Getting to Physical Activity, Programs that are Effective, Reach a lot Of People, and Can be Sustained

Paul Estabrooks, PhD
What is Participatory Dissemination?

- The process of developing sustainable program, practice, or policy approaches in collaboration with key decision makers and delivery agents within existing delivery systems.

Estabrooks, 2007
Integrated Research-Practice Partnerships for Participatory Dissemination

Research Evidence

- As Tested
- Critical Elements

Practice Evidence

- Organization
- Clinic
- Program
- Delivery
- Staff

Partnership

Research Design

- Fit
- Appropriate For Question

Broader Health Policy and Cultural Context
The Diabetes Prevention Program

- A multi-site RCT
- Intervention included:
  - Weight loss and physical activity goals
  - Individualized training by lifestyle coaches
  - Supervised exercise sessions
  - Individualized strategies to overcome barriers
  - Materials targeted toward ethnically diverse populations
  - An extensive network of physical activity, nutrition, and clinical support
The Diabetes Prevention Program

- Significant weight loss and increased physical activity
- Lowered the incidence rate of diabetes by 58 percent.
- The success attributed to:
  - The blend of nutrition, exercise and behavioral weight loss strategies employed
  - Intensive & highly individualized to improve the participants’ chances of achieving challenging goals
**Application of Model to Diabetes Prevention**

**Broader Health Policy and Cultural Context**

1. National Organizational Campaign To Promote Healthy Lifestyles
2. Prevention Department Desire to Provide Diabetes Prevention Program

**Partnerships across organizational structure defined necessary results for decision to deliver broadly across multiple clinics**

*Smith-Ray, Almeida, Bajaj, Foland, Gilson, Heikkinen, Seagle & Estabrooks, HPP, 2009*
Application of Model to Diabetes Prevention

DPP Intervention

Be a Fat Detective
Three Ways to Eat Less Fat
Healthy Eating/Move Those Muscles
Being Active: A Way of Life
Tip the Calorie Balance
Take Charge of What’s Around You
Problem Solving
The Four Keys to Healthy Eating Out
Talk Back to Negative Thoughts
The Slippery Slope of Lifestyle Change
Jump Start Your Activity Plan
Make Social Cues Work for You
You Can Manage Stress
Ways to Stay Motivated

Smith-Ray, Almeida, Bajaj, Foland, Gilson, Heikkinen, Seagle & Estabrooks, HPP, 2009
Application of Model to Diabetes Prevention

DPP Intervention

Tested in Multiple Settings

Critical Elements
- Be a Fat Detective
  - Three Ways to Eat Less Fat
- Healthy Eating/Move These Muscles
- Being Active: A Way of Life
- Tip the Calorie Balance
- Take Charge of What's Around You
- Problem Solving
- The Four Keys to Healthy Eating Out
- Talk Back to Negative Thoughts
- The Slippery Slope of Lifestyle Change
- Jump Start Your Activity Plan
- Make Social Cues Work for You
- You Can Manage Stress
- Ways to Stay Motivated

Research Staff Delivery

Diverse Samples

Frequent Contact

Fit

Re-invention of intervention retaining critical elements but drastically reducing contact

Appropriate For Question

Demonstration Project

Broader Health Policy and Cultural Context
1. National Organizational Campaign To Promote Healthy Lifestyles
2. Prevention Department Desire to Provide Diabetes Prevention Program

Delivery Sites

Clinic
- Approval of PIC & MOA
- Clinic Staff Engagement
- Scheduling, Cost, & Co-pay

Dietitians
- Electronic Medical Record
- Space Limits
- Limited Staff Time

Primary Care

Scheduling, Cost, & Co-pay

Partnerships across organizational structure defined necessary results for decision to deliver broadly across multiple clinics

Organization

Prevention Department

Clinic

Diverse Samples

Multiple Settings

Research Staff Delivery

Frequent Contact

Notes:
- PIC=Physician in Charge; MOA=Medical Office Administrator

Note: PIC=Physician in Charge; MOA=Medical Office Administrator
Outcome

• A 90-minute intervention was developed based upon a patient-centered approach that highlighted the content used in the Diabetes Prevention Program.

• The intervention was taken to scale and offered for all patients with pre-diabetes.

• The proportional reach of the intervention based on the number of patients with pre-diabetes was calculated.

• A matched-case control group (n=1095 pairs) was used to determine effectiveness.

