Applying Evidence in Practice: Products vs. Principles

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UNIVERSITY OF NEBRASKA MEDICAL CENTER
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Implementation science

- The study of methods to promote the integration of research findings and **evidence** into healthcare policy and practice.
- Focused on the adoption or uptake of **evidence-based interventions** by delivery agents and clinical or community organizations.

NIH Fogarty International Center

Research objectives

To support innovative approaches to identifying, understanding, and overcoming barriers to the adoption, adaptation, integration, scale-up and sustainability of **evidence-based interventions**, tools, policies, and guidelines.

What is an evidence-based intervention?

- A product
  - Published in peer-reviewed journal.
  - Part of systematic review that demonstrates consistent efficacy across a broad range of participants.
  - **Dependent on fidelity of implementation**

The problem with fidelity to an evidence-based product: The Project Move! Example

- Project Move! An adaptation of DPP for weight loss in the VA.
- Used a qualitative comparative analysis during scale up of the intervention
- Primary outcomes: Determining necessary and sufficient implementation conditions that lead to greater weight loss

Kahwati et al, 2012

Facility ID	Larger patient weight loss outcomes	High interface between screening and treatment	Use of standard curriculum	Use of multidisciplinary team approach involving a dietitian and at least one other discipline	High program complexity	Use of weight loss maintenance component	Used group care delivery format	High use of structured dietary plans
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6	1	0	1	0	1	1	1	0
9	1	0	1	0	0	1	1	0
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17	0	1	1	0	0	0	0	1
18	0	0	0	0	0	1	0	1
22	0	1	1	0	1	1	1	0

Results & Conclusions

- No two sites shared the same pattern of implementation
- All high success sites used a standardized curriculum and group sessions to deliver the intervention
- ~50% of the low success sites did too.
- Successful patterns of implementation
  - High program complexity combined with high staff involvement
  - Low accountability to facility leadership
  - Active physician champion combined with low accountability to facility leadership
  - The use of quality improvement strategies combined with not using a waiting list
- Adaptation is necessary
- Fidelity may be necessary, but more similar to guidelines that rules.

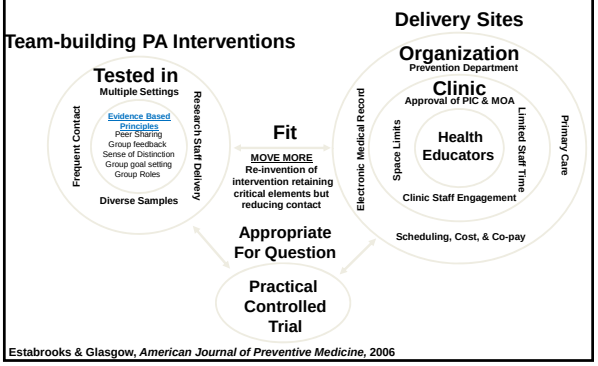
What is the primary concern of health professionals about evidence-based interventions?

- Not representative…
  - My participants
  - My skill set
  - My local resources
- Not flexible
  - Requires **high fidelity** where tailoring to patient needs is always necessary

The benefit of working from evidence-based principles

- Provides information on why an intervention was or was not effective
- Allows for targeted intervention adaptation
- Can be matched to population and available resources
- **Provides practice partners with a framework for ideas and the opportunity to identify current practices that would fit within, and contribute to, a given intervention approach**

