

Implementation mapping: a promising and innovative method to design and select implementation strategies

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@rsbeidas

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Agenda



Background

Method
and
exemplar

Future
directions

Objective

To share a promising method that can be used to select and tailor implementation strategies with an eye towards targets and mechanisms.

BACKGROUND

Or in other words, why does this presentation matter?

Implementation strategies are the “interventions” of implementation science.

Implementation strategies are active techniques to enhance the adoption, implementation, and sustainment of research-supported clinical interventions into practice

(Proctor et al., 2012; Powell et al., 2012)

IMPLEMENTATION STRATEGIES



PLAN

Gather data, build buy-in, and develop relationships



EDUCATE

Inform stakeholders



FINANCE

Incentive, train and support



RESTRUCTURE

Alter staffing, physical structures and data tracking



QUALITY MANAGEMENT

Incentive, train and support



ATTEND TO THE POLICY CONTENT

To encourage the promotion of programs and practices through accrediting bodies, licensing boards, and legal systems

The evidence on the effectiveness of implementation strategies is troubling.

Strategy Review	Number of Trials	Effect Sizes
Printed Educational Materials	14 Randomized Trials 31 ITS	Median absolute improvement 2.0% (range 0% to 11%)
Educational Meetings	81 Randomized Trials	Median absolute improvement 6% (IQR 1.8% to 15.3%)
Educational Outreach	69 Randomized Trials	Median absolute improvement in prescribing behaviors 4.8% (IQR 3% to 6.6%), other behaviors 6% (IQR 3.6% to 16%)
Local Opinion Leaders	18 Randomized Trials	Median absolute improvement 12% (6% to 14.5%)
Audit and Feedback	140 Randomized Trials	Median absolute improvement 4.3% (IQR .5 to 16%)
Computerized Reminders	28 Randomized Trials	Median absolute improvement 4.2% (IQR .8 to 18.8%)
Tailored Interventions	26 Randomized Trials	Meta-Regression using 15 trials. Pooled odds ratio of 1.56 (95% CI, 1.27 to 1.93, $p < .001$)

Thank you to Byron Powell via Grimshaw et al (2012)

The lack of robust findings may be due to strategy development approaches.



**ISLAGIATT
principle**

**“It Seemed
Like A
Good Idea
At The
Time”**

There is a magical quality to the development of implementation strategies to date.



We need to use rigorous and innovative methods to select and tailor our strategies.

Methods to Improve the Selection and Tailoring of Implementation Strategies

Byron J. Powell, PhD

Rinad S. Beidas, PhD

Cara C. Lewis, PhD

Gregory A. Aarons, PhD

J. Curtis McMillen, PhD

Enola K. Proctor, PhD

David S. Mandell, ScD

Context

Theory

**Stakeholder
preference**

Journal of Behavioral Health Services Research (2017)

METHODS

What did we do?

Implementation mapping is a promising approach.

Context

Stakeholder preference

Theory

Step 4: Produce implementation materials

Step 5: Evaluate implementation outcomes

Fernandez, ten Hoor, van Lieshout, Rodrigues, Beidas, Parcel, Ruiter, Markham, & Kok (2019).
Frontiers Public Health.

Exemplar

Thing: firearm safety
promotion EBP for
pediatric primary
care

210 stakeholders
across 2 health
systems



Step 1: Conduct a needs assessment and identify adopters and implementers

ARTICLE IN PRESS

Acceptability and Use of Evidence-Based Practices for Firearm Storage in Pediatric Primary Care

Rinad S. Beidas, PhD; Shari Jager-Hyman, PhD; Emily M. Becker-Haimes, PhD; Courtney Benjamin Wolk, PhD; Brian K. Ahmedani, PhD; John E. Zeber, PhD; Joel A. Fein, MD; Gregory K. Brown, PhD; Courtney A. Gregor, BA; Adina Lieberman, MPH; Steven C. Marcus, PhD