Almeida, Smith-Ray, Shetterly, & Estabrooks, PCD, in press
• Over the 12 months 12,834 patients were eligible, 1080 (8.4%) received the intervention

Reach & Effectiveness

Average Weight Loss

Matched Control-Group Visit

Intervention

Almeida, Smith-Ray, Shetterly, & Estabrooks, PCD, in press
Phase 2: Automated Telephone

• Intervention

• Interactive voice response (IVR) automated telephone calls over a 12-week period

• Addition to the 90-minute pre-diabetes class

• Tailored IVR calls were designed to follow DPP components

• 7 calls provided about 5-10 minutes of participant driven counseling

• 5 calls provided a tip of the week (<1 minute)
Phase 2: Methods for Testing

• Small RCT pilot
  • Reach = 78/205 (38%)
  • Completion rate = 90% of participants completed 75% or more of the intervention

3 Month Weight Change

- IVR
- DP Class
- Cohort (Class)
- Matched Control
So... What happened?

• If you had to guess, which of the following is true?
  • The class is still being delivered
  • IVR is still being delivered
  • Both are still being delivered
  • Neither are being delivered
Lessons Learned

• Integration and use of existing resources can lead to translation of research into practice

• Effectiveness is not the only consideration in the translation process

• Even integrated projects may not lead to translation
Participatory Dissemination:

Getting to **Physical Activity** Programs that are Effective, Reach a lot Of People, and Can be Sustained
The RE-AIM Framework:

- Reach
- Effectiveness
- Adoption
- Implementation
- Maintenance

Glasgow et al, AJPH, 1999
Team-building PA Interventions

Tested in
- Multiple Settings
- Critical Elements
  - Peer Sharing
  - Group feedback
  - Sense of Distinction
  - Group goal setting
  - Group Roles
- Diverse Samples
- Frequent Contact
- Research Staff Delivery

Delivery Sites
Organization
- Cooperative Extension
- Extension
- Office
- Agents
  - Current Health Programs
    - Space Limits
    - Office Staff Engagement
    - Limited Staff Time
    - Available Resources
    - Scheduling & Cost of Delivery

Critical Elements
- Testing & Cost of Delivery
  - Organization
  - Extension
  - Office
  - Agents
    - Current Health Programs
      - Space Limits
      - Office Staff Engagement
      - Limited Staff Time
      - Available Resources
      - Scheduling & Cost of Delivery

Fit
- Walk Kansas
  - Re-invention of intervention retaining critical elements but reducing contact
- Appropriate
  - For Question

Demonstration Project

Broader Health Policy and Cultural Context
1. Extension looking for new ways to engage new users.
2. Organizational Decision Maker Engaged

Partnerships across organizational structure defined necessary results for decision to deliver broadly across state

Estabrooks, Bradshaw, Dzewaltowski, & Smith-Ray, ABM, 2008; Estabrooks & Glasgow, AJPM, 2006
Walk Kansas Principles in Practice

- Primary Principles
  - Team-based registration
  - Team-name (sense of distinction)
  - Team size
  - Group goal to walk across Kansas
  - Regular feedback on individual contribution to group goal
  - Regular comparative group feedback
Walk Kansas Principles in Practice

- Program components as originally implemented
  - Teams of 6 to allow team to reach 8 week goal if all members were active at the recommended level
  - All teams reported miles each week to extension office
  - All counties used newsletters
  - Weekly feedback was sent with each newsletter to each team member
  - 8 Weeks in duration
Representativeness

- Year 1 differences only:
- Less active agent, less likely to deliver
- Smaller population counties, more likely to deliver
- Non-adopting counties by Year 5 have no specific agent assigned

Adoption & Maintenance

Estabrooks, Bradshaw, Fox, Berg, & Dzewaltowski, AJHP, 2004
Estabrooks, Bradshaw, Dzewaltowski, & Smith-Ray, ABM, 2008
Implementation

- Average team size: 6 participants
- 96% provided weekly newsletter
- 100% had captains report miles weekly
- 80% provided team feedback; 63% offered it weekly
- Participant indicators**
  - 7.5 of 9 newsletters received
  - 6.7 of 9 newsletters read

Doerksen & Estabrooks, IJBNPA, 2007
Downey, Wages, Flaming-Jacksons, & Estabrooks, under review
In your opinion, what is it about Walk Kansas that helps people to do more physical activity? (n=96)