Using Evidence-Base Principles for Program Adaptation

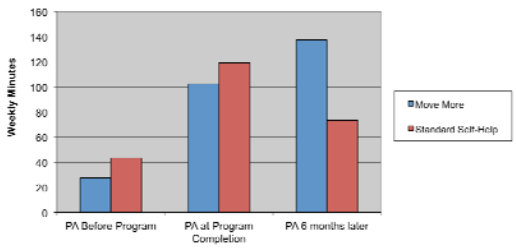


Estabrooks & Glasgow, *American Journal of Preventive Medicine*, 2006

Move More

- Recruitment:
  - Insufficiently active adult patients
  - Waiting room PA screener, Physician referral, & active outreach call from health educator
- Interventions & Outcome:
  - Group sessions reduced from 36, 1 hour sessions, to 2, 2 hour group sessions and follow-up telephone support call—over 3 months.
  - Original effect size ~50-100 minute increase of PA per week
  - Enhanced standard care control.
  - Energy expenditure measured by BRFSS.
- Partner:
  - Kaiser Permanente Colorado Prevention.
  - Sustainability decision based on superiority over enhanced standard care, 6 months post intervention

Estabrooks et al., International Journal of Sport and Exercise Psychology, 2011

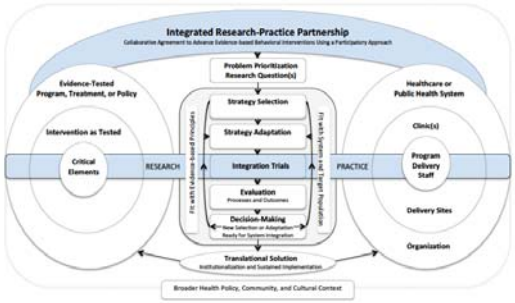


Estabrooks et al., International Journal of Sport and Exercise Psychology, 2011

Defining and refining integrated research practice partnerships

- Integration of scientific and community/clinical personnel to address questions that are scientifically innovative, have practical implications for clinical or community settings, or both.
- A research process of developing sustainable program, practice, or policy approaches in collaboration with key decision makers and delivery agents within existing delivery systems.
- Provides a strong understanding of evidence-based interventions and delivery system values, resources, and structure to develop a fit between an evidence-based intervention and sustained delivery within an organizational context.
- Can come together for a single purpose and initiative or for multiple projects around a variety of goals.

Estabrooks & Glasgow, 2006



Integrated Research Practice Partnership

Childhood Obesity Treatment: Adaptation Process

Partnering for Obesity Planning and Sustainability (POPS)

Children's HealthCare Center

Fralin Biomedical Research Institute at VTC

VDH Virginia Department of Health

Danville Parks and Recreation

Boys & Girls Clubs of the Danville Area

Interdisciplinary, integrated team:
Paul Estabrooks, Madlyn Frisard, Jennie Hill, **Ruby Marshall, Kathryn Plumb, Bryan Price, Brianna Riche, Kimberly Wiles,** Wen You, Jamie Zoellner

Specific Aim #1: Capacity-Building: to assess community capacity to develop, implement, and sustain a childhood obesity reduction initiative in the Dan River Region.

Specific Aim #2: Intervention testing: to determine the potential reach, effectiveness, feasibility, and cost of the newly developed intervention.

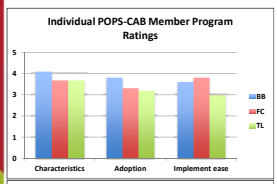
R24 MD008005 (Estabrooks, Zoellner)

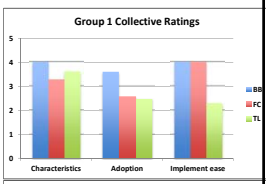
Three candidate evidence-based interventions

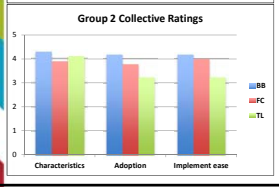
	Bright Bodies	Family Connections	Traffic Light
Nutrition Plan			
Calorie counting			✓
Healthy eating	✓	✓	✓
Physical Activity			
Structured exercise	✓		
General information		✓	✓
Behavioral Strategies			
Home environment		✓	✓
Goal Setting & Self-monitoring	✓	✓	✓
Self-esteem	✓	✓	
Praise, rewards, modeling		✓	✓
Stimulus/cue control	✓		✓
Relapse prevention	✓	✓	
Maintenance behavior	✓	✓	✓
Delivery method (Sessions)			
Individual	✓		✓
Group	✓	✓	
In-person	✓	✓	✓
Telephone		✓	
Parent	✓	✓	✓
Child	✓		✓
Workbook/Resource	✓	✓	✓

