th>
<th>Knowledge</th>
<th>Skill Demonstration</th>
<th>Use in the Classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory and Discussion</td>
<td>10%</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>+ Demonstration in Training</td>
<td>30%</td>
<td>20%</td>
<td>0%</td>
</tr>
<tr>
<td>+ Practice &amp; Feedback in Training</td>
<td>60%</td>
<td>60%</td>
<td>5%</td>
</tr>
<tr>
<td>+ Coaching in Classroom</td>
<td>95%</td>
<td>95%</td>
<td>95%</td>
</tr>
</tbody>
</table>

Joyce and Showers, 2002
Formula for Successful Patient Outcomes

Effective Intervention Practices

+ 

Effective Implementation Practices

Good Patient Outcomes
Implementation Framework

Organizational Structures/Culture

Evidence-based Practices

Practitioner

Fidelity & Outcome Measures

Practitioner

System of care

Policy makers

Fixsen, Naom, Blase, Friedman, & Wallace, 2005
Stages of Implementation

- Exploration
- Installation
- Initial Implementation
- Full Implementation
- Innovation
- Sustainability

2 – 4 Years

Fixsen, Naoom, Blase, Friedman, & Wallace, 2005
**Stages of Transfer**

1. **Exposure** *(Training)*
   - Lecture
   - Self Study
   - Workshop
   - Consultant

2. **Adoption** *(Leadership decision)*

3. **Implementation** *(Exploratory use)*

4. **Practice** *(Routine use)*

**Institutional & Personal Readiness**

- Motivation
- Resources

**Organizational Dynamics**

- Climate for Change
- Staff Attributes

**Source:** Simpson (2002)
A Comprehensive Framework for Research Implementation

Systemic Factors

- Financial
- Legal/Regulatory
- Health Care Infrastructure
- Education & Training

Program Components

- Initial Services
- Staffing
- Assessment
- Info & Clinical Care Systems
- Research & Knowledge Transfer
- Therapeutic Interventions
- Engage & Sustain
- Org Structure & Culture

National Quality Forum (2005)
• A policy group on performance measurement for care of substance abuse dependence
• 4 domains of care
• 7 core performance measures
• 3 adopted by National Committee for Quality Assurance’s (NCQA) Health Plan Employer Data and Information Set (HEDIS)
<table>
<thead>
<tr>
<th>Domain</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention/Education</td>
<td>Educating patient about AOD disorders</td>
</tr>
<tr>
<td>Recognition</td>
<td>*Identification rates</td>
</tr>
<tr>
<td>Treatment</td>
<td>*Initiation of AOD plan services</td>
</tr>
<tr>
<td></td>
<td>Linkage of detox and services</td>
</tr>
<tr>
<td></td>
<td>*Treatment engagement</td>
</tr>
<tr>
<td></td>
<td>Interventions for family/significant others</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Maintenance of treatment effects</td>
</tr>
</tbody>
</table>

* HEDIS measure
Science to Services
Activities Underway: Research Opportunities
Blending Teams: Linkages Between CTN and ATTC

CTN Sites
- Seattle
- San Francisco (CA/AZ Node)
- Los Angeles
- Denver
- Cincinnati
- Charleston
- Miami
- Newport Beach
- Detroit
- Baltimore/Richmond
- New Haven
- Raleigh/Durham
- Albuquerque
- Portland

ATTC
- Philadelphia
- Portland
- Miami
- Beach
- Providence
- New York City
- Boston
- Long Island
- Philadelphia
- Baltimore/Richmond
- Raleigh/Durham
- New Haven
Training Rural Practitioners to Use Buprenorphine: Using *The Change Book* to Facilitate Technology Transfer

- 7 multi-disciplinary Oregon county teams convened using *The Change Book* model
- N = 51 (17 MD’s, 4 pharmacists, 2 nurses, 28 drug counselors)
- 1.5 day training
- Significant improvements in attitudes based on pre/post testing
- 8 months after training, 10 of 17 MDs received waivers to use buprenorphine

Source: McCarty et al (in press)
Speak to Us!

NIDA
NATIONAL INSTITUTE
ON DRUG ABUSE

www.drugabuse.gov