- Open ended responses:
  - Teamwork, the team aspect 85% of agents
  - Accountability to teammates 40% of agents
  - Goal setting 28% of agents
  - Newsletters 7% of agents
  - Time of the year the program is offered 13% of agents

Downey, Wages, Flaming-Jacksons, & Estabrooks, under review
**Reach Outcomes**

- From 1 to 3% of pop.
- Older, more likely to be women
- Slightly more likely to meet PA guidelines
- No other differences with larger pop.
### Table 2: Effectiveness and Maintenance of the Walk Kansas Program: results from multilevel repeated measures ANOVA

<table>
<thead>
<tr>
<th>Time period</th>
<th>Activity level</th>
<th>Estimate (change in minutes of PA)</th>
<th>SE</th>
<th>df</th>
<th>Adjusted p</th>
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<tr>
<td><strong>Effectiveness: minutes of moderate physical activity</strong></td>
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<tr>
<td>Baseline to 8 weeks</td>
<td>Inactive</td>
<td>177</td>
<td>17.55</td>
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<td>107.81</td>
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<td>Baseline to 6 months</td>
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Is this participatory model better than our traditional model?

Participatory Dissemination Targeted Model

Efficacy to Effectiveness to Demonstration to Dissemination Model

Fit Extension

Active Living Everyday
Adoption Trial

Total Population
N=56 FCS Agents

Agents interested in PA program
N=36

Decliners differed on a number of behavioral and work related issues

R

ALED
N=18

Fit Ex
N=18
Adoption Trial

Total Population
N=56 FCS Agents

Agents interested in PA program
N=36

Decliners differed on a number of behavioral and work related issues

ALED
N=18

Trained
N=14

Delivered
N=2

Fit Ex
N=18

Trained
N=16

Delivered
N=14

R
Adoption Trial: Outcomes

![Bar Chart]

- **Training**: Fit Ex (16) vs. ALED (14)
- **Delivered**: Fit Ex (18) vs. ALED (2)

Virginia Tech
Invent the Future
Implementation: Human Resource Needs

**Total Hours**

- Fit Ex: 0, 1,000, 2,000, 3,000
- ALED: 500, 1,500, 2,500, 3,000

**Total Hours Per Program**

- Fit Ex: 0, 100, 200, 300, 400, 500, 600
- ALED: 0, 100, 200, 300, 400, 500, 600

**Total Hours Per Participant**

- Fit Ex: 0, 5
- ALED: 100, 200, 300
Reach & Representativeness:

**ALED: 30 participants (15/agent)**

**Fit Extension: 1104 participants (78/agent)**

<table>
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<td>Female:</td>
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<tr>
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<tr>
<td>Cauc:</td>
<td>81%</td>
<td>Cauc:</td>
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<tr>
<td>A.A.:</td>
<td>14%</td>
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<td>As.:</td>
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<td>Age</td>
<td>Mean: 38</td>
<td>Mean: 44</td>
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</tbody>
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*VirginiaTech
Invent the Future*
Effectiveness & Maintenance

![Bar chart showing effectiveness and maintenance over time for two groups: ALED and Fit Ex.](chart)

- **Baseline**: Low values for both groups.
- **End Program**: Significant increase for ALED, moderate increase for Fit Ex.
- **3 mo. Post**: ALED remains high, Fit Ex shows a decrease from the end of the program.

*Virginia Tech*
Effectiveness & Maintenance
Promise of integrated research & practice

- Programs can be developed that fit the organizational structure, resources, and mission
- Psychology of physical activity principles can be translated into clinical and community programs
- Strategies based on these principles can be identified by those delivering the program
- Local health professionals can identify critical elements of intervention effectiveness.
Pitfalls of integrated research & practice

• Can take much longer to develop and trade-offs are often made between what a researcher may consider optimal and what practitioners may consider practical.

• Fidelity to principles is just as important as treatment fidelity in the more traditional sense--adaptations can reduce effectiveness (or improve?)

• Insignificant findings are often more uncomfortable because of organizational desire to fill gaps

• Shared design decisions could reduce internal validity.
Future Directions

• Research that determines the comparative effectiveness of integrated research/practice developed interventions with those developed through a more linear scientific approach

• Understand mediational pathways in physical activity intervention adoption at the organizational level

• Examine the impact of adaptations to intervention strategies while adhering to underlying principles
Question’s, Comments, or Smart Remarks?