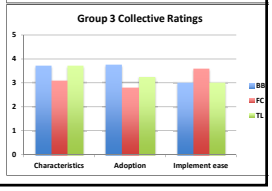
Hypothesis… least resource intensive would be selected

Results









Results

- Four main themes emerged from the qualitative data

1. The importance of program balance on nutrition and physical activity
1. Negative perceptions of calorie counting
2. A desire to target both the parent and the child
3. The need for practicality

Program decision

- Among evidence-based interventions—the most published with the best data was not the final choice.
- Nor was the program that required the least amount of resources.
- Adaptation is necessary—no program was judged as 'off the shelf, ready'.

Adaptation-iChoose!

- Drivers of adaptation
  - Bright Bodies learning objectives (nutrition, physical activity, and behavioral)
  - Change in delivery organization and member roles
  - Typical program length
  - Sustained reach for families (i.e. retention)
- Reduced to 3 months
  - Bi-weekly family sessions 90 minutes-Nutrition, Exercise, Behavioral (parent and child separately)
  - Bi-weekly telephone support using teach back and teach to goal methods
  - Bi-weekly child newsletter
  - 2, 50-minute PA sessions (child only).

Adaptation-Wave 2

- Clear communication evaluation of all intervention materials and adaptations based on family and community leader feedback.
- Added family session weigh-ins
- Made PA sessions for families
- Consistent program director
- Longer family sessions (90 to 120 minutes)
- Combined family contract at end of behavioral session

Community outcomes of interest

- Community leaders trained on clear communication strategies
- Parks and Recreation and Health District personnel and nurses trained on nutrition, PA, and behavioral support
- City of Danville approved position for iChoose leader
- Sustainable reach and recruitment strategy

Integrated Research Practice Partnership

Community Physical Activity Promotion: Integration Trials, Evaluation, & Decision Making

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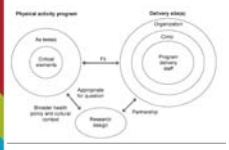
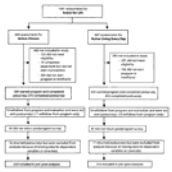
Principle versus Product Approach