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Survey

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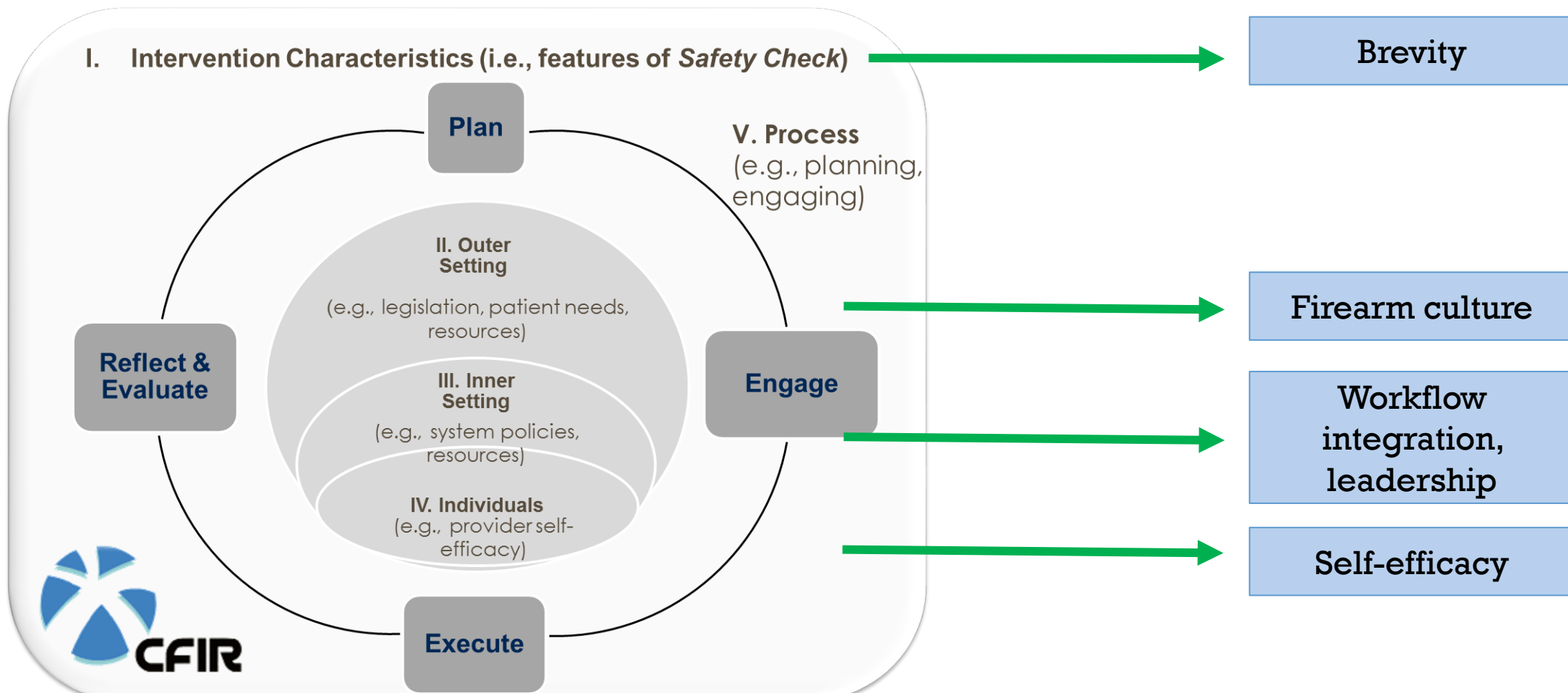
Original Investigation | Pediatrics

Stakeholder Perspectives on Implementing a Firearm Safety Intervention in Pediatric Primary Care as a Universal Suicide Prevention Strategy A Qualitative Study

Courtney Benjamin Wolk, PhD; Amelia E. Van Pelt, MPH; Shari Jager-Hyman, PhD; Brian K. Ahmedani, PhD; John E. Zeber, PhD; Joel A. Fein, MD, MPH; Gregory K. Brown, PhD; Courtney A. Gregor, BA; Adina Lieberman, MPH; Rinad S. Beidas, PhD

Interviews

Step 1: Conduct a needs assessment and identify adopters and implementers



Damschroder et al., 2009

Step 2: Consolidate inputs into a working logic model that guides strategy selection and tailoring



Barriers

- Time
- Cost
- Storage of gun locks
- Provider motivation/capacity
- Health system barriers
- Political Climate
- Patient Objection
- Role/influence of parents

Facilitators

- Intervention characteristics
- Operations/workflow (time/capacity)
- Salience (priority, buy in, salience)
- Inner setting (existing initiatives, relationships, champions, culture)
- Outer setting
- Leadership buy in
- Parent/patient

Core implementation strategies

Organizational Level

- Champions
- *Financing (cost, reimbursement)
- *Policy
- Restructuring workflow
- QI Plan
- EHR Integration
- *Marketing/branding

Provider Level

- Education
- Marketing/branding
- Champions
- Responsibility
- Accountability/piloting
- On-going coaching
- Workflow

Patient Level

- Marketing/Branding
- Education
- Responsibility
- Follow-up
- Gun Culture
- Guardian

Implementation Outcomes

1. Stage of implementation (SIC)
2. Penetration (gunlocks; # of families screened)
3. Fidelity (provision of each FSC component)
4. Acceptability (FSC or IS)
5. Cost (FSC or IS)

Client Outcomes

1. Safer gun storage
2. Accidental/intentional self-injury with firearm
3. Satisfaction

Step 3: Specify theory of change and operationalize strategies

Implementation strategies

Creating a plan for whom on the medical team will be responsible for implementing each component of the Firearm Safety Check

Changing the clinic or health system policies to encourage the implementation of Firearm Safety Check