Integrated Research-Practice Model

Versus

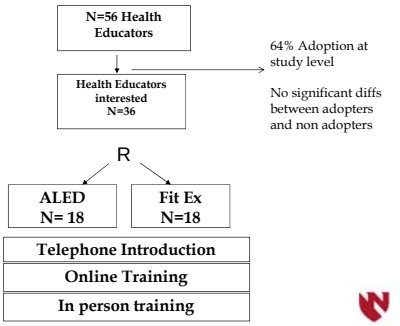
Traditional Research Model



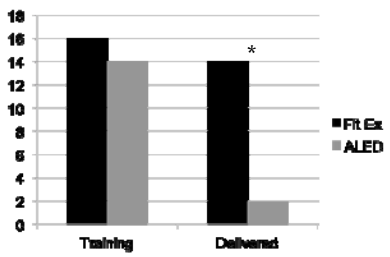


Fit Extension

Active Living Everyday

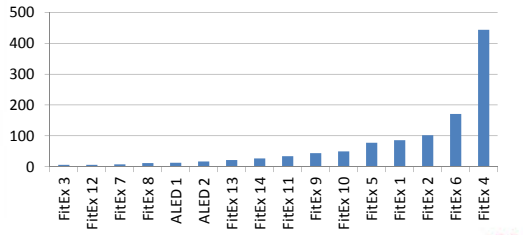


Delivery agent training and delivery

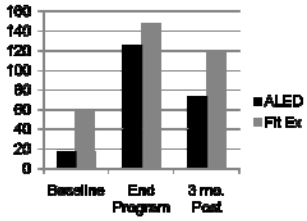


*$\chi^2(1)=7.2$, $p<.01$

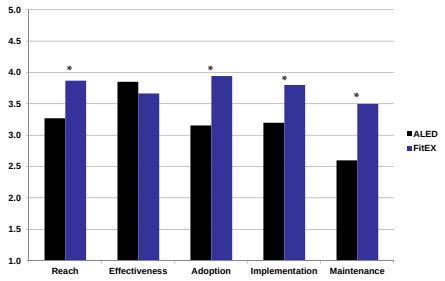
Reach



Effectiveness



How did the public health professionals perceive the interventions?



* p<0.05

Integrated Research Practice Partnership

Clinical weight management: Integration Trials, Evaluation, & Decision Making

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Adapted Lifestyle-based Weight Loss Program

Healthy Lifestyles-Care Coordinator Delivered Weight-Loss program

Quasi-experiment—one region, **more intensive training** (n=14 nurses vs n=31 nurses) and follow-up focused on increasing reach.

Outcomes: Implementation quality, reach, effectiveness

Implementation quality

Implementation Fidelity	Total	Standard	Plus	p value
5A's addressed by care coordinator across sessions (1-20) delivered, mean %, (SD)	84% (.10)	86% (.09)	81% (.18)	.162
• Assess addressed by care coordinator across sessions (1-20) delivered, mean %, (SD)	81% (.13)	86% (.07)	69% (.30)	.011
• Advise addressed by care coordinator across sessions (1-20) delivered, mean %, (SD)	79% (.14)	82% (.08)	67% (.28)	.015
• Agree addressed by care coordinators across sessions (1, 2, 5, 14, and 20) delivered, mean %, (SD)	73% (.14)	82% (.09)	55% (.31)	.085
• Assist/Arrange addressed by care coordinators across sessions (1-20) delivered, mean %, (SD)	95% (.08)	97% (.05)	91% (.24)	.299
Program sessions completed, mean no., (SD)	6 (5.7)	7 (6.2)	5 (4.9)	.131
Duration of program sessions, mean minutes, (SD)	38 (18.4)	39 (14.4)	35 (24.1)	.477
Length of program engagement, mean days, (SD)	88 (112.5)	98 (122.8)	76 (99.6)	.332
Program commitment contracts completed, mean no., %	58 58%	26 49%	32 68%	.054

Reach & Effectiveness

- Reach:
  - Plus: 321 participants, ~23 per care coordinator
  - Standard: 426, ~14 per care coordinator
- Effectiveness:
  - Plus: 2.5 (4.7) % average weight loss at 6 months, 25% achieved 5% weight loss
  - Standard: 1.8 (4.7)% average weight loss at 6 months, 18% achieved 5% weight loss

Conclusions

- The adapted program is effective, but outcomes have room for improvement
- Training with goal setting for participant accrual improves reach
- Qualified program delivery personnel adapt the delivery of key intervention content, likely in response to participant needs, and facilitate a higher weight loss
- Adherence to principles are key, but following product protocols may be less critical

Promise of Research-Practice Partnerships

1. Can adapt interventions based on underlying functioning principles of evidence-based interventions to allow for adaptation without reducing effects
2. Interventions developed through the partnerships have a higher probability of being sustained beyond the life of a research program
3. Interventions developed using this approach tend to be less resource intensive than traditional evidence-based interventions
4. More attention is paid to issues related to reach, cost, and sustainability
5. Better potential to achieve a public health impact
6. Community capacity is developed

Pitfalls of Research-Practice Partnerships

1. 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.
2. Fidelity to principles is just as important as treatment fidelity in the more traditional sense--adaptations can reduce effectiveness (or improve?)
3. Insignificant findings are often more uncomfortable because of organizational desire to fill gaps
4. Shared design decisions often reduce internal validity.
5. Fresh factory—community partner ongoing efforts to adapt interventions to make them "fresh"

Acknowledgements

Questions?

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