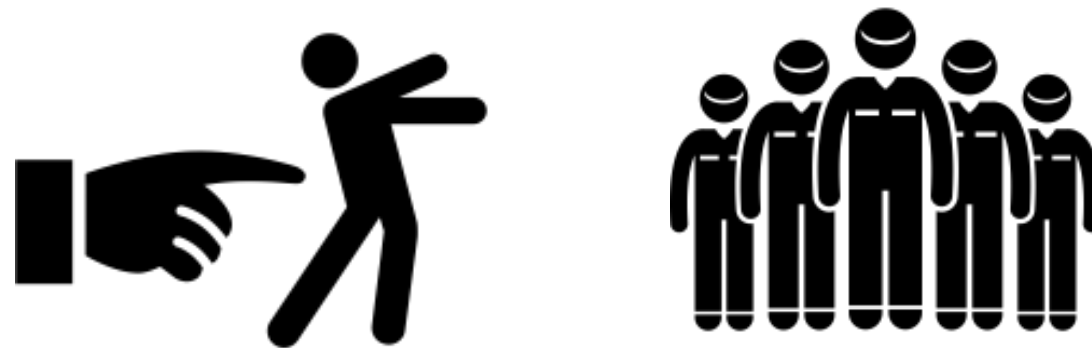
Integrating the intervention into the electronic health record

Training providers how to implement the Firearm Safety Check

Making changes to the workflow to make it easier to implement the intervention

Barrier/Facilitator	Operations & Workflow (time, capacity)
Implementation Strategy	Electronic Health Record (EHR) Integration
ERIC strategy and definition (EHR Integration)	Change record systems: Change record systems to allow better assessment of implementation or clinical outcomes
For whom and by whom (EHR Integration)	For clinicians; by IT
Outcome (EHR Integration)	Program will be embedded in EHR
Example (EHR Integration)	Prompts in the electronic health record to remind clinicians to implement and document each component of the program
Theory of behavior change (EHR Integration)	Behavioral economics (making it “easier” by creating a nudge in the EHR)

Is the less costly and scalable EHR-based 'nudge' powerful enough or is more intensive and expensive facilitation needed to overcome implementation barriers in the case of this sensitive intervention?

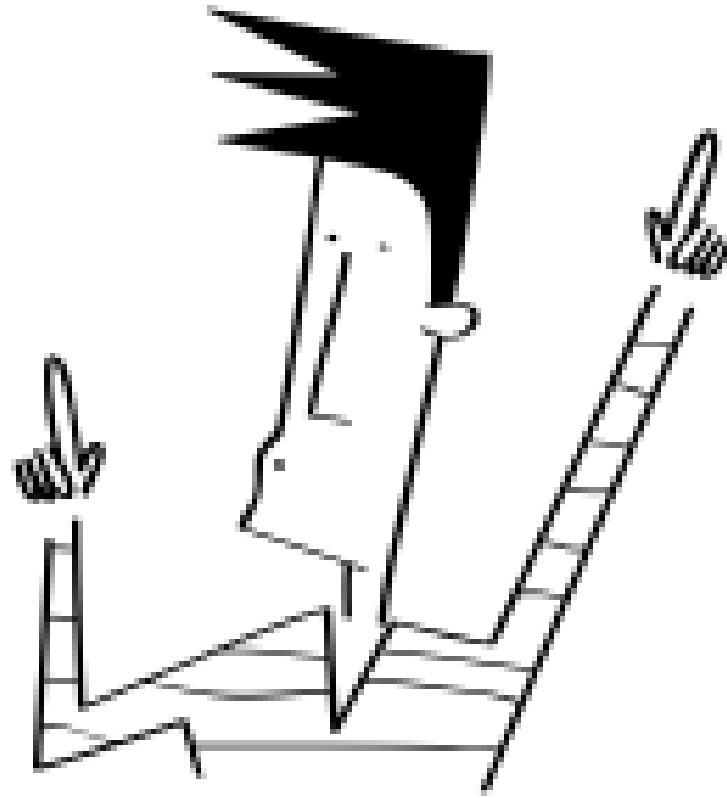


Hybrid type III effectiveness implementation trial – longitudinal cluster RCT

32 clinics, 151 clinicians, ~40,000 youth



This is a highly promising approach!



We experienced common barriers in using this approach across projects.

Capturing the voice of all stakeholders

How to weight inputs

Inputs are not always fully formed – still require elaboration

Output is largely what we hypothesized initially

Still feels more “art” than “science”

FUTURE DIRECTIONS

What should we do next?

We need rigorous trials to demonstrate that this approach results in more effective implementation strategies.

Do we need to do this every time we design implementation strategies (is the process important?)

Explore approach alongside other promising approaches (e.g., CFIR-ERIC tool)

We need recommendations on which inputs to include and how to weigh (e.g., surveys, interviews, innovation tournaments)



Our Community Partners



- Brian Ahmedani, PhD
- Shari Barkin, MD, MSHS
- Gregory Brown, PhD
- Leo Cabassa, PhD
- Joel Fein, MD, MPH
- Maria Fernandez, PhD
- Courtney Gregor, BA
- Shari Jager-Hyman, PhD
- Adina Lieberman, MPH
- Steven Marcus, PhD
- Amy Reed, BA
- Katherine Sanchez, PhD, LCSW
- Greg Simon, MD
- Courtney Wolk, PhD
- John Zeber, PhD
- Nicole Zeld